



# RADIOWORLD

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## Broadcasters Get Behind All-Digital AM Option

Numerous entities express support for idea in comments filed with the commission

*The U.S. broadcast industry, it seems, wants AM radio stations to have the option to turn on all-digital transmissions, if they wish, on a station-by-station basis.*

*Comments filed with the FCC by major broadcast entities generally have been supportive. This article provides a sampling, collected by Radio World. Comments to the FCC about all-digital AM (Docket MB 19-311) were due March 9. Reply comments are due April 6.*

— **HD Radio developer Xperi** said the technology provides many benefits over traditional analog radio, including crystal clear, static-free sound, multicasting, enhanced metadata — including artist, song title, and album information — traffic services, and enhanced digital emergency alerts.

The company is offering AM stations

a license to use all-digital technology in perpetuity without any initial or ongoing licensing fees.

“Nevertheless, the cost to upgrade a station’s facilities to accommodate all-digital operations will vary by station. By providing broadcasters with the flexibility to transition if they want and when they want, however, the commission will facilitate a transition driven by market forces rather than regulatory fiat.”

Xperi said that because all-digital signals have less spectral occupancy, the potential for interference is greatly reduced as compared to hybrid mode. “Moreover, the HD Radio system was designed to operate in a mixed environment of analog, hybrid and all-digital stations, with all-digital signals designed to protect analog and core digital services within their protected contours.”

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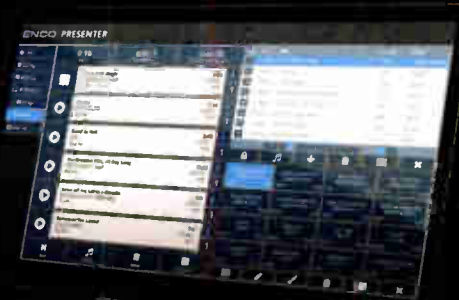
## Spring Show @ Home

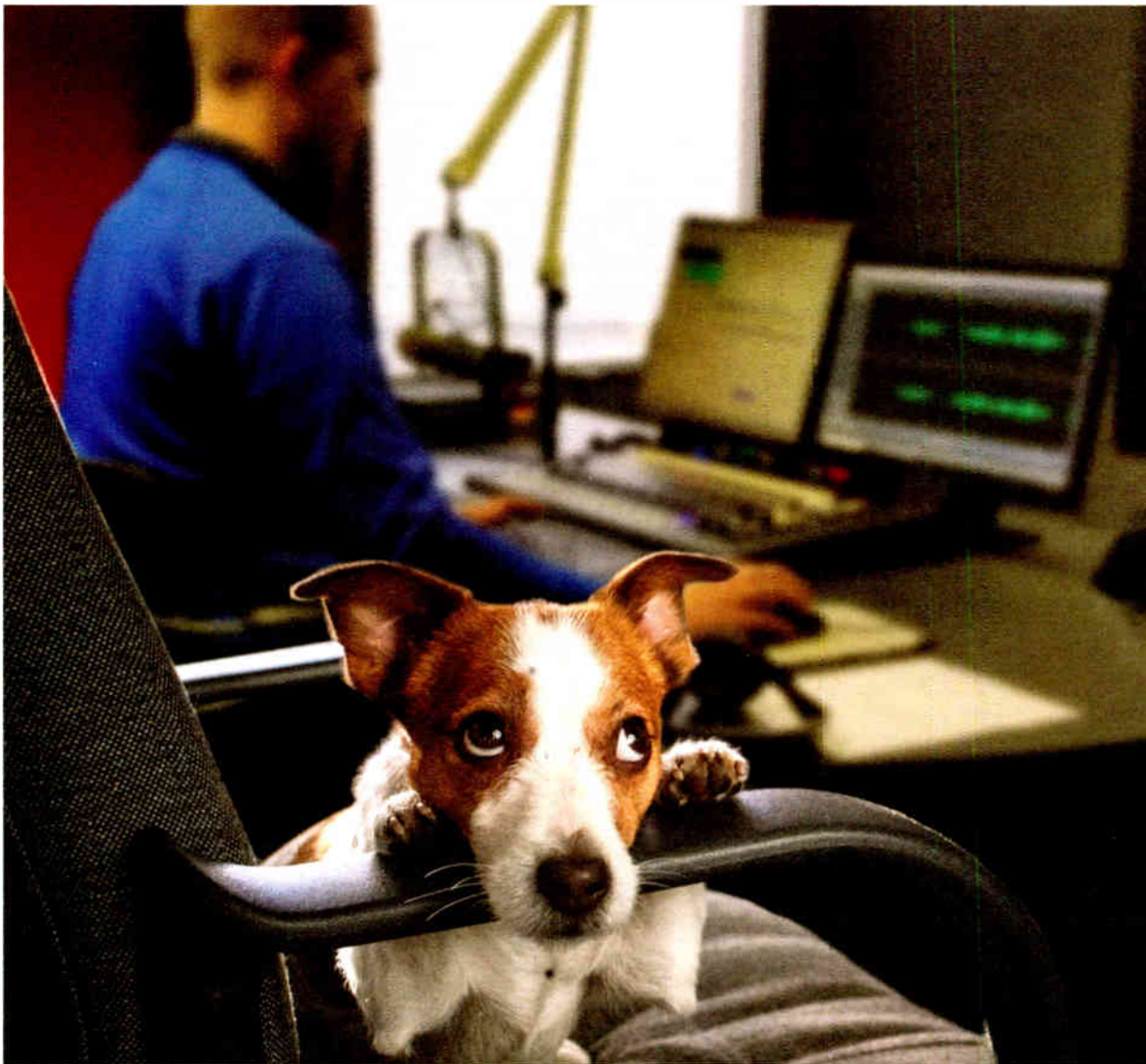
*In lieu of his annual remarks at the spring show, we bring you David Layer's overview of U.S. radio technology initiatives from the Digital Radio Summit 2020. And we take a peek at what we'll see when we do finally get back to Las Vegas (below).*

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# Health Crisis Challenges All of Radio

## Technical teams scramble to adjust as media companies are forced to decentralize

BY PAUL MCLANE

The coronavirus crisis ripped the fabric of the U.S. radio broadcast industry in March, as it did virtually all of the nation's business sectors.

Vague uneasiness about public health and transmission in early March changed swiftly to sweeping action that reinvented radio's daily life a week or two later. And the situation continued to evolve daily.

For many, it was the postponement (and eventual cancellation) of the April NAB Show, first announced March 11, that brought home reality: The 2020 spring convention season would be like no other.

This decision would have seemed controversial not long before, and it was still jarring on the day it was announced, given that the spring show hadn't missed a year since 1945.

But within two more days President Trump was declaring that COVID-19 constituted a national emergency. The loss of a big convention, as dramatic as it was, became just another example of how radio's business and technical landscape was altering at breathtaking speed.

### RADIO AT ARM'S LENGTH

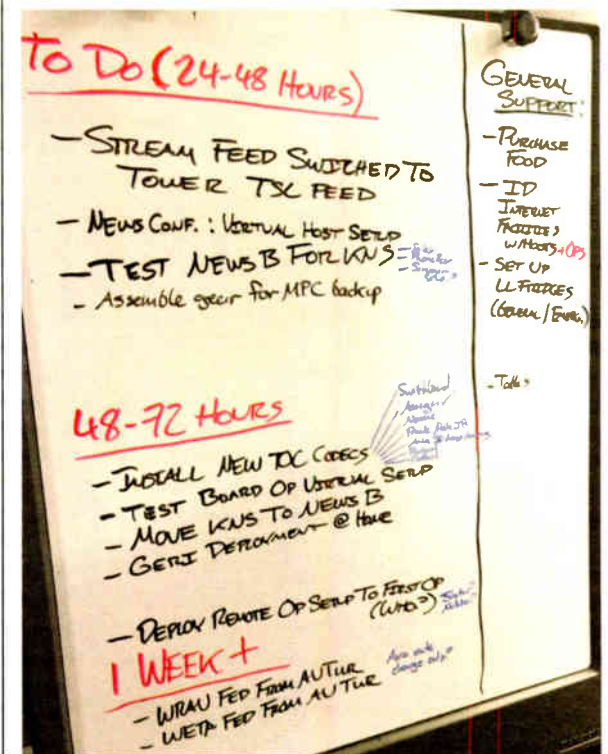
Virtualization became a trending topic as stations told employees they'd be working from home for the foreseeable future. Engineers and IT staff had to move quickly to enable remote shows from living rooms of air talent without opening new cybersecurity gaps.

"The good news is that for many stations, remote access has been in place in one form or another," consultant Gary Kline told Radio World. "Traffic can operate remotely using VPN or other specialized remote access software. The same goes for music



**Rob Bertrand** • 1st  
Chief Technology Officer at WAMU 88.5  
2h •

War room in action as we work to mostly virtualize one of DC's primary news sources (while also planning to hunker down just in case that doesn't work out)...



Ad hoc planning: A white board at WAMU (FM) in the nation's capital mirrored what was happening at many radio stations in March. Senior Director of Technology Rob Bertrand told RW the station was working to "achieve 100% virtual operation" over coming weeks. Read his interview at [radioworld.com](http://radioworld.com), keyword WAMU.

SBE chapters were asked not to meet in person. Annual events like the convention of the New Jersey Broadcasters Association were cancelled. College radio station managers were faced with deciding whether and how to function when campuses shuttered and student populations went home.

scheduling and even the automation/playout system. Many stations have been utilizing some form of remote voice tracking for years," he said.

The basic elements of operating a radio cluster are routine for most stations, he said, perhaps with help from the vendors of traffic, CRM or playout systems as well as the involvement of the station engineer or IT department/contractor.

The emotional impact of this transition, however, was another matter. For engineers, Facebook groups and social media sharing became even more important sources of information, ideas and comfort.

Meanwhile radio stations that remained "open" adopted vigorous procedures for cleaning and sharing

equipment. Microphone windscreens became a hot commodity. Station visitors such as prize winners or clients were asked to stay away.

Broadcast equipment manufacturers said they were working to maintain product shipments from current inventory and to maintain remote support; but many sent team members home or, at least in one case, quietly laid off most of their staff. Many manufacturers also wondered whether their incoming component shipments would be maintained.

NAB's PILOT innovation initiative cancelled an FM-band HD Radio field test that had been scheduled to start in March, involving Xperi and radio engineers

(continued on page 6)

# Radio Spends the Spring Show at Home

Stations and networks adapt to COVID-19;  
RW's seasonal offerings for you are adapting too

Hard to believe that it has only been a couple of weeks since NAB Show organizers cancelled the April show because of the coronavirus emergency. The pace of events since then, in and beyond the world of broadcasting, has been breathtaking.

Like all responsible organizations, Radio World has been assessing and adapting. I don't want to indulge in too much navel-gazing, but it's worth pausing to tell you how we've been approaching the situation, since the RW community is something like a family.

Our core mission, in my view, is to bring together buyers and sellers of specialized broadcast technology and to help radio industry engineers and managers advance in their jobs and careers by exploring key technical and business trends.

Those goals usually converge at the annual convention, where so many new products roll out, and which we've covered in depth for 43 years. That's why so many of our stories and ads are created

during spring show season.

We had been making plans against a possible show postponement; and since the show was postponed on March 11 we've been working hard to adjust RW's familiar offerings to these unique circumstances. For instance, in this issue,

and managers need to buy new products — indeed, they are learning quickly how to put familiar products to use in new ways. Also, trends that would have been discussed during the show conferences are still newsworthy, as reflected in our story about David Layer's presentation on page 16. And manufacturers need to get their word out to professional consumers.

Radio World, as the industry's leading

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**Our mission is to bring together buyers and sellers, and to help radio industry engineers and managers in their jobs and careers.**

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you will find several stories based on what would have been shown or discussed at the convention, now presented with the reader at home in mind.

The point is that commerce and business need to go on. I have no doubt that the NAB Show will return vigorously next year. But meantime, radio engineers

radio technical brand, has a crucial role to play; expect us to continue to report on products that would have been shown at NAB while exploring new ways to put them before you. We also are covering the ongoing impact of the novel coronavirus in a responsible manner, including stories on the Radio World website

FROM THE  
**EDITOR**

Paul McLane



about how stations and manufacturers are adjusting. To find them quickly, visit [www.radioworld.com/tag/coronavirus](http://www.radioworld.com/tag/coronavirus).

Radio World's pre-show product-focused webinar (April 8) will continue, as will the Best of Show Awards in a modified form. If anything we feel these have an even more important role in helping shine a spotlight on new offerings. You've also continued to receive newsletters such as our Sneak Peeks as part of our Spring Show @ Home initiative.

All of these are delivered with the idea of helping you to do your job, whether you are a technology user or a technology developer. And we want to hear from our readers and advertising partners about how we can best serve you.

Thanks for bearing with us as we adjust our own processes to serve you best. This is a unique business situation as well as a very challenging personal one. But like radio itself, our broadcast technology industry is vibrant, enduring and evolving. We're proud to be part of it.

I'm at [radioworld@futurenet.com](mailto:radioworld@futurenet.com).



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MARCH 31, 2020

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**REMEMBRANCE**

The Radio World family lost a colleague when Lauren Rooney passed away after a three-year battle with cancer. In addition to writing freelance articles in RW, her background included work as an air personality in New Hampshire, Kansas, Georgia and Pennsylvania. She spent seven years as news director of WNNK(FM) in Harrisburg, Pa., where she won more than 35 Associated Press awards; five years as South-Central Pennsylvania regional news director for Clear Channel, based at WHP(AM) Harrisburg; and three years as assignment editor and producer at Clear Channel's WHP(TV) Channel 21 in Harrisburg. She appeared on-camera at Hearst's Lancaster, Pa., WGAL(TV) Channel 8 in the late 1990s. She wrote for the Radio and Television News Directors Association newsletter and was former president of the Pennsylvania Associated Press Broadcasters Association. She later was a media specialist for the Pennsylvania House of Representatives and then executive director of the Pennsylvania House Aging and Older Adult Services Committee, a position she held at the time of her death.



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# Landecker Succeeded by Making Connections

Newest member of NAB Broadcasting Hall of Fame is iconic top 40 radio jock with a legendary middle name

BY RANDY J. STINE

John Records Landecker has never been to Las Vegas in his life. And with no NAB Show this year, he might not get there anytime soon.

But the lack of a physical event in April doesn't diminish his accomplishment. The National Association of Broadcasters chose him this year for induction into its NAB Broadcasting Hall of Fame.

The legendary top 40 radio jock has spent 50 years on the air and still works a weekly shift for WEFM(FM) in Michigan City, Ind.

**I just knew it even at a very young age. Maybe it was part ego, but I wanted to be the guy on the radio talking to people through this magic box.**

— John Records Landecker

He became a national name during his tenure at WLS(AM) in Chicago. The 50,000-watt station reaches audiences in some 40 states.

## IT STARTED WITH A DICTAPHONE

"John Records Landecker has had a profound impact on radio and has inspired generations of new talent," said NAB Executive Vice President of Industry Affairs Steve Newberry. "His induction into the Broadcasting Hall of Fame symbolizes the personal connection between DJs and their audiences and how innovative personalities can influence radio programming."

Most stories about Landecker start out explaining that Records was not just a clever addition to his name to play off his radio work. The origins of that can be traced back to his mother's maiden name.

In fact, his autobiography is titled "Records Really is My Middle Name." In addition, he has released six albums

based on his bits and satirical songs accumulated through his career.

Landecker, 73, was born in Ann Arbor, Mich., just outside Detroit, and his earliest memories of radio are of several hometown AM radio stations that were fairly typical of that time.

"I didn't really tune in for the music or even recall that part of it. But the announcers did everything. They hosted talk shows, read sports and weather, they did call-in buy and sell shows and remotes. I found it fascinating. So I began tape recording myself around the house," Landecker said.

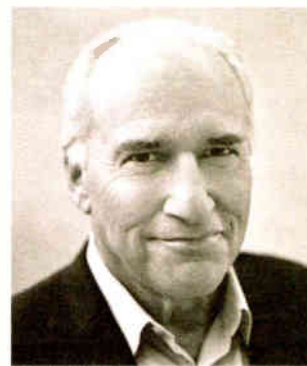
His father had a Dictaphone that Landecker was allowed to play with, and when he first heard his voice come out of it he was convinced that radio would be his career choice.

"I just knew it even at a very young age. Maybe it was part ego, but I wanted to be the guy on the radio talking to people through this magic box," Landecker said.

Landecker landed his first job in radio during high school in 1964 following a live on-air tryout. "I went to visit WOIA(AM) in Saline, Mich., where my girlfriend's mother wrangled an interview for me with the station manager. So I get there and the jock handed me some copy and told me to read it when the light came on. I did. Then he joked on-air about it later. But it was my ever so humble start in radio," Landecker said.

He attended Grand Valley State University in Grand Rapids, Mich., and later transferred to Michigan State University and majored in communication arts. While in college Landecker honed his craft while pulling air shifts at WTRX(AM) in Flint, Mich., WERX(AM) in Grand Rapids and WLS(AM) in Lansing, Mich.

Landecker, already inducted into the National Radio Hall of Fame in 2017 and saluted in an exhibit at the Rock and Roll Hall of Fame in Cleveland, fondly



John Records Landecker

recalls the phone call that led to his first big break to major-market radio.

"I was still in school at MSU in my senior year and working nights at WILS when a man from Philadelphia called my mom and said he was looking for me. It was WIBG(FM) in Philly. I called them back and took the job. I thanked my mom profusely for relaying the message to me," Landecker said.

Landecker says he credits two listeners of his show in Lansing for sending a tape of his show to radio executives that eventually landed him the gig.

"They were just radio aficionados in Lansing that I didn't even know, but they were impressed with my work at WILS and thought I deserved to work in a bigger city, so they put together an air check and sent it on to Mike Rivers in Detroit at CKLW(AM). He eventually moved on to Philadelphia where the tape ended up with the top executives at WIBG. It was crazy that it worked out," he said.

## HOME IN THE WINDY CITY

Landecker was forced to change his name to Scott Walker to begin his Philadelphia radio tenure, but Chicago came calling a few years later and so began a dizzying span of about four

(continued on page 8)

## CORONAVIRUS

(continued from page 3)

from a number of NAB member groups.

The Society of Broadcast Engineers asked its chapter chairs to refrain from holding in-person meetings for at least two months. Instead, SBE encouraged them to "meet virtually through any capabilities you may have available to you," according to an email shared by Chapter 1 Chair Paul Kaminski.

Numerous planned events like the annual convention of the New Jersey Broadcasters Association in June were cancelled.

College radio station managers were faced with deciding whether and how to function when their campuses shuttered or student populations mostly went home.

FEMA put out messaging about how the Integrated Public Alert Warning System may be used to inform, alert or warn the public, including EAS and WEA alerts. It encouraged questions via email to [IPAWS@fema.dhs.gov](mailto:IPAWS@fema.dhs.gov).

Manufacturers, law firms, trade publications and other service providers scheduled virtual conferences and events either to present the content they'd planned to share at the convention, or to help clients cope with their new business reality.

## #WEAREGRATEFUL

Radio leaders celebrated the medium's role in disseminating information. The Centers for Disease Control and Prevention upped the number of radio PSAs airing specific to COVID-19 in target markets, including Seattle, San Francisco, New York, Los Angeles and Houston. NAB said the value of airtime donated to coronavirus PSAs in about a week was equivalent to \$10 million of radio and TV ad spots.

Beasley Media Group rolled out a hashtag and PSA campaign, the #WeAreGrateful initiative, intended to thank "first responders, healthcare industry workers, retail employees, utility workers, transport drivers and others who are making a difference."

Dashboard radios began displaying messages from RDS feeds like "Remember to wash your hands" and "We're all in this together."

But some in the industry lamented recent reductions in U.S. radio air staffs — such as the big cuts by iHeartMedia in January — and questioned radio's ability now to provide true local programming during a time of crisis.

Some observers also speculate that the impact of changes on operations and workflows will be long-term. Given that stations only recently have been allowed to run without a main studio in each city of license, one school of thought holds that this sudden growth in the use of remote broadcasting could hasten the trend away from local physical studios.

Tell us about the impact on your own operation. Email [radioworld@futurenet.com](mailto:radioworld@futurenet.com).

To read the latest articles on this topic, see [www.radioworld.com/tag/coronavirus](http://www.radioworld.com/tag/coronavirus).

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# PEOPLE NEWS

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#### Teddy Shrader

upped to director of West Coast Commercial Production

#### Bill Royal

promoted to Commercial Production manager



### NABPAC

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Elected co-chairs



#### Eric Johnson

##### ABC Audio

hired as the director and executive producer of podcast programming.



#### Liliana Ranon

##### NAB

joins as vice president of external affairs

#### Bridgett Knupp

##### iHeartMedia

becomes market president in Harrisonburg, Va.



#### Jeff Adams

##### Broadcast Pix

leads business and product development of RadioPix visual radio systems.

#### Frank Lopez-Balboa

##### Cumulus Media

named executive VP/CFO

#### Suzanne Tetreaultart

##### Wilkinson

##### Barker Knauer

Former FCC official joins as partner.

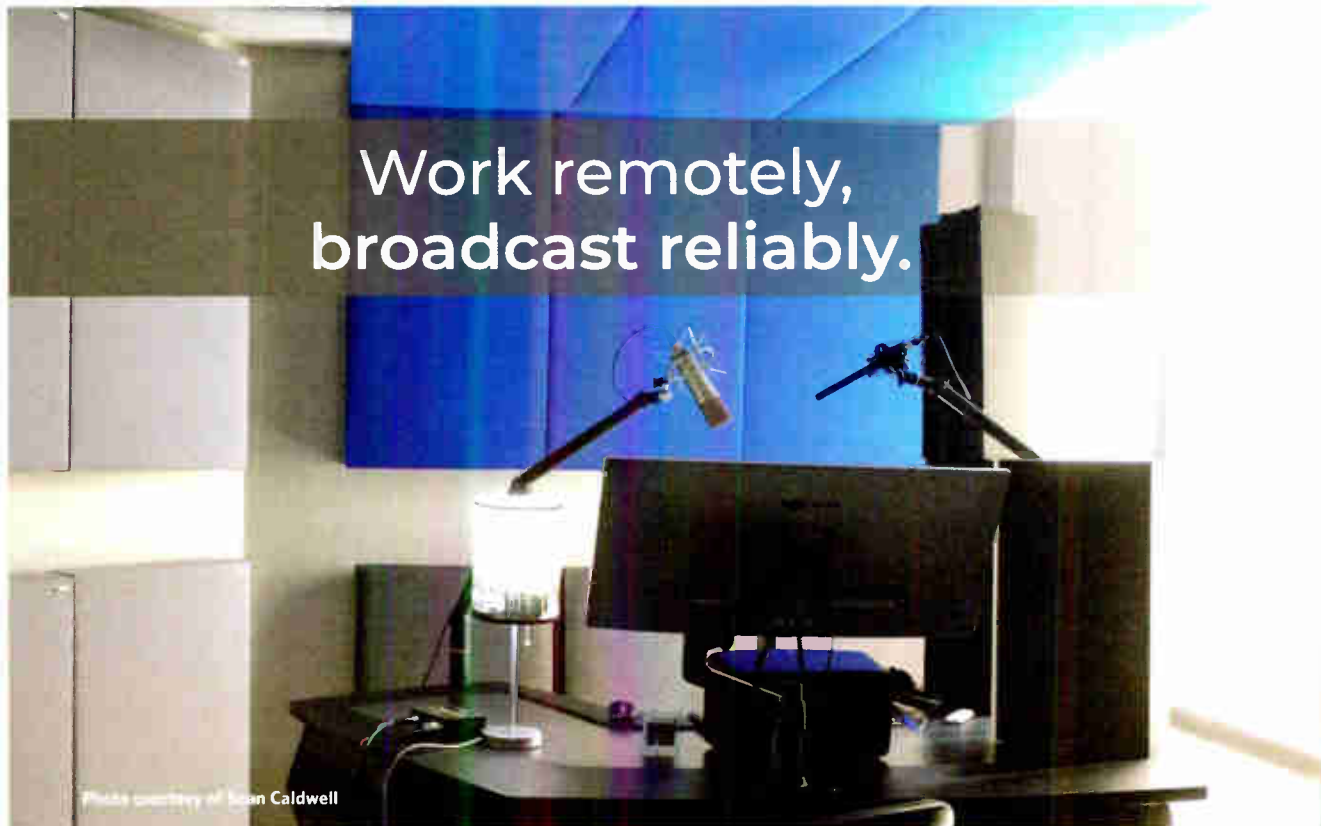


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## AM DIGITAL

(continued from page 1)

— **Hubbard Radio** has been testing all-digital AM broadcasting on its WWFD(AM) outside Washington, D.C., since July 2018. According to the broadcaster, the ride has been mostly a smooth one.

Hubbard says the MA3 signal of WWFD, which operates in full-time all-digital under special temporary authority, has proven to be much more robust than the hybrid mode of HD AM broadcasting, and with improved signal coverage. The company says it has received positive feedback from listeners about the fidelity and reliability of their signal.

“In Hubbard’s experience, the data conclusively confirm that all-digital MA3 operation provides an improved, consistently high-quality listener experience, in terms of audio fidelity and signal robustness,” according to the filing.

The station, which broadcasts at 820 kHz, has seen ratings gains since launching the all-digital signal. “WWFD broadcasts an Adult Album Alternative music format. The station had no ratings in its home market of Frederick, Md., for the five years it was an analog station with that format, but now that it is operating in MA3, the station is ranked by Nielsen in the market,” it wrote.

Hubbard is using the MA3 technology to transmit auxiliary data and metadata to listeners of WWFD, it says. “The secondary and tertiary carriers of WWFD can provide stereo audio information, data services such as station logo, album artwork, and other

**[A]ny decision** by an AM station to operate in an all-digital mode [should be] discretionary and reversible, so that no station is required to operate in an all-digital mode, nor is any station who chooses to do so locked into that mode of operation.

— *Joint filing of 25 licensees*

artist experience information, as well as multicast channels.”

In addition, earlier reliability issues with the secondary and tertiary carriers on WWFD have been resolved, Hubbard said. The station fixed the issues by “installing a replacement transmitter, a Nautel NX-5, with a pulse duration modulator that runs at a sufficiently high rate to pass the secondary and tertiary carriers, allowing the full MA3 waveform to be transmitted.”

WWFD in December tested an HD-2 multicast channel, according to Hubbard, transmitting musical track data and a station logo image as well. Future versions of enhanced EAS alerting will use the secondary and tertiary carriers to supplement the data transmitted on the Primary IBOC Data Service Logical Channel (“PIDS”) carriers.

“Hubbard believes that these continued improvements in the MA3 deliv-

ery system will mitigate any concerns about secondary and tertiary carrier issues, and that these technologies will continue to be expanded to better serve listeners,” it stated.

Hubbard believes all-digital AM technology will help WWFD compete in the dashboard of the connected car. “Trends in vehicle entertainment system receiver designs are converging on ‘tuning by visual metadata,’ where listeners select an audio program by pressing a thumbnail image of the desired program. MA3 allows AM broadcasters to have both aural and visual parity with other broadcast services in the automobile dashboard.”

In conclusion, Hubbard told the FCC the MA3 mode provides “far more manageable solutions” to any unintended interference with neighboring analog AM stations in the band when compared to the MA1 mode. In fact,

WWFD “has never received any interference complaints from co-channel or adjacent channel stations,” it reported.

— **National Public Radio** “generally supports” the voluntary transition but believes the commission needs to go further on how it would handle interference complaints from neighboring analog stations in the band.

About 80 AM public radio stations are affiliated with NPR or receive operational funding from the Corporation for Public Broadcasting, including WNYC(AM) in New York City.

NPR says it has significant interest in any measures to help AM broadcasters better serve the public by improving the listening experience.

“Facilitating the expansion of HD Radio and its additional functionality for program and public safety information

(continued on page 10)



Getty Images/morsij

## LANDECKER

(continued from page 6)

decades in Chicago where he worked for multiple radio stations, beginning with WLS(AM). His career also included stops at WLUP(FM), WJMK(FM), WGN(AM) and WLS(FM). In between were brief stints at Toronto and Cleveland radio stations and hosting duties for “Into the Seventies,” a syndicated show from TKO Radio Networks.

“Chicago was the best for me and became home. The WLS success was really a team effort. There was only one person on the air at a time, but we all helped each other behind the scenes. We fed off each other’s energy. Nobody does it alone,” Landecker said.

“And I worked with some incredible talent over the years. There was Larry Lujack at WLS and I worked with Bob Sirott and many others. Unbelievable talent. It was real radio.”

Landecker banged the phones and developed bits at WLS(AM) where he worked from 1971 until 1982 and developed the “Boogie Check,” a nightly feature of a quick succession of phone calls from listeners, all

without the parachute of an on-air delay. “There was some risk taking. I relied on the staff engineers to get me out of trouble as soon as possible!”

### NEW OUTLETS

The old-school jock in Landecker has a hard time appreciating the current brand of commercial radio in this country with its “liner card reading” style of presentation, he said.

“I guess if I was any good at voice-tracking I could still be successful. I think radio is kind of flat right now,” Landecker said.

“That was really why I left WLS(FM) in 2015. There were so many rules. You only had a few seconds to talk. I had to execute the format and try to match to the PPM clock. It really wasn’t much fun. So I quit.”

For young people who aspire to communicate to the masses there are many other options like podcasting and social media, Landecker said.

“I just don’t think radio has the attraction now. There are so many different opportunities for young people to have a platform, it’s just not in radio. The days of knocking on the door of a program director and saying ‘Hey, I want to be in broadcasting’ are sadly over.”

Recently, Landecker has found a new outlet for his creative nature by taking to the stage for live summer theater in Michigan City and was expecting to be in another play this summer, at least before the coronavirus crisis erupted.

“I even took acting classes in Los Angeles, where my two daughters, Amy and Tracy, live. I went to the Lesly Kahn Studios for acting lessons a few years back. The average age was probably 22 and I was 70. I took a comedy intensive session and loved it. Acting really is a team sport and I feed off the energy of other people,” he said.

In addition to perfecting his acting chops, Landecker continues to work that air shift each Friday afternoon at WEFM(FM) in Michigan City with his friend and co-host, Mike Dempsey. “It’s really free-form radio. We talk about music or go out on remote. It’s live. I still get a chance to talk up the intro of a song and hit the post if I want. I still find it energizing. It’s just me being John Records Landecker,” he said.

And there is that famously fitting middle name again that still seems so appropriate. Turns out Landecker was bequeathed a name fit for a future member of the NAB Hall of Fame.



- Pg 2. Hot New Features in the ViA Remote Codec
- Pg 3. Discover the Gateway Multichannel IP Codec
- Pg 4. TieLink Traversal Server released

## Tieline ViA Drives Ratings for SCA from Across the Globe



**4 home studios with ViAs spanning over 14,000 miles and 2 continents**

**By Gino Canzano, Engineering Manager, Southern Cross Austereo, Melbourne, Australia**

The Hughesy and Kate Show has been on-air for 17 years and is one of the flagship national shows for the Hit Network. It is broadcast over 48 stations in metro and regional markets, with a reach of over 2.6 million listeners. Based in Melbourne, since 2017 the show has consistently been one of the top rating shows in the drive time slot. The longevity of the show, the chemistry between Hughesy and Kate, and the quality of the content produced, makes the show very important to the Hit Network.

Announcer Kate Langbroek always planned to have a year away in Italy with her family and decided to make the move in 2019. Management put forward the idea of Kate broadcasting remotely from Italy, rather than losing her from the show.

For the Hughesy and Kate Show we needed to implement IP streaming technology that was compact and simple to use, with the flexibility of redundant IP streaming, remote access and uninterrupted power. After using the ViA for multiple projects in the lead up to the Italy project, we knew without any doubt that it was the right fit for the application.

Andrea Cole from our engineering team went to Italy to set up the studio as she has a wealth of knowledge when it comes to studio design and acoustics. Our primary fibre connection was paired with a Netgear Nighthawk LTE modem using the TIM network in Italy to provide SmartStream PLUS redundant streaming over Ethernet to the ViA.



Sarah Heneil, Executive producer, Kate, Dave and Jack Langbroek anchor of the show

Each day the team would do a combined segment with the Carrie & Tommy Show. One day we had Kate in Italy, Dave Hughes in Maroochydore, Carrie at her home studio and Tommy in Darwin. 4 locations, 4 ViA codecs, and all sounding like they were in the same room. Days like this are pretty normal for our drive shows. We love the challenge and without the ViA or Merlin, we couldn't deliver such flexibility.

We used the Toolbox web-GUI for 90% of our configuration. We can remotely adjust Kate's Send / Return mix, mic and headphone levels. With the ViA's built in audio processing we can deliver a clear sounding broadcast quality line paired with a Neumann KMS105, which is the same mic we use in our studios.

(Continued on Page 2)

**Learn More about the  
Cloud Codec Controller**

**See Page 4**

The show was on-air seamlessly throughout 2019. From the start Kate felt at home with the setup and was extremely happy with the result. She would continuously praise the reliability of the technology. Dave Hughes back in Melbourne said it was: "Incredible! The technology worked better than when we're in different studios around Australia."

The ViA is portable, simple to use, robust, flexible (with its multiple ways of connecting), sounds great, and has everything built into it that you need to make OBs reliable. We have used them in cars, busses, bikes, boats, beaches, bars. Doesn't matter where you are, it does the job.

Our Executive Producer Sacha French said, "From day one of the broadcast the quality of the audio coming from the Italian studio was excellent... using the ViA codec we didn't have any issues with delay in prep meetings before the show or on-air during the broadcast."

There has been discussion now that we use so many ViAs



Studio Setup in Bologna, Italy

in the field as to whether we even need to build studios anymore! I'm sure that would never eventuate, but we often laugh about where the future is headed with such great technology becoming available.

## Hot New Features in the ViA Remote Codec



After winning the coveted "Grands Prix Radio" as the Product of the Year at the European Radio and Digital Audio Show in January, Tieline has released new groundbreaking features to whet the appetite of remote broadcasters. Download firmware v2.20 to take advantage of these new features today.

### More Redundant Streams!

Use the touchscreen to configure a primary and 3 SmartStream PLUS redundant streams for a total of 4. That's high class redundancy.



### New Dialing Interface Released!

Now you can configure all your multi-stream programs with the codec touch screen, no PC is required. Plus you get...

### More Streams!

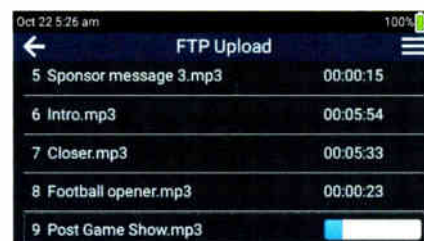
Now the ViA codec support 3 mono connections, making it easier than ever to stream remote audio to more locations.



### Keep Calm, Podcasting is Here!

The ViA now delivers FTP and podcasting capability directly from the codec! So now it has stream, record and playback capability, plus it can operate as a podcast production studio!

Create a podcast on the go while live at a remote, or record a post-game show, complete with post-game interviews, plus sponsors' messages – all without entering the studio!







## Discover the Gateway Multichannel IP Codec

The Tieline Gateway is the most powerful DSP-based 1RU IP codec enabling transport of multiple channels of mono or stereo audio across any QoS-enabled IP network, including T1 and T3 connections and private WANs with MPLS. The Gateway streams up to 16 IP audio channels with support for AES67, AES3 and analog I/O as standard.

### Applications

It is perfect for large-scale audio distribution to single or multiple locations, as well as managing multiple incoming remotes at the studio using SmartStream PLUS and Fuse-IP technologies over internet connections. It supports 16 bidirectional mono or 8 bidirectional stereo streams of IP audio in 1RU to increase channel density and reduce rack space requirements.

Its feature-rich and compact design is interoperable with all Tieline IP codecs and compatible over SIP with all EBU N/ACIP Tech 3326 and 3368 compliant codecs and devices. An optional WheatNet-IP interface allows seamless integration into Wheatstone studios.

### The Gateway is ideal for:

- Audio contribution and managing multiple incoming

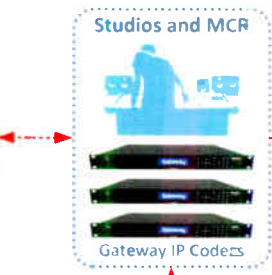
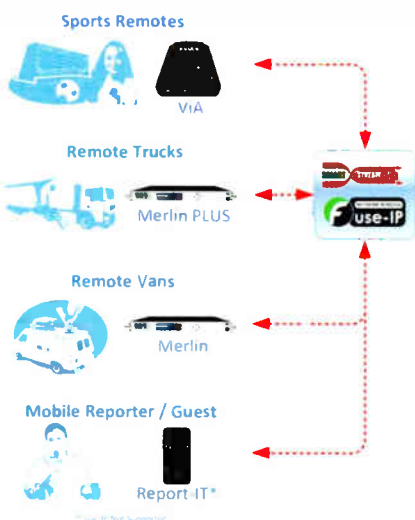
- remotes.
- Studio-to-Transmitter Links.
- Network syndication of programming.
- Multi-channel links to remote studios.

### Key features

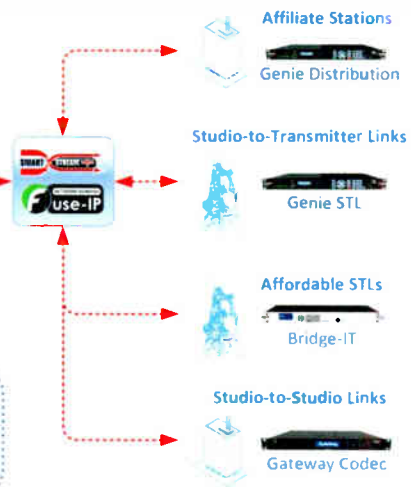
- High channel density with 16 bidirectional mono or 8 bidirectional stereo IP streams
- 16 GPIOs, plus SLIOs (Tieline and WheatNet-IP)
- Stream IP audio over WANs using dual Ethernet ports
- Fully AES67 compatible for AoIP streaming
- WheatNet-IP interface option available
- Supports multicasting and multi-unicasting
- Internal Solid-State Drive supports record, store and forward applications
- Dual DSP based platform with dual internal power supplies, dual Ethernet ports, dual AoIP ports, and dual USB ports for firmware upgrades, memory and Wi-Fi modems.
- USB 2.0 and USB 3.0 ports
- SD card slot for firmware upgrades, memory and SDIO options
- Fully SIP EBU N/ACIP 3326 and 3368 compliant
- Module slot for future technologies and hardware upgrades
- Remote control using the Toolbox HTML5 Web-GUI or the Cloud Codec Controller
- Connect simply using the TieLink Traversal Server

Learn more and register your interest for the latest updates at: [www.tieline.com/Gateway](http://www.tieline.com/Gateway)

#### Remotes & Contribution



#### STLs & Audio Distribution

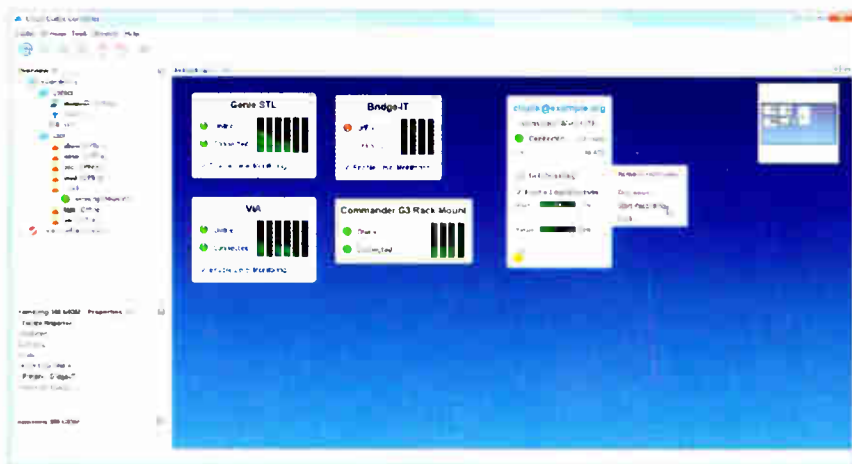


## Cloud Codec Controller Delivers Powerful Remote Control

Discover today how the Cloud Codec Controller allows you to manage an entire fleet of Tieline codecs and Report-IT Enterprise from the studio, at home, or anywhere with an internet connection.

The latest cloud computing technologies deliver secure, real-time monitoring and remote control of all ViA, Merlin and Genie codecs, as well as smartphones using Report-IT Enterprise. As soon as a device connects to the internet, the Controller delivers:

- Real time online/offline status of supported codecs and users logged into Report-IT Enterprise.
- Monitoring of connection status, link quality and audio levels.
- Remote adjustment of audio levels.
- The ability to remotely dial and hang-up remote codec connections from the studio.



Cloud Codec Controller User Interface

Monitor and control your entire network of IP codecs, select and load programs, and view and manage alarms. Plus, launch the HTML Toolbox web-GUI to access all codec controls, mixer and router settings, program editing and creation, and more.

Learn more about the Cloud Codec Controller at: [www.tieline.com/cloud-codec-controller/](http://www.tieline.com/cloud-codec-controller/)

## TieLink Traversal Server Released

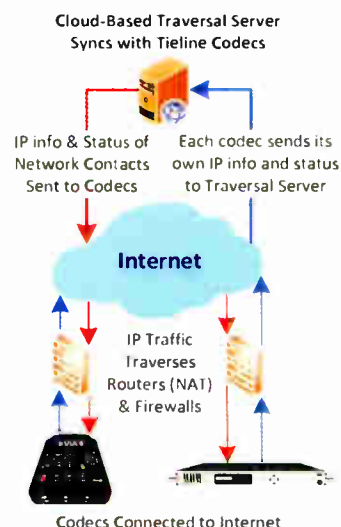
Tieline has developed the new TieLink Traversal Server, designed to facilitate simple codec discovery, NAT traversal, and connections throughout your entire codec network.

How does it work? TieLink is a secure, independently hosted global server network, with multiple global backups. It centralizes Tieline codec contact list management and provides self-discovery of codecs within customized 'call-groups'. Users can easily view the online or offline status of all codecs in

a group and whether it is connected or disconnected. It also provides NAT traversal to simplify connections.

The upshot? TieLink makes connecting over IP a simple, no-fuss task for non-technical broadcast personnel - and you gotta love that! Upgrade ViA, Genie & Merlin to v2.20 firmware & register a TieServer domain to access TieLink today.

Learn more about the TieLink at: [www.tieline.com/tielink/](http://www.tieline.com/tielink/)



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**Tieline**   
 The Codec Company



# Control your ViA Remotely



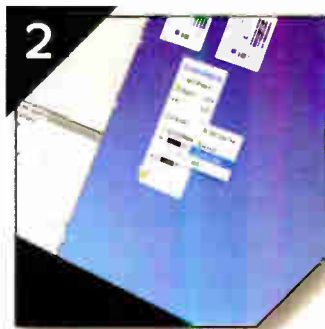
Imagine if your talent accidentally changed a setting during a live broadcast...

With the Cloud Codec Controller you can log in and adjust all settings remotely in real-time.

Log in



Change Settings



Real time update



This is just one of many advantages  
of the Cloud Codec Controller.



CLOUD CODEC  
CONTROLLER

Compatible with Genie, Merlin,  
Bridge-IT and Report-IT Enterprise.

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# Yesterday Our Privacy, Today Our Radio

When tech companies delete radio from cars, it tears at the fabric of our social connectedness

## COMMENTARY

BY ROGER LANCTOT

*The author is director, automotive connected mobility of the Global Automotive Practice of Strategy Analytics.*

As technology consumers we make tradeoffs.

We let Google peer into our online activity and email communications and we even accept annoying advertisements tied to our browsing activity in order to access free email and browsing. We tolerate smartphones with dimin-

ishing performance from Apple — even after Apple admits that the diminishing performance is deliberately-inflicted obsolescence to push us into our next iPhone upgrade. We accept Tesla's privacy violations in exchange for an awe-inspiring driving experience and software updates.

Along the way we have surrendered our privacy and so much more. Now Tesla Motors may be asking us to surrender free over-the-air broadcast radio.



Roger Lanctot

According to the notes describing the latest software update for owners of 2018-made Tesla's and earlier (using MCU-1), the latest optional software update (which carries a \$2,500 price tag but adds Netflix, Hulu, YouTube and Twitch) removes AM/FM radio and SiriusXM.

This is the oft-cited downside of software updates — the potential to obtain improved system performance while sacrificing previously desirable functionality.

While Tesla's decision only impacts older Tesla's, it never-

theless highlights the strangely tortured relationship between the broadcast radio industry and Silicon Valley. The issue is a common thread traceable to Apple's refusal to activate the FM chips built into its phones — and Google's decision to ignore "terrestrial" radio as part of either Android Auto or Google Automotive Services.

Google, Apple and Tesla have all turned their backs on the broadcast radio industry in spite of the wide reach of radio — a reach that exceeds that of television — and the fact that it is free, localized content ideally suited to consumption in a mobile environment. Tesla's decision likely only affects a sliver of Tesla owners given the cost of the optional upgrade and the limited in-vehicle enhancements, but it has the ominous tinge of something more sinister.

The Tesla software update, focused as it is on adding streaming video and

*(continued on page 14)*

## AM DIGITAL

*(continued from page 8)*

and services would serve the public interest, provided the transition to all-digital HD Radio operation does not cause harmful interference." NPR wrote. "As it has in the past, NPR supports the expansion of HD Radio, but not at the expense of current analog AM service."

NPR goes on to note the "concerns of others in the FCC record" over the potential for interference. "NPR urges it to collaborate with industry to monitor both the progress of stations that adopt all-digital AM and the effects of such deployment on all-digital stations' analog neighbors.

"Second, NPR suggests that the commission consider periodically disclosing general information about the number of stations transmitting all-digital AM signals, the number and type of interference complaints it receives, and how such complaints were resolved to help stakeholders understand the full landscape," NPR commented.

NPR acknowledges certain FCC policies might prevent it from disclosing specific facts about complaints it receives.

"Finally, NPR encourages the commission to issue a public notice on or about the first and second anniversaries of the effective date of any rules it adopts here, seeking comment on the positive and/or negative effects of any all-digital AM deployments."

— **A group of smaller-market AM owners** support the idea and cautioned the commission against repeating the AM stereo situation of the 1980s.

The collection of broadcasters — in all 25 licensees — consists of groups such as East Texas Broadcasting and Georgia-Carolina Broadcasting that typically operate AM stations in smaller markets.

The comments were submitted by attorney John Garziglia of Womble Bond Dickinson LLP. They say broadcasters can control their own destiny by deciding whether to invest in all-digital AM technology. They cite the "significant" harm to AM listenership from interference and reception issues, and the availability

of higher-fidelity alternatives.

"The AM broadcasters believe that allowing for all-digital AM operations is one means by which this listener erosion may be stemmed in the future. The undersigned AM broadcasters ask the FCC to make the all-digital AM mode of broadcasting available to them to use at their option."

The group recognizes that listenership could potentially drop since people with analog radios will be unable to receive the new signals, but they argue that it is broadcasters, not the FCC, that can best discern what mode of broadcasting is most likely to attract audiences now and in the future.

All-digital AM operation should be allowed "both day and night," the broadcasters say. They also are asking the FCC for some flexibility to be built into the new rules: "That any decision by an AM station to operate in an all-digital mode is discretionary and reversible, so that no station is required to operate in an all-digital mode, nor is any station who chooses to do so locked into that mode of operation."

But the broadcasters said that mistakes made during the launch of AM stereo in the mid to late 1980s should be avoided.

"The undersigned well-remember the listener and broadcaster confusion that surrounded the failure to adopt a specific AM stereo standard some decades ago, and have no wish to foist that uncertainty once again on the public and broadcasters," they wrote. "Therefore, the undersigned AM broadcasters fully support the FCC's decision to reject in this proceeding any comments advocating for a different AM digital mode of broadcasting."

Digital Radio Mondiale has asked the FCC to allow DRM to be considered for use in the United States. The FCC has stated in a footnote to the current NPRM that it declines to reconsider the choice of IBOC HD Radio as the U.S. standard.

— **The California and Missouri Broadcasters Associations** urged the FCC to adopt the MA3 digital operation rules as promptly as possible. They believe that this proceeding is especially important to small towns

and diverse communities where local AM remains the most relevant source of local news and information.

"AM broadcasters provide unique, community based programming that distinguish them from other media sources in an increasingly competitive mass media market," they stated. "Many local communities still have but one 'community-oriented' resource: their AM station."

The groups also said that the MA3 mode can produce a respectable HD2 signal that has the ability to support a second local translator with a second, independent stream of programming, a benefit that Xperi has recently been emphasizing.

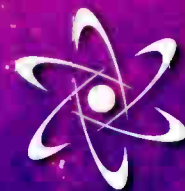
"A small town's single AM station can, therefore, effectively become a second local station supporting a second FM signal, multiplying the local sources of news and entertainment," the associations wrote. "[A]ll-digital AM technology will improve the ability of diverse communities to better receive specialized programming tailored to their needs."





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# Cameras Keep Watch at Your Transmitter Site

Also, here's a software suggestion for April 1

## WORKBENCH

by John Bisset

Email Workbench tips to [johnpbisset@gmail.com](mailto:johnpbisset@gmail.com)

**E**rne Nearman is a veteran broadcast engineer who has been practicing in Honolulu for decades. Like any contract engineer, Ernie sometimes has to be in two places at once, and believe it or not, he's figured a way to do just that.

Ernie uses strategically-placed IP cameras at his sites to give him "remote" eyes to see what's going on. He acknowledges that these IP cameras are not cheap, but if you buy the style that provides pan, tilt and zoom features,



Fig. 1: A strategically-placed IP camera keeps watch on your transmitter site equipment.

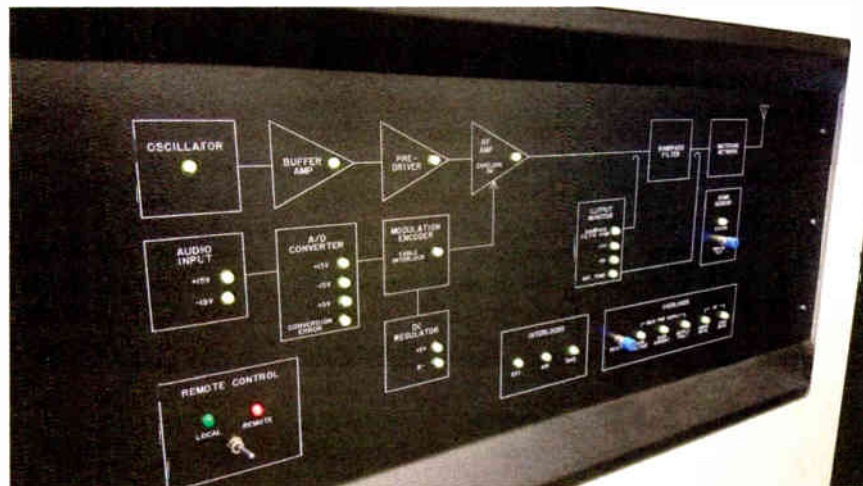


Fig. 2: By selecting a camera with pan and tilt functions, the camera can zoom in to a specific piece of equipment, like this transmitter fault panel.



Fig. 3: Pan in another direction to check the room temperature and N2 pressures.

IP cameras permit engineers to work smarter and more efficiently.

the camera does a pretty good job of letting you know what's going on before you arrive at the site.

At one site, the camera is mounted on conduit so it normally faces the door (Fig. 1). Anyone entering the site can be identified. However, with the built-in mechanical adjustments, Ernie can remotely turn the camera to



Fig. 4: How about checking your Surge Suppression status, before arriving at the site?

view the faults on a transmitter, as seen in Fig. 2 or point the camera in another direction to check the room temperature and Nitrogen pressure gauges (Fig. 3).

After a storm, wouldn't it be nice to know the surge suppressor took a hit before arriving at the transmitter site? Fig. 4 shows that information. These little snapshots may not seem important, but when you are handling a number of contract clients, IP cameras can help you perform triage.

If, for example, a station goes down and you see that the fault can be corrected remotely, your time can be spent on bigger issues. Ernie says this benefit is especially appreciated when a storm rolls through, taking several of his contract clients off the air at the same time. These IP cameras permit engineers to work smarter and more efficiently.

(continued on page 14)

# MAXXKONNECT WIRELESS

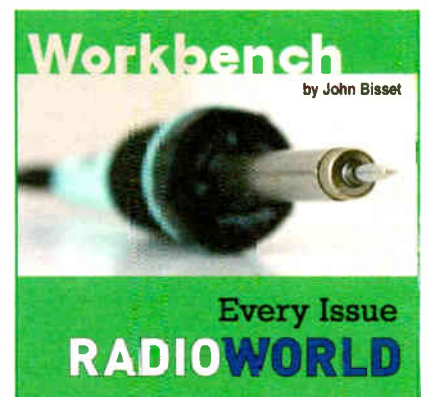
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Add security and reliability to your remote broadcasts and transmitter sites with our service.

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BROADCAST

## WORKBENCH

(continued from page 12)



**Fig. 5:** The compact camera fits in the palm of your hand, making mounting a breeze.

Ernie chose the Amcrest IP Camera, Model IP4M, in Fig. 5. It's not the cheapest but its features include Ultra-HD resolution, remote viewing, two-way audio and night vision. It uses power over the Ethernet.

Yes, you can find less expensive versions, but buying cheap junk probably won't give you the features you need. Consider this a diagnostic tool, so don't fall for the \$20 wonders — you'll be disappointed.

You can find out more by Googling "Amcrest IP cameras" or searching for them on Amazon.

**H**ave you signed up for the SBE Member Plus membership tier? When you do, you'll have access to all

## DASHBOARD RADIO

(continued from page 10)

a \$9.99/month subscription — for owners not already on the company's premium service tier — points to a streaming-only approach to content delivery. Just as satellite broadcaster SiriusXM felt compelled to offer an IP version of its content, Tesla appears inclined to shift all content delivery to IP reception.

The strategy makes sense for a company delivering cars on multiple continents with varying local broadcast protocols and metadata. Shifting radio reception to IP delivery vastly simplifies the in-dash configuration and, in the long run, may enable some hardware content reduction in the form of deleted tuners and antennas. This is particularly relevant in the run up to 5G adoption — a technology upgrade that will require the additional of multiple antennas.

Tesla vehicles in North America have always come with TuneIn — so, now, TuneIn becomes the preferred



**Fig. 6:** Compile a screen to show both inside and outside the transmitter site.

of the SBE webinars. These broadcasting webinars provide online training in a variety of broadcast engineering topics. Head to [www.sbe.org](http://www.sbe.org) for more information.

**A**pril 1 is coming up. With that in mind, Newman-Kees' Frank Hertel sent in some tips for using the latest release of Sonus Precarious Audio Software. He writes that many engineers have yet to experience Sonus Precarious and its quirks. As an experienced user, Frank thought it would be useful to share some of the things that you need to be aware of when considering Sonus Precarious.

- If you download the free version, after three months, you will be required to purchase and install a dedicated Sonus Precarious hard drive to save your work.
- When deleting elements of your work, all mouse buttons and the scroll wheel must be used in reverse order. They provide this as an extra safety feature for jocks, to keep them from accidentally deleting elements of their work.

radio IP broadcast point of aggregation. In fact, it is quite possible that Tesla has leveraged user data from its own vehicles to determine that radio listening in its vehicles was sufficiently minimal to be worth risking some minor resistance.

More importantly, the software update removing the radio experience is optional. Maybe the offer is a test to determine the customer reaction to a trade-off of streaming video and improved user interface performance with the sacrifice of broadcast radio for \$2,500? Is the offer a bit of a market research project? Anything is possible from Tesla, which has altered its pricing and discounts on multiple occasions in response to market conditions.

But the inclination to delete radio is a popular behavior pattern in Silicon Valley where Google and Apple have treated broadcasters with disdain.

Is this approach sustainable? Is it tolerable? Where can an outraged consumer turn to protest? Will there be consumer outrage? Should there be? Is it time for an in-vehicle radio mandate to ensure that emergency

- All work is saved in the new Sonus Precarious file format. To distribute your recorded work to others, you must attach a document that has a ciphered phrase. That ciphered phrase must be decoded and entered to unlock the recording for playback.
- Sonus Precarious offers a user-selectable series of new bitrates, to enhance the sound of the recorded work. This gives you the sound quality that relates to the year of audio quality development. For example: one of the bitrates is called "64÷8," and it actually enhances recordings to sound like 1941.
- Be aware that the manual is written in 64-point "Baked Alaska Script" font. They did this because, they explain, "It's pretty!"

Have a great April 1.

*John Bisset has spent over 50 years in the broadcasting industry and is still learning. He handles western U.S. radio sales for the Telos Alliance. He holds CPBE certification with the Society of Broadcast Engineers and is a past recipient of the SBE's Educator of the Year Award.*

communications — at least — can be broadcast into cars?

I'm not going to cry wolf. And I'm not going to play Chicken Little. I will say that the radio industry offers contextually relevant and reliable content delivery with a broad reach across a wide range of devices and listening environments. Deleting radio from cars — terrestrial or satellite-based — tears at the fabric of our social connectedness.

The marginal cost of preserving terrestrial broadcast connections — particularly in the context of radio's ongoing global digital transition and the resilience of the medium during emergencies — ought to place this particular content reception experience in a non-delete category. Tesla doesn't appear to share this view and Tesla is not alone. Once again, Silicon Valley is asking us to surrender one thing in exchange for another. Yesterday it was our privacy. Today it is the radio. Tomorrow it will be our freedom.

*Roger Lancot posted this to his blog in early March; it appears with permission.*



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# Spring Show @ Home

## NAB Radio Technologists Look Ahead

Current goals include the creation of "broadcast-only" zones for hybrid systems



Fig. 1: David H. Layer, NAB vice president for advanced engineering, addresses the audience at the Digital Radio Summit 2020.

BY DAVIDE MORO

U.S. radio technologists look forward each April to hearing about new developments from David Layer, the vice president, advanced engineering of the National Association of Broadcasters.

But with the NAB Show cancelled, Radio World asked our correspondent Davide Moro to report on Layer's presentation in February at the Digital

Radio Summit 2020 in Geneva, an annual meeting at European Broadcasting Union headquarters.

That presentation — about HD Radio developments, all-digital AM, hybrid radio and voice platforms — doubles as somewhat of a state-of-the-industry technical report for U.S. radio.

Among other things, attendees heard about potential new costs for U.S. broadcasters that could result from

wider deployment of new "hybrid" receivers that combine over-the-air and online connectivity. NAB technologists are involved in research that may help resolve the problem.

They also heard him describe an NAB effort to create a standardized broadcaster database so that stations can interact more consistently with the many new voice-controlled audio platforms.

### DIGITAL DATA

Speaking first about the status of HD Radio, Layer described continuing

uptake in Mexico and Canada. In the United States he noted the proliferating number of receivers, though on the station side, "frankly there's still work to be done."

The majority of radio stations in the U.S. are not yet broadcasting in digital. However, FM stations doing so now cover the large majority of the population with their signals, so overall coverage is very good, but many smaller-market broadcasters in particular haven't converted yet. "We at NAB understand that and are trying to work with Xperi and equipment manufacturers to develop less expensive ways for broadcasters to deploy HD Radio." Xperi is the owner of HD Radio technology.

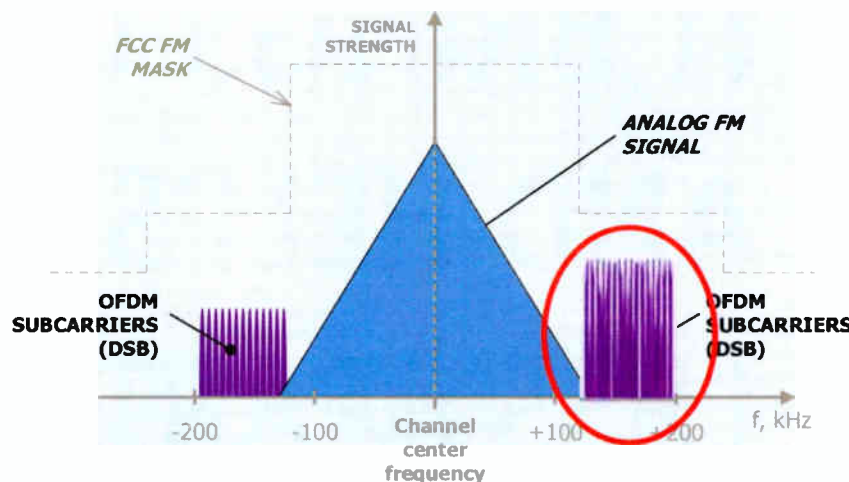


Fig. 2: Spectrum distribution in the FM IBOC asymmetric sidebands broadcast mode.

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On the receiver side, deployment continues to grow at a steady pace, to an overall figure of 70 million receivers sold as of the end of 2019. Layer said roughly 25% of 275 million vehicles registered in the U.S. are capable of receiving digital broadcasts now. Noticeably, penetration is greater in the major markets like New York (37.5%), Miami (35.9%) and Los Angeles (34.3%).

Layer said how those figures are potentially important for AM broadcasters. Awareness of a proposed all-digital option for the AM band is growing, and it is inherently supported in all existing HD Radios. He noted however that when a given station decides to move to all-digital AM, listeners won't be able to receive those signals on analog-only receivers.

He said solid, well-established digital radio receiver penetration is key if broadcasters are to consider offering an all-digital AM service.

In November, as RW has reported, the FCC announced plans to give AM sta-

(continued on page 18)



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World Radio History

# RADIO TECH

(continued from page 16)

tions the flexibility to voluntarily adopt all-digital broadcasting, and it has been taking comments from industry about it.

## ASYMMETRY

Layer also updated attendees on the proposed use of the FM IBOC asymmetric sidebands mode. Under this mode, which currently requires an experimental authorization, FM HD Radio broadcasters in the United States can increase their digital power on just one side of the signal (Fig. 2).

When first-adjacent channels are closely spaced on one side of the signal but not on the other, this waveform helps broadcasters achieve better digital coverage since the entirety of the digital broadcast is present in both sidebands. NAB, Xperi and National Public Radio recently filed a Petition for Rulemaking with the FCC asking for a routine authorization for this, but no decision has been forthcoming yet.

Like most digital standards, HD Radio also allows for a number of different operating modes. NAB recently investigated the mode called MP11, which until recently was not supported by commercially available transmission and reception equipment.

Compared to the standard hybrid HD Radio modes MP1 and MP3 (Figs. 3 and 4), which are currently used by most broadcasters, MP11 adds additional digital sidebands (Fig. 5) and offers broadcasters an additional 25 kilobits per second of capacity.

“Working with Xperi and equipment manufacturer Nautel, PILOT, an innovation initiative of the NAB, tested this mode using the PILOT radio test bed, confirming that it works great and manufacturers are now implementing that,” Layer said. MP11 mode also has been demonstrated to have minimal impact on analog FM reception and audio quality, he said.

Layer reported that Xperi is also looking for new operation modes for digital FM broadcast, especially target-

ing a long-term potential future where FM could be all-digital in the United States. The HD Radio standard dates to the early 2000s. Since then, hardware technology and coding methods have improved and it’s now possible to do much more with the same signal and spectrum, he said.

Xperi and NAB PILOT are investigating new modes that provide much higher throughput, up to 320 kbps (Fig. 6), to support higher levels of service as well as new applications.

## AM CHALLENGES

In-car listening accounts for more than 50% of overall radio listening in the United States, so Layer also is paying attention to new car and dashboard designs.

“As the great U.S. philosopher Yogi Berra used to say, ‘You can learn a lot by just watching.’ So I visited the November 2019 LA Auto Show, sitting in over 50 cars and operating the radios. I was looking for certain things like the radio button, whether there was a tuner knob, HD Radio capabilities and so on.”

Layer compared the experience with his prior findings from the Detroit Auto

Show of January 2017 and provided a brief comparison (Fig. 7). In a couple of years, HD Radio availability in the vehicles on display at these auto shows rose from 78% to 82% while the presence of a physical “radio” button dropped down from 39% to 26%.

In addition, the presence of a physical tuning knob dropped from 54% to 38% while cursor knob presence rose from 31% to 36%. Layer says this expanded use of cursor knobs is evidence of how the dashboard is becoming more like a computer platform.

He also found that Apple CarPlay was more prevalent than Android Auto (92% vs. 70%).

Three out of nine all-electric vehicles he saw did not feature AM radio at all, presumably in part because of issues with electric motors creating interference to the AM signals.

At the most recent CES, NXP demoed a solution to solve this issue; but an obstacle for car manufacturers is the cost of these advanced tuners. The challenge for U.S. broadcasters, considering the huge number of AM stations on air, is to ensure there will continue to be con-

(continued on page 20)

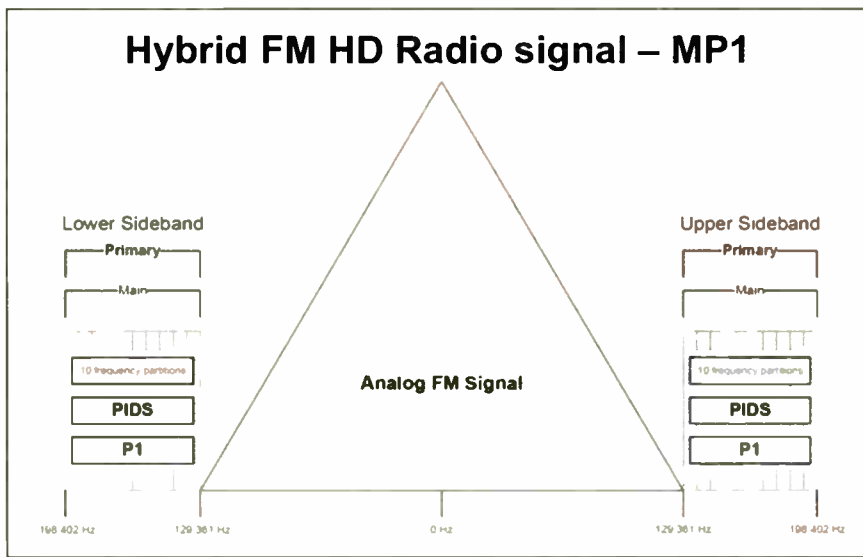


Fig. 3: HD Radio mode “MP1” spectrum distribution.

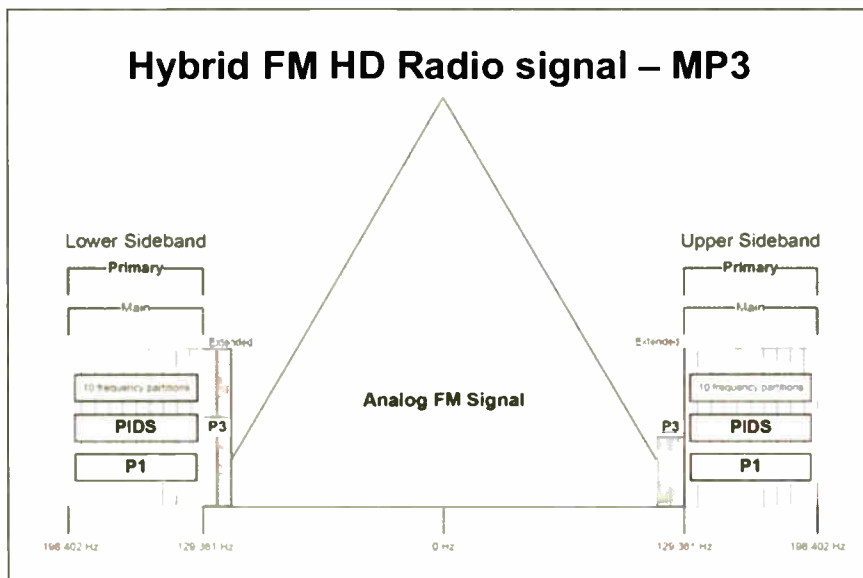


Fig. 4: HD Radio mode “MP3” spectrum distribution is the most commonly used by U.S. broadcasters.

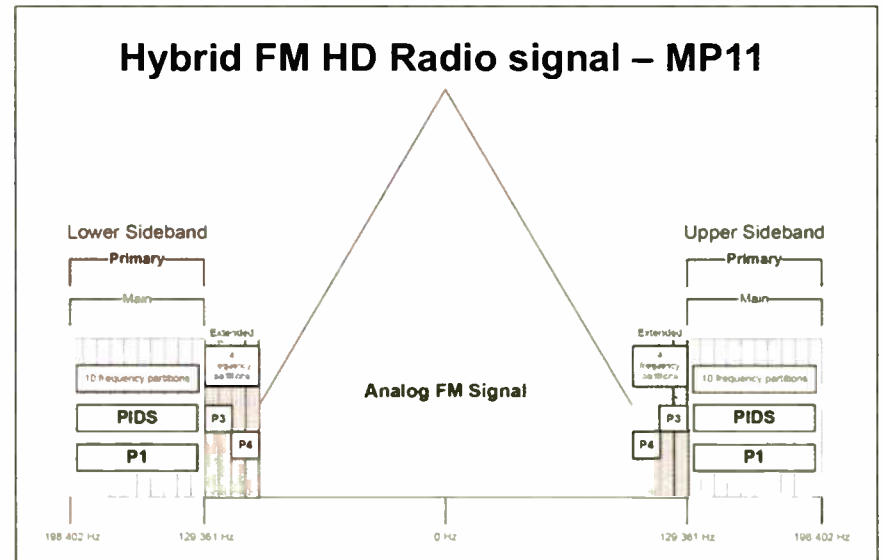


Fig. 5: HD Radio mode “MP11” spectrum distribution, featuring additional digital sidebands.

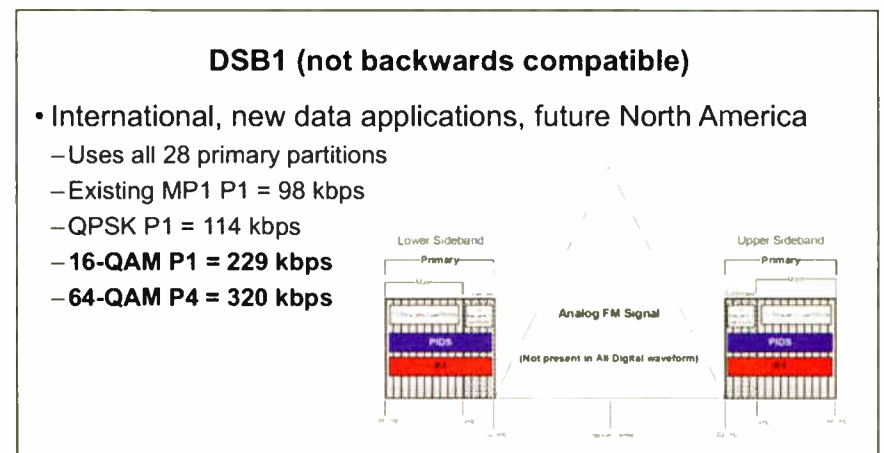


Fig. 6: Xperi and PILOT are investigating new HD Radio modes which provide enhanced throughput, up to 320 kilobits per second.





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# RADIO TECH

(continued from page 18)

sumer demand for AM services based on their content; Layer said this will be the best reason for automotive manufacturers to keep AM radios in electric cars.

## HYBRID RADIO

Meanwhile, hybrid radio is poised to be of growing importance. Here the term refers to emerging platforms that combine over-the-air broadcast reception with online connectivity that extends a station's coverage beyond its OTA footprint (with the use of audio streaming), offers the possibility of enhanced metadata and listener interactivity, and provides the ability for analytic feedback to broadcasters about listening.

Layer noted the hybrid radio platform 360L recently announced by satellite company SiriusXM as a remarkable example of hybrid radio capabilities, user experience and listener engagement (see a video tutorial at <http://tinyurl.com/rw-hybrid>).

But the growing popularity of hybrid radio comes with a major drawback for local U.S. broadcasters. Once a driver tunes to a given station, a hybrid radio receiver may silently look for and stay connected to the

broadcaster's streaming audio signal to support time alignment of the over-the-air and streaming versions of the signal. This is done so as to allow seamless switching to the streaming feed in case the broadcast coverage weakens.

In this scenario, the streaming signal is in use even when a receiver is playing the RF feed and no one is listening to the stream. As a consequence, performance rights costs significantly rise.

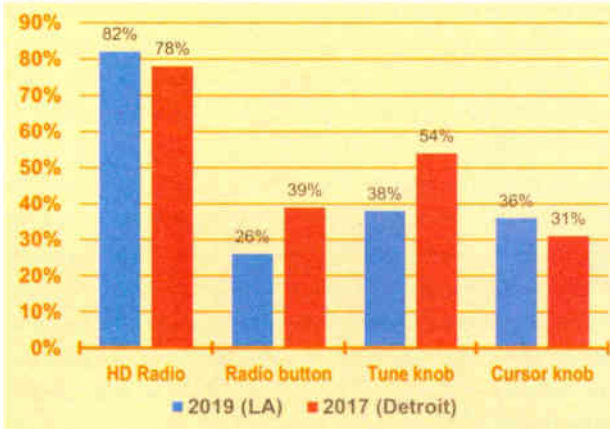


Fig. 7: Layer compared the dashboard features he encountered at new car shows 2-1/2 years apart.

## NAB contour-based proposal – example

- Empire State Master, NYC

**WHTZ**  
 BLU:19402040D  
 Latitude: 40.445393 N  
 Longitude: 073.9910 W  
 ERP: 5.00 kW  
 Channel: 262  
 Frequency: 100.3 MHz  
 AMSL height: 429.0 m  
 Elevation: 16.0 m  
 Main Pattern: Omni  
 Aux Pattern: No  
 Prop Model: Longley-Rice  
 Climate Cont: temperate  
 Conductivity: 0.0050  
 Dens: Const: 1.0  
 Ref: activity: 310.0  
 Receiver Ht: AG: 2.0 m  
 Receiver Cap: 0 dB  
 Int: variability: 50.0%  
 Sit: variability: 50.0%  
 ITM Mode: Broadcast

4.0 dBu - L R Contour Legend

- 360 Radios
- 72 Radios
- 36 Radios

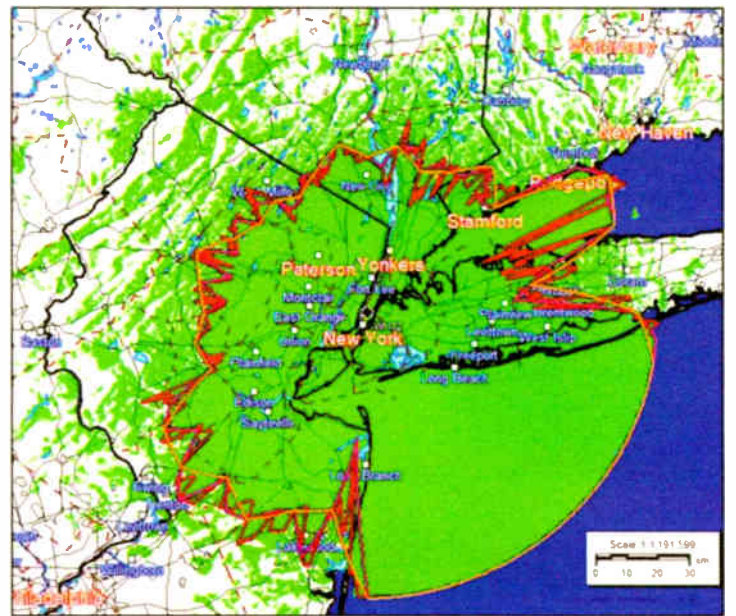


Fig. 8: A possible implementation of the "broadcast-only zone," which drives the receiver in tuning to RF-only signals. The orange line visible over the red is created using only 36 points.

Images courtesy of David Layer/NAB



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"I've heard a broadcaster say, 'This just completely breaks the business model.'" Layer noted. "This is a big problem; hybrid radio offers so much promise but there's a peril for U.S. broadcasters because of the streaming fees."

**BROADCAST-ONLY ZONE**

NAB is seeking to define a way for broadcasters to try to control such costs. The idea is that the broadcaster creates a description of a "strong signal area" in which streaming is not allowed; the receiver gets information about the broadcast-only area via the internet-delivered portion of the hybrid radio signal, exchanging data with the onboard GPS system.

Thus the receiver can detect the position of the vehicle with respect to the broadcast-only area and, when within that zone, the receiver tunes to broadcast signals only, with no streaming. Beyond this broadcast-only area is a "gray zone" where the receiver selects either source according to RF reception metrics. Outside these two areas, the receiver is allowed to force streaming.

This process would give the broadcaster an opportunity to better manage streaming costs.

Layer believes it may be a challenge to convince receiver manufacturers to implement this solution because it adds cost and complexity. "But it's very important and it's something that we're going to continue to work on," he said. "Maybe we can come up with a simpler way to achieve the same goal."

The idea of conditioning a receiver's action on its geographical position is not virgin territory; it is one of the pillars on which emergency alerting in mobile phones is based. It's common practice to create a contour and dictate that an alert will only be received by smartphones in a certain area. So the basics are proven, but it has not been applied to radio broadcasting in this fashion. NAB is exploring this with the RadioDNS technical group, Xperi and receiver manufacturers.

Layer believes a basic broadcast-only area can be adequately shaped by using a contour with well under 100 points (an example using 36 points was shown during the EBU presentation), thus making communication to receivers a relatively "light" task.

**POSITIVE THINKING**

Finally, Layer discussed voice platforms, which are becoming a major channel through which consumers receive audio services. When listeners attempt to access broadcast stations using, for example, smart speakers, he noted that they have to face some issues.

Instead of asking for the name of their favorite station, many Americans are accustomed to asking for the frequency

on which a station is broadcasting. So, when a listener asks for 97.1, they might end up hearing the wrong 97.1 which disadvantages the local broadcaster and annoys the listener. (Read about an effort to resolve this problem in Australia at <https://tinyurl.com/rw-smart-3>.)

For the broadcaster, one issue is that voice platforms often connect the listener to a station only via a particular aggregation platform. The audio feed is not coming directly from the broadcaster, meaning it is out of the loop in controlling that experience.

"We are talking to Google and to

Amazon," Layer said. "and we are working at a solution where broadcasters can be more involved in selecting where a stream originates from, maybe from broadcasters' own platforms."

Layer feels positive about this process and hopes that broadcasters in various countries can work toward a common approach because the web companies are accustomed to targeting global audiences through global solutions.

With that in mind, NAB PILOT is working on creating a standardized broadcaster database of how voice platforms find and ingest data, with the

goal that each station would have a say in what information is shared with the voice platforms, such as station name, frequency, branding, location and market. The database would allow stations to prioritize stream location for voice platforms.

"If we can collaborate on these activities and develop a database that broadcasters have access to and control, I think that would really improve the experience from both the broadcasters' and listeners' perspectives," Layer concluded.

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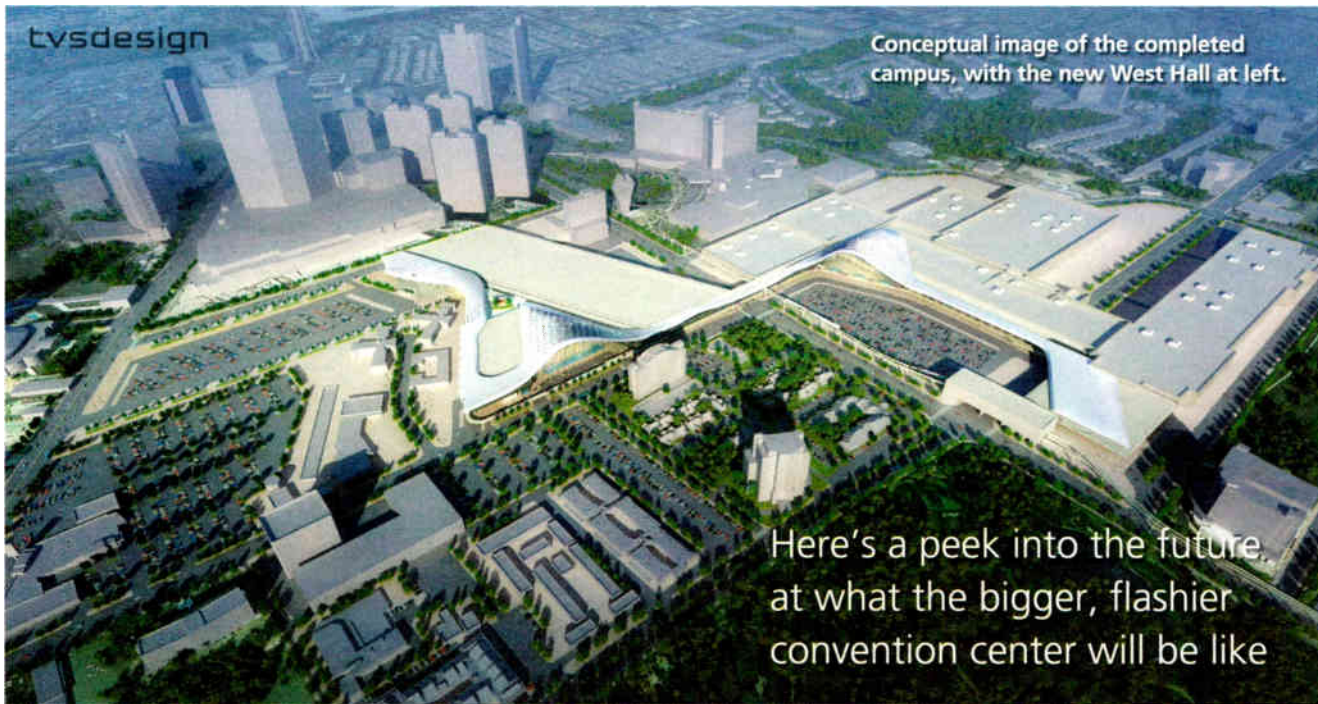
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## Spring Show @ Home

# Massive LVCC Expansion Is Underway



BY JAMES CARELESS

One small pleasure denied us with the decision not to hold the NAB Show in April was that we aren't able to see the new expansion of the LVCC under construction. But when broadcasters do come back to Vegas, we won't be able to miss it.

With nearly 2 million square feet of exhibition space, the Las Vegas Convention Center has always been a spacious facility for NAB Shows. But thanks to the \$980 million expansion project now underway, the LVCC is adding 600,000 square feet of exhibition space called the West Hall, an outdoor plaza and a new grand atrium. What was spacious before will be even more vast.

The expanded LVCC will have an entrance facing the famous Las Vegas Strip. For those familiar with the city landscape, the 60-year-old Riviera Hotel and Casino was cleared to make room for this new facility.

But that's Vegas, a one-of-a-kind destination that is constantly reinventing itself.



### BIG, BIG, BIG

"Las Vegas is a city built for moments that change lives, and now we're expanding to better serve the moments that change business," said John S. Schreiber, vice president of business sales with the Las Vegas Convention and Visitors Authority. The LVCVA is the owner/operator of the LVCC.

"These additions and improvements will keep Las Vegas as a top destination for meetings, events and tradeshows."

To put it mildly, the expanded LVCC will be huge, so huge that it will include a three-station underground loop tunnel system traversed by self-driven Tesla electric vehicles to move convention-goers around.

Las Vegas is the kind of town where a tourist can clearly see their destination but then spend half-an-hour walking

towards it without making much apparent progress.

The current LVCC with its North, Central and South Halls fits into the city's "Big, Big Big!" tradition. And when the West Hall opens in January 2021 — its first event will be CES 2021 — it will push those limits even further even by Vegas standards.

Construction of the new LVCC West Hall, outdoor plaza and grand atrium is in full swing. "The project is currently more than 70% complete," said Schreiber in early 2020. And once it is done, the LVCVA will start renovating the current North, Central and South Halls to bring them up to the West Hall's standards; that work is scheduled to be finished in 2023.

(Target dates in this story were gathered prior to the global coronavirus

emergency but an LVCVA official said in late March that the dates remained valid so far.)

### PHASED COORDINATION

"The LVCC expansion and renovation project was designed in phases to accommodate the needs of all shows utilizing the facility with minimal disruption," Schreiber told RW.

The work was not expected to have an effect on the 2020 show, according to Chris Brown, the NAB's EVP of conventions and business operations. Construction was to be limited to the new West Building. "The LVCVA has done a good job of coordinating with major shows like ours to minimize the effects of their construction and renovation plans. They have set their schedule to work around the big events."

Looking farther ahead, Brown said that he anticipated "one year of challenge" in 2022.

"We will lose access to the Central Hall as it is taken off-line to undergo much-needed renovations," he said. "This means we will be in a situation where we will use West, North — renovated at that point — and South. So we will need to come up with supplemental transportation options to help move people between the three halls."

The underground tunnel loop being built by Elon Musk's Boring Company should be online by 2021.

Excavation of the first of the two vehicular tunnels was completed in February. The boring machine tunneled 40 feet underground for nearly a mile over three months, then broke through a concrete wall near the West Hall expansion. The project is designed to transport up to 4,400 convention attendees per hour.

"This is an exciting new transportation concept and will provide a highly-advanced and unique underground transport option to move people from one corner of the campus to the other using Tesla vehicles," said Brown.

"It will ultimately move a high volume of people at rapid speeds. For instance, it will only take a couple of minutes to go from the tip of West to the tip of the South Hall."

### BIGGER, BETTER SHOWS

Once all phases of the LVCC expansion and renovation have been completed in 2023, the facility's extra room will allow for bigger, better NAB conventions.

"We are excited about the expansion as it will not only provide access to more space, but to more flexible space," said NAB's Brown.

(continued on page 24)



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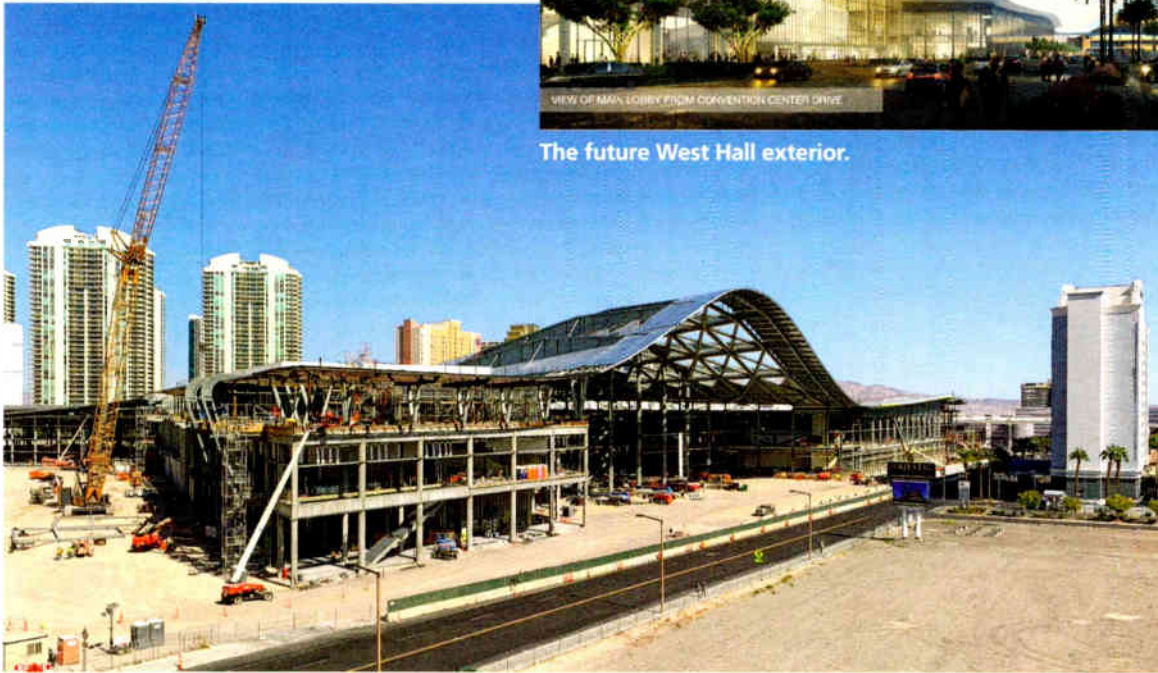
# LVCC

(continued from page 22)

“For instance, the new West Building includes a large, centralized meeting room complex that includes great swing space and some larger room options. This opens up some possibilities for us, including moving our Main Stage programs to that area or maybe adding a second spot for larger ses-



The future West Hall exterior.



sions. We are also considering some creative uses of that space; perhaps using it for more experiential purposes, special demo areas, combo learning and networking areas.

“Another great feature of the new West Hall is a sizable outdoor balcony space that is perfect for receptions and other networking,” Brown added. “So we will definitely be incorporating the West Hall immediately.”

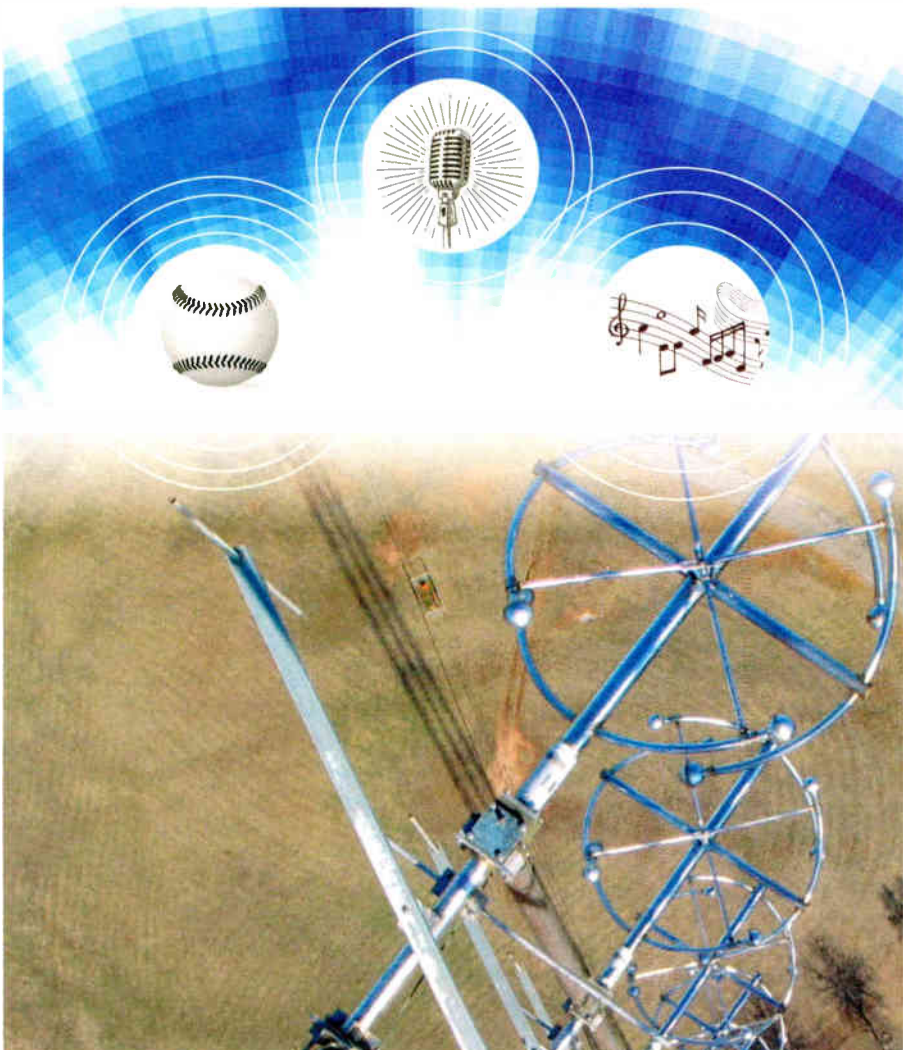
Adding more floor space potentially means more walking; would NAB add other options such as Segways, electric carts or other people movers to help delegates get around the larger LVCC more comfortably?

“Some of that will depend on how we are using the space from one year to the next,” replied Brown. “In 2022 we will likely have to consider some of these options to help facilitate flow between the buildings. The Boring system will certainly help in all scenarios, but we also understand it won’t cover the need entirely.”

Brown expressed excitement about the long-term impact.

“The plan is being undertaken not just to add the space, but to create a more modern facility with better and more flexible space. And at a point in time where we are very focused on evolving and enhancing the experience that we deliver through the NAB Show, those enhancements will have a very positive effect.

“It is also true that more space means more options for us, both in terms of what space we choose to use and how we use it. The rest, the getting around part, is all an operational challenge — and I think our team is pretty good at figuring out how to manage those challenges.”



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# Spring Show @ Home: Exhibitors

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Ravenna, AES67, SMPTE ST 2110-30, SMPTE ST 2110-31).

## Aldena Telecomunicazioni

**New antenna solutions for FM/DAB+ Radio:** Dipoles, Yagis, panels and high-gain log periodic antennas suitable for linear/elliptical/circular polarization. Also: **EMLAB** antenna array design software. An innovative tool to optimize antenna patterns, calculate your MFN/SFN coverage. New features are available for EM field strength exposure/NIR Calculations. Also: **SEP** is a small selective EMF measurement device (100 kHz to 3.8 GHz). All-in-one solution: spectrum analyzer and three-axis antenna directly connected in 370 gram sphere only. Are you ready for EMF measurements powered by SEP and drone?

## Angry Audio

See box, below right

## Arrakis Systems

**DARC Virtual AoIP Software Console 3.0** — The newly redesigned DARC Virtual is more powerful than ever. The 3.0 version has new features such as 10 point multitouch, two phone mix-minus channels, individual channel play for podcasters, and more. Also: **ARC-MIC-PRE** is an extremely affordable two-mic-channel preamp that directly connects to any ARC series console. It may be used with any other line-level input on a broadcast console as well. Easy to set up and operate, a solution for creating additional mic inputs. Also: **APEX** is our flagship automation system that allows you to voice-track, schedule, live assist and more.

## ATEN Technology

**UC9020 StreamLIVE HD** is a portable, all-in-one, multichannel audio/video mixer device that integrates a 1080p video capture, video switch, stream broadcaster, video converter, video splitter and audio mixer into one compact box to eliminate the hassle of working with different AV equipment. Ideal for independent live streaming broadcasting environments.

## Audioarts Engineering

**DMX Digital Audio Console** — Full WheatNet-IP AoIP network-compatible. Console includes built-in five-port Ethernet switch. No external switch required to create or join an existing WheatNet-IP system. Available with eight

or 16 faders, with talkback and cue, EQ/dynamics, control room, studio and headphone monitors, LED metering, built-in timer and four-event recall.

## AudioScience

See box, below

## Barix

The **M400 SIP Opus Codec** is Barix's latest audio-over-IP device for STL and remote contribution. Combining dynamic SIP-based link establishment with the open Opus audio compression format, it can be configured as either an encoder or decoder, and offers analog stereo input or output plus USB microphone support.

## Bext

**Compact XD 5000 FM Transmitter** is totally customizable. Optional features include built-in audio processor; RDS encoder; FM receiver; satellite receiver; internal audio storage; phase locking to GPS; in-unit access to user manual; AES67; AES192 (MPX over IP); web audio streaming; and more. Models available up to 20 kW.

## Broadcast Electronics

See Elenos Group

## Angry Audio

**Bluetooth Audio Gadget** — Use your smartphone on the air and in production. Play recorded interviews, streams or music into your mixer. Bidirectional audio for Skype, FaceTime and phone calls, you can even put callers on the air. Amazing sound quality thanks to AAC and APTX codec algorithms. \$349 MSRP.

Michael Dosch  
michaeldosch@me.com  
128 Holiday Ct.  
Suite 118  
Franklin, TN 37067  
<https://angryaudio.com>

## ABOUT THIS SECTION

As noted elsewhere in this issue, radio industry commerce goes on, even without an NAB Show in April. The following information about new product offerings was provided to us by radio and audio exhibitors in anticipation of the show; we share it here so that readers may stay informed of what's happening at their favorite companies. We invited all radio exhibitors to participate; only companies that responded are listed here. Highlight boxes are paid for by sponsors.

## Broadcast Pix

See box, page 28

## Broadcast Software International

**Op-X One** is powerful, state-of-the-art radio automation technology in one standalone computer. Easy to learn, powerful enough to handle the largest audio libraries. Clock builder to easily manage your satellite programming, remote voice-tracking capabilities, built-in data repeater, remote control access, complete single-station turnkey solution. Also: **Simian Radio Automation Simian 2.3** is a full-featured, professional radio automation and computer payout system



## AudioScience

**Iyo Dante Livewire+ AES67** — The Livewire+ AES67 functionality is included with Iyo Dante firmware version 3.2.1 and above; this can be downloaded from AudioScience's website. Most Livewire+ AES67 devices can stream audio to and from an Iyo Dante interface including Axia Livewire+ enabled consoles and mix engines using the Livewire low-latency stream format.

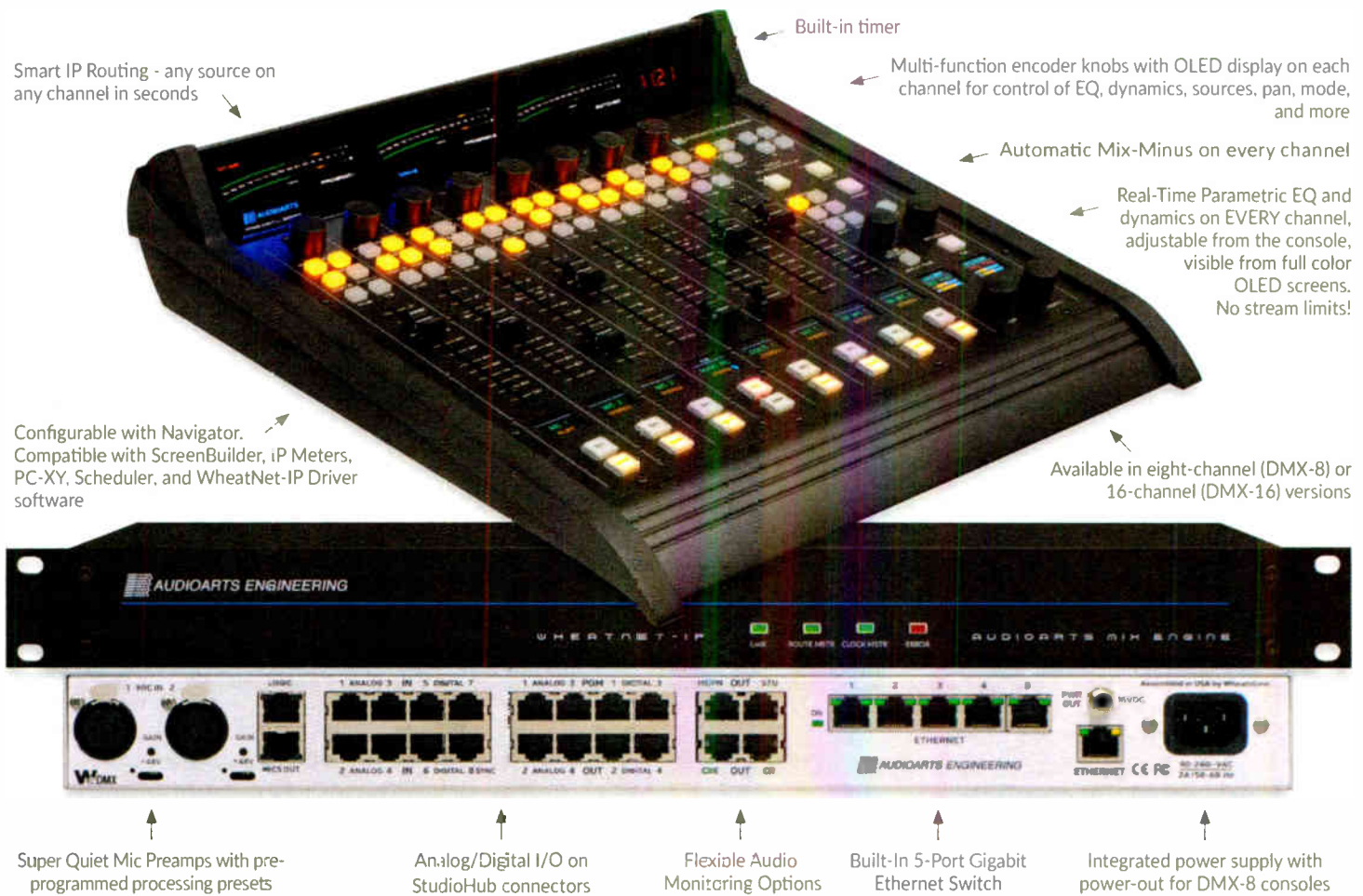
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**DMX**

[audioarts.com/dmx-rw20](http://audioarts.com/dmx-rw20)



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phone 1.252.638-7000 | [audioarts.com](http://audioarts.com) | [sales@wheatstone.com](mailto:sales@wheatstone.com)



for radio, internet and satellite broadcasting.

### Burk Technology

**Arcadia Cloud Service** delivers fast fingertip access to hundreds of remote sites over a secure web link for managers and engineers on the go. Active directory authentication limits users to authorized sites and channels. NOCs running Burk AutoPilot software can leverage its efficient centralized communications architecture. Also: **Arcturus** turnkey solution for managing multiplexed antenna sites monitors key RF and environmental parameters and takes action when necessary to minimize the risk of damage to combiners, transmission lines and antennas. Custom Views provide visual status and touchscreen control. Also: **ARC Plus Touch** transmitter facility control has new features including restricted web access to channels and macros based on user credentials, enhanced SNMP v2c support and timer channels for calculating elapsed or accumulated time. Also: **ARC Solo** combines facilities management with the simplicity of a self-contained remote control. Also: **AutoPilot** software makes managing remote sites easy. New features like Real Time Streaming Protocol for IP cameras and password protection

for commands increase the power and flexibility of AutoPilot Custom Views. Enhanced Warp Engine capabilities bring speed and flexibility to NOCs.

### Burli Software

**Burli NewsHub** is a centralized platform for sharing news content. It's a simple, effective way to share news production across newsrooms or build your own news network. Browser-based, NewsHub lets newsrooms and journalists contribute to and download content from any newsroom and virtually any device.

### BW Broadcast Ltd.

New **TR600 V3 Translator** features Direct to Channel Digital Modulation. This product combines BW's V3 transmitters with an built-in DSP rebroadcast receiver. This 600W, 2RU FM translator has a built-in four-band DSP audio processing, Ethernet control, RDS encoder and FSK IDer, GPS inputs for SFN and hot-swap PSU.

### Calrec Audio Ltd.

The **VP2 virtualized mixing system** enables a station to benefit from a Calrec console without a physical control surface. VP2 comes in three DSP sizes, uses Calrec's Assist software for control, and

### Broadcast Pix

**RadioPix** — Now there's an easy way to stream your radio show with engaging live video. RadioPix has AI built-in to automatically switch the included robotic cameras to whoever is talking. Add moving titles and graphics. Or use its easy control interface. Simple to install. You will be streaming in minutes.

Sarah Madio  
sarah@broadcastpix.com  
27 Industrial Ave., Unit 5  
Chelmsford, MA 01824  
<http://www.broadcastpix.com>



can be controlled by station automation systems. Assist can be accessed via a web browser. Also: **ImPulse** is Calrec's powerful audio processing and routing engine with AES67 and SMPTE 2110 connectivity. Compatible with current Apollo and Artemis control surfaces, providing a simple upgrade path for existing Calrec customers into the IP domain. Also: **H2-IP Gateway** provides an interface between a Hydra2 network and an AoIP network, providing a control level that allows audio labels and control data. to be passed between networks. This gives Hydra2 users the ability to control gain of Calrec AoIP mic inputs, and vice versa. Also: **Type R for Radio** is a modular, expandable, IP-based radio system that uses standard networking technology and combines it with configurable soft panels. Provides customization across networks, open control protocols and surface personalization.

### Clear-Com

The newest addition to FreeSpeak, **FreeSpeak Edge**, operates in the 5 GHz ISM band, full 12 kHz audio quality, and is designed for the largest and most challenging productions and environments. Also: **FreeSpeak II Wireless Intercom System** includes the FreeSpeak II IPT Transceiver, with connection to 10 belt-packs each, which utilizes AES67 transport low-latency signal distribution, high radio performance and high audio bandwidth, enabling FreeSpeak II wireless belt-packs to be deployed across a user's LAN.

### Comrex

**Access MultiRack** — For users who need to run multiple IP codecs at once, Comrex created Access MultiRack. It is equivalent to five codecs, contained within a sleek 1RU chassis. Access MultiRack features AES67-compatible I/O on all five codecs, along with AES3 and analog I/O on the first codec.

### Countryman Associates

Countryman's **Phantom Power Supply** provides ultralow noise, balanced

phantom power to your microphones anywhere, anytime. Flexible power options — 9 V batteries or DC power supply — and three switchable voltage levels (12 V, 24 V, 48 V) are packaged in a low-profile, durable housing, making it an invaluable tool in any audio kit.

### Davicom, a division of Comlab Inc.

New **Digital Temperature Probe Interface** connects One-Wire temperature probes to any Davicom unit via SNMP. Also: Davicom's **latest firmware release for Cortex** incorporates new features such as an SNMP MIB browser, up/down counters, an I/O finder, an inter-user chat screen, activity monitoring on all inputs, custom voice-message recording capability and many others.

### DEVA Broadcast Ltd.

**DB4005** is a third-generation digital FM radio modulation analyzer and monitoring receiver. A powerful monitoring system that allows for easy and reliable monitoring of the quality of up to 50 FM radio stations. Offers an MPX input and a loudness meter, as well as TCP/IP and (optional) GSM connectivity. Also: **DB6400 FM and Digital Radio Four-Band Audio Processor** provides ultralow latency and perfect clarity of sound, regardless of the source material. An intelligent silence detector and a fallback function with a built-in MP3 player and a multiformat IP audio player. Extensive set of factory presets and several customizable user presets. Also: **DB45 Compact FM Radio Receiver** accurately measures RF level, MPX deviation, MPX power, left & right audio levels, RDS, and pilot injection levels. Has a fully DSP-based core, a built-in audio streamer and an RDS/RBDS decoder with BER meter and adjustable alarms via email, SMS and SNMP. Supports TCP/IP and optional GSM connectivity.

### Dielectric

The IP-connected **RFHawkeye** system allows broadcasters to monitor RF performance and condition in real

Nothing is more important than local information right now and we are ready to support your needs through these uncertain times. For more than 50 years, we have been supporting FM broadcasters and that's not changing.

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World Radio History



time, 24/7 and under full power. Introduced last year, it has now added an intuitive graphical user interface to help broadcasters present actionable and meaningful performance data. Also: **DRFSC Dual RF Switch Controller** integrates SNMP and secure web-based capabilities to streamline the management of waveguide and coaxial transfer switch activation for modern TV and radio transmitters. Benefits include plug-and-play adaptability to accelerate installation, streamlined hardware requirements and networked status monitoring with richer data sets.

#### Digigram Digital

**Iqoya Connect** is both a SIP infrastructure and a web application allowing from one screen: Contact list and audio profile management, codec discovery, codec and call monitoring, Placing, accepting, denying or hanging-up calls, Past broadcast quality checks. Iqoya Connect provides interoperability and security against cyber-attacks.

#### DJB Radio Software Inc.

**DJB Zone** is an award-winning, attractive and full-featured radio automation system designed with the budget-conscious user in mind.

#### Elber

The **ESSPx** is the outdoor solid-state power amplifier series manufactured by Elber with GaN transistor technology, with power from 50W up to 400W. Available as SSPB, with in-house designed upconverter, the **ESSPA-Ku400** is the 400W Ku-band version. The **ESSPx**

is an integrated unit, comprehensive of power supply and cooling system. Also: **Wayber II** is an analog/digital microwave link able to transport a mono or a MPX stereo signal from studio to audio transmitter. Compact and reliable, it features high quality and modern technology both in its signal processing and its microwave section.

#### Elenos Group/Broadcast Electronics

**BE 3k** — Our newest compact FM transmitter. The same legendary audio performance you expect from BE. AC to RF efficiency >70%. Two PSU hot-swappable from the front panel. 7/16 DIN RF output. Analog, AES and composite (MPX) inputs with auto-switching on silence sense. Built-in Web GUI and SNMP control. Also: BE introduces the **Genesis TV transmitter line**. The modulator/exciter provides maximum flexibility on new or existing transmitters and is ready for IP-based networks and all international standards including ATSC3.0, DVB-T/T2 and ISDB-T.

#### ENCO

**DAD Disaster Recovery (DAD-DR)** is a cloud-based companion to ENCO's DAD radio automation system, ready to take over program and ad playout on a moment's notice. DAD-DR stays in continual synchronization with the broadcaster's on-premises DAD deployment to ensure backup content is updated and all scheduled ad spots will run.

#### ERI-Electronics Research Inc.

See box, above right

#### ERI-Electronics Research Inc.

**CY300 70 kW FM Switchless Combiner** — This switchless FM combiner is rated for 2 x 35 kW at the inputs, 70 kW at the output port. The output port is a 4-1/16-inch flanged and the RF inputs and load port are 3-1/8-inch flanged. The system includes three directional couplers and 2 voltage probes.

Bill Harland  
bharland@eriinc.com  
7777 Gardner Road  
Chandler, IN 47610  
<http://www.eriinc.com>



#### Henry Engineering

**SUPERLIGHT** — Controls LED on-the-air tally lights, compatible with WheatNet Blade, Axia xNode and similar network protocols. Cat-5/Cat-6 interface can control multiple units using one cable. Also: **POWERCLAMP SERIES 200 Surge Suppressor** — New AC power line surge suppressor is ideal for broadcast transmitter sites. This TVSS unit is rated at 200,000 surge-amps per phase, and will clamp most transients to within a few volts of the AC waveform. The Series 200 replaces older Series 10, offers better performance for 33% less cost. Also: **BackUPS** — An automatic UPS controller that monitors the AC output of UPS power supplies. Automatically bypasses the UPS if output fails or becomes unstable. Manual bypass mode allows maintenance of UPS without shutting off power to the load.

Hank Landsberg  
henryeng@aol.com  
P.O. Box 3796  
Seal Beach, CA 90740  
<http://www.henryeng.com>



#### GatesAir

**Maxiva VLX-OP Series** — GatesAir has added a liquid-cooled VHF family of transmitters, available for analog or digital TV, plus DAB radio. Also: **PMTX-1 Pole-Mount Transmitter** — An outdoor pole-mounted low-power unit that is configurable as a transmitter, translator or on-channel gap filler (TV

and DAB radio). The rugged weather-proof enclosure is suitable for extremes in temperature and humidity, allowing stations to install in locations where no suitable building is available. Heat is dissipated through the pole. Also: The **Intraplex IP Link 100e** is a plug-in card for Flexiva transmitters that receives program audio and data over IP STL. It provides the same IP Link codec capabilities including Dynamic Stream Splicing, and failover to Icecast. The IP Link 100e is designed for open slot in Flexiva FAX excitors. Also: First demonstration of the **GatesAir Intra-Mast system**, a specially packaged unit with six transmitters in a tower configuration. Each transmitter can be a transmitter, translator or on-channel gap filler, with maximum power of 70 W prefilter per transmitter. The packaging minimizes real estate costs associated with multi-transmitter operational support. Also: GatesAir's **MultiD multicarrier platform** combines three DAB transmitters into a 1RU chassis. The multicarrier architecture removes the need for external RF combining, and instead generates and retransmits all three channels through a single amplifier. Built-in multicarrier modulation supports adjacent and nonadjacent frequencies, providing a flexible solution for DAB networks.

#### Henry Engineering

See box, above

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**Inovonics Inc.**

See box, right

**Jampro Antennas Inc.**

**JA/MS-BB Broadband Slot Antenna** — The true and tested Prostar slot antenna available in broadband for combined analog and digital applications. Eliminates the need for multiple antennas and provides a single, compact solution that conserves tower space and minimizes tower loading. Also: **JAVA Broadband Log Periodic FM Antenna** ideal for high-gain directional applications.

**JK Audio**

**Voice Path 4C Telephone Handset Audio Tap** connects between the handset and base of any analog or VoIP office telephone. A four-conductor TRRS cable plugs directly into the headset jack of your desktop or laptop computer. Allows users to capture and play back phone conversations or interviews.

**Kintronic Labs**

The **ISO-250-CAT6-2** is a weatherproof isolation inductor comprising two runs of Cat-6 Ethernet cable to facilitate the installation of PoE Ethernet systems on AM base insulated towers. This model is applicable for AM transmitter power up to 10 kW. Custom designs for higher-power applications are available.

**Lawo AG**

Popular **Lawo Power Core** AoIP mixing engine is now even more versatile. With the new **MAX** (for "multiple access") license pack, two, three or even four Ruby consoles can share a single Power Core's enormous I/O and DSP mixing resources. Ideal for multiple studios with smaller mixing surfaces. Also: **R3LAY AoIP Stream Monitor**, the world's first monitoring software for AES67 networks, displays crucial data for up to 16 streams: LUF5 readouts, definable loudness alerts, stream health data, and a unique SDP interrogator. An invaluable addition to

today's AoIP studio toolkit. Runs on Windows 10 PCs; VMWare compatible for multi-instance deployment.

**Logitek Electronic Systems**

**mixIT-6** — Affordable, networkable radio console system. Includes six-fader console with touchscreen control and powerful, versatile audio engine with AES67, Ravenna, Livewire and Logitek JetNet networking standard; Dante optional. System priced at \$4,800. Also: **JET67** — Multiple-format AoIP router and console engine providing maximum flexibility in radio console operation. JET67 interfaces to AES67, Ravenna, Livewire and Logitek JetNet networks; Dante is optional. Includes analog and digital I/O, mic inputs, EQ and dynamics; 24 mix-minus busses.

**Moseley Associates Inc.**

**NX-GEN-T** is an economical advanced microwave STL/TSL software-defined digital radio for 6 GHz to 38 GHz bands that offers scalable configurations of Gig-E and T1/E1 payload. with split indoor/outdoor topology. Also: **Moseley Starlink 8 Channel Digital STL** easily transports up to four stereo radio stations on one STL channel. STL is perfect for multi-station clusters. Digital audio and serial and IP Ethernet transport supports HD Radio and RDS. Powerful 5 Watt output overcomes crowded STL channels.

**MultiDyne Video & Fiber Optic Systems**

**Census Digital C-Series** of embedded audio monitors provides cost-effective, broadcast-quality confidence monitoring for studios, mobile production and post-production. Six 1RU and 2RU models address specific needs for 3G-SDI, analog, AES/EBU and MADI audio signals, and share the same front-panel design and intuitive user interface. Also: **MultiDyne's Census Digital BALUN Series** provide 75–110 Ohm impedance matching for digital audio signals.

**Inovonics Inc.**

**Sofia 565 FM SiteStreamer+** is a web-enabled FM receiver for remote monitoring of FM broadcasts, providing advanced features for critical monitoring situations. The Sofia 565 provides analog, AES3 digital and Dante AoIP audio outputs. Internet listening is streamed for up to 10 listeners. Multiple stations can be sequentially monitored using the StationRotation feature.

Gary Lührman  
gary@inovonicsbroadcast.com  
5805 Highway 9  
Felton, CA 95018  
<http://www.inovonicsbroadcast.com>

**On-Hertz**

**Artisto** is a virtual audio core for broadcast and media running on off-the-shelf IT. Fully modular thanks to its microservice-based architecture, fully integrated thanks to its open web API, intuitive thanks to its fully customizable web-based user interface. Artisto simplifies the automation and the integration of any workflow involving sound. Also: **Lumo** is a software comprehensive radio studio for outside broadcasting. It features integration with major automation solutions, a mixing table with DSP (presets, EQ, dynamics, AGC), a gain-sharing automixer, a mix editor, recording for voice-tracking and podcast, VoIP telephony and AoIP transmission codec. Lumo's web UI is natively touch-optimized.

Benjamin Lardinois  
benjamin.lardinois@on-hertz.com  
214 rue des Canadiens  
Hyon, Hainaut 7022 BELGIUM  
<http://www.on-hertz.com>



Products include BALUN-1 in-line cable versions and the BALUN-1P universal panel mounts, each

**Myers**

**ProTrack 7.0** is the newest broadcast management and sales solution from Myers. Also: Myers' cloud-hosted solution **ProHost** and their web-based traffic and sales system unite the existing suite of adaptable integration add-ons to extend, automate and simplify workflows.

**Nautel**

**All-Digital AM Transmitters** — Tested extensively in the USA over the past few years, all-digital AM radio can become a reality through Nautel's NX Series trans-

mitters. Stereo audio, album artwork data and more are available. New enhancements for 2020 will be shown. Also: Nautel's power-saving **MDCL** brings real-world cost savings to AM broadcasters.

**Neutrik**

Neutrik's **NA2-IO-DPRO** features two inputs switchable between mic, line and AES/EBU signals plus two outputs switchable between analog line and AES/EBU. Two Dante ports provide for either redundancy or device daisy chaining. The NA2-IO-DPRO offers a rugged, reliable solution ideal for numerous applications.

**NPR**

The **Hub@NPRDS** is a content distribution delivery platform that delivers your live and prerecorded content via internet, satellite (C-Band and Ku-Band) or both, whichever option works best for you. Features include store/forward, regionalized spot insertion and IP streaming. Benefits include increased revenue opportunities and low capital expense.

**On-Hertz**

See box, above

**OPNS**

**SoundID Audience** — Measuring audience has always been a challenge. SoundID Audience is the game-changer. Thanks to a smartphone app, we sample

<p><b>Studio Items Inc.</b></p> <p>Mic Booms On-Air Lights Speaker Mounts <a href="http://www.studioitems.com">www.studioitems.com</a></p>	<p><b>TORPEY TIME</b> (The Good Time People)</p> <p>Clocks Up/Down Timers <a href="http://www.ram68.com">www.ram68.com</a></p>	<p><b>Dixon Systems</b></p> <p>News Mixers Line Matchers USB Audio Codecs <a href="http://www.ram68.com">www.ram68.com</a></p>	<p><b>RAM Systems</b></p> <p>Broadcast Furniture Systems Integration Sound Absorption Panels <a href="http://www.ram68.com">www.ram68.com</a></p>
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the ambient sounds and a fingerprint will be generated locally. We can confirm the amount of active panel members, the percentage of listeners or analyze the customer behavior.

**Orban Labs Inc.**

See box, right

**Platinum Tools**

The ezEX RJ45 Starter Kit contains EXO Crimp Frame with EXO-EX Die, ezEX38 connector (25pcs) ezEX44 connector (50pcs), ezEX48 connector (25pcs) and ezEX strain reliefs in assorted colors (20pcs) Also: Platinum Tools' **Waterproof RJ45 Coupler System** is rated to IP67 to meet those harsh environmental conditions commonly found in outdoor and indoor installs, such as wireless and TV/radio towers, security systems, outdoor entertainment venues, industrial manufacturing, LED lighting, emergency communications, marinas and more

**PR&E**

**DMX PR&E Digital Series** — Full WheatNet-IP AoIP network compatible. Console includes built-in five-port Ethernet switch — no external switch required to create or join an existing WheatNet-IP system. Sixteen physi-

**Orban Labs Inc.**

The Orban XPN-AM/HD is Orban's state-of-the-art AM/MW/SW processor. Using Orban's latest generation MX limiter, it offers unparalleled processing capability. Orban planned to demo XPN-AM/HD with a Nautel NX-5, running MDCL AMC 6 dB. Also: **SmartRadio** is a cloud-based data-driven radio platform developed by Broadcast Partners. It is designed to deliver "radio as a service." It consists of several components: Smart Production, Smart Publication, Smart Analytics and data-driven Smart Tools. SmartRadio utilizes the Orban OptiCloud audio processing engine to provide cloud-based and web-based audio processing. Also: Orban's newest generation of **Orban Inside HD Radio** processing enables transmitter manufacturers to incorporate next-gen Orban processing in their importer/exporter designs. It can process FM analog and HD1 along with HD2 on the typical HD Radio importer/exporter SBC. Options include diversity delay correction and ratings encoder loops. Also: **Orban 8700iLT FM/HD Radio Processor** is a "light" version of the Orban 8700i. It features dual redundant fully monitored and alarmed power supplies and DMPX in 192 kHz/384 kHz sample rates, and is fully upgradable to the Orban 8700i.

Mike Pappas  
mike@orban.com  
7209 Browning Road  
Pennsauken, NJ 08109-4602  
http://www.orban.com



cal faders, with talkback and cue, EQ/dynamics, control room, studio and headphone monitors, LED metering, built-in timer, and four-event recall.

**ProCo Sound**

**Wireless In-Ear Monitoring System** — W.I.E.M.S. is a compact in-ear solution featuring a sleek and simple design,

with no external antennas and a seamless plug-and-pair set-up. With up to 30 meters of range (line of sight) between transmitter and receiver, it can be used in several applications, including broadcast, film and install-based instances.

**RCS**

Zetta's "No Limits" design allows maxi-

**Shively Labs**

**SLV-DA** — Our trusted and relied-on SLV antenna can now be used as a directional antenna. This can fit many low-power patterns without paying higher-power antenna prices. As the FM market continues to get smaller and more congested, this is a perfect solution for many low-power needs.

Angela Gillespie  
agillespie@shively.com  
188 Harrison Rd  
Bridgton, ME 04009  
http://www.shively.com



mum flexibility without restriction on functionality. No other company offers a solution with as many features and possibilities for terrestrial, satellite, digital or streaming stations. Zetta's design has been simplified, streamlined and architected so that new users get more out of the system.

**Shively Labs**

See box, above



**WALLTIME**  
NTP Clock & Notification System



Current Time: 09:37:15  
Segment Counter: 04:59:41  
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- Customize with Your Logos
- Supports Livewire, WheatNet & Ethernet GPIO Interfaces



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**Sonifex Ltd.**

**Dante DIO Audiophile Interfaces** are higher-quality, plug-and-play audio interfaces that provide a convenient method of connecting legacy analog and digital audio equipment to the Dante AoIP audio network. There are nine products in the range. Also: **AVN-AIO8 Dante Interface PoE** converts up to eight analog inputs and eight analog outputs to and from the Dante audio-over-IP networking standard. This cost-effective 1U rackmount unit offers an easy solution for AV professionals and system integrators.

**StreamGuys**

StreamGuys' **SmartMetadata** service fills in missing content metadata in broadcasters' live streams, enabling them to improve their presentation — such as song titles, artists, album names and

more — to online and mobile listeners. SmartMetadata uses audio fingerprinting technology to identify music in the live stream and deliver corresponding metadata. Also: StreamGuys' **Magic HLS** streaming server ingests playlists from broadcasters' scheduling or automation systems and transforms them and associated content into interactive, personalized HLS streams. Combined with StreamGuys' **SGplayer**, listeners can rewind or skip forward and backward in the playlist, with support for automatic time zone shifting and dynamic ad insertion. Also: New **AudioLogger**

**functionality** in StreamGuys' flagship **SGrecast** podcast management platform helps broadcasters expand revenues by automatically converting live streams into podcasts without needing to manually tag the results for mid-roll ad breaks. The enhanced **AudioLogger** supports metadata-triggered recording, giving users more flexibility than prescheduled recordings.

**StudioHub**

See box, left

**SuiteLife Systems**

See box, left

**Telos Alliance**

**Axia Quasar AoIP Console** delivers limitless production possibilities for radio and specialized TV applications. New Source profiles, automatic mix-minus, automixing on all channels. 64 stereo input channels — all with robust DSP processing — and loudness metering on outputs. Four programmable layers to control all channels, including DSP, even on smaller surfaces. Also: **Omnia MPX Node** is the first purpose-built hardware codec capable of sending/receiving FM signals at data rates as low as 320 kbps utilizing Omnia

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µMPX algorithm, ideal for networks w/limited capacity. MPX Node makes peak-controlled L/R baseband, stereo pilot, RDS data routable from a studio to FM transmitters. Also: **Telos Infinity IP Intercom** replaces outmoded matrix technology with an advanced, distributed IP network solution that provides superior functionality in a simplified, elegant form. Being matrix-free allows plug-and-play networked hardware and software devices to be added without exceeding the number of available ports on a matrix.

#### **Thimeo Audio Technology B.V.**

**Thimeo STX** is a digital FM audio processor with a built-in stereo/RDS encoder and a MicroMPX STL encoder. It can process multiple signals simultaneously, for example an FM and multiple HD signals. Also: **PhoneBooster** uses artificial intelligence to make telephone conversations sound less "tinny." It adds missing lows and highs to telephone sound, making phone calls easier to understand and more pleasant to listen to.

#### **Tieline — The Codec Company**

**Gateway Multichannel IP Codec** is a compact, powerful multichannel IP audio transport solution, delivering 16 mono channels or eight stereo streams of IP audio in 1RU, increasing efficiency and reducing rack space. It supports AES67, AES3 and analog I/O as standard. Optional WheatNet-IP interface supported. Also: **ViA Remote Codec** — Reimagine remote broadcasts with ViA. Connect using dual Ethernet ports, dual USB air cards, an optional Dual Active

SIM LTE module, or built-in Wi-Fi and stream using a cellphone Wi-Fi hotspot, or Wi-Fi access point. Includes record and playback capability, SmartStream Plus and Fuse-IP bonding. Optional POTS and ISDN modules. Also: **Cloud Codec Controller** lets you manage a fleet of Tieline codecs and Report-IT Enterprise users in real time from anywhere, even over cellular and Wi-Fi networks. Use the simple user interface to configure, connect and manage codecs and Report-IT Enterprise users from anywhere in the world. Also: **TieLink Traversal Server** is a secure, independently hosted global server network, with multiple global backups. It centralizes Tieline codec contact list management and provides self-discovery of codecs within customized call groups. Simply select a contact and press Dial to connect. The TieLink Traversal Server takes care of IP call routing automatically. Also: **Bridge-IT XTRA IP Codec** — Tieline's inexpensive STL and multipoint IP codec features a range of algorithms, including aptX Enhanced, Opus and AAC-LD/AAC-ELD. Includes an LCD display, PPM metering, dialing keypad, dual internal power supplies, SDHC card backup, SmartStream Plus dual redundant streaming and receive Fuse-IP connections. Four GPIOs and SIP compatible.

#### **V-Soft Communications LLC**

See box, above right

#### **Vorsis**

**AirAura X5 Digital Audio Processor** — Advanced audio broadcast processor actually reconstructs audio after appli-

#### **V-Soft Communications LLC**

**RFHAZ-4** is a serious update of our longstanding RF hazard program. It considers the FCC's five new categories for FM EPA antennas and it graphs multiple antennas on a given tower. Check it out for all the new features. Also: **Probe5** — Updated and upgraded, professional level RF propagation analysis, modeling of FM and DTV broadcast coverage and interference. Produces spectacular "atlas" quality polygon maps while integrating high-resolution population databases with state-of-the-art mapping. Features Longley-Rice, Okamura-Hata, Cost-Hata, PTP, line-of-sight, ITU and standard FCC. Includes FCC, census, precise city boundaries and land-cover databases. Also: **FMCommander** — Find ways to upgrade FM stations, move a transmitter site, map coverage or interference contours. FMCommander now uses the FCC's double precision, NAD 83 station coordinates. It integrates FCC, census, terrain, towers, airports, AM stations, railroads, rivers, highways, city and county boundaries into a complete mapping and channel search package. Also: **AM-Pro 2** performs automated daytime ground-wave and nighttime skywave allocation studies. The program has been adopted by the FCC for daily use. You get the same answers as the FCC. It also creates beautiful, polygon shaped, coverage and interference maps with related tables, all based on the FCC AM rules. Also: **Microwave Pro-2** is a frequency allocations and path analysis program. It uses NSMA methodology and ULS data to study Broadcast Auxiliary, Part 101, COALS and CARS projects. The new version adds bidirectional channel analysis. Everything you need to perform your own microwave studies, including the preparation of PCN mailing list.

Doug Vernier

[dvernier@v-soft.com](mailto:dvernier@v-soft.com)

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**WinSales** enables broadcasters to book and manage their ads across multiple stations, as well as multiple media including TV, radio, media networks, internet, smartphones preroll and tablets from a single system. Highly scalable, winSales offers real-time, flexible reporting that delivers extraordinary visibility and control at all levels of your business.

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#### **WideOrbit**

**WO Unified Sales Console** is a set of workflow optimization tools that brings electronic orders from buyers and DSPs to broadcasters faster, helping to shorten the negotiating process. WO Unified Sales Console aggregates and compares multiple demand sources so stations can



**WorldCast Systems**

Audemat FM MC5 is a complete, accurate FM test and measurement solution for mobile RF coverage measurement and extensive modulation analysis. The 3.10 version includes an improved user experience with fixed point measurements, more intuitive interface and simpler analysis of mobile measurement campaigns. It is the only equipment compliant with ITU-R SM.1268-5. Also: **APT Mobile SureStreamer** mobile network access solution improves performance of remotes and OBs with the lowest possible latency. Compatible with most IP codecs, plug-and-play, and featuring SureStream technology, it ensures high-quality audio/video streaming with zero dropouts, zero jitter and low op-ex. Lightweight and easy to transport for outside broadcasting. Also: **Audemat RDS Encoder** — Feature-packed, innovative RDS encoder with built-in FM tuner, RDS2-readiness and MPX/composite-over-AES compatibility. New communication features available for higher flexibility and ease-of-use including backwards compatibility with FMB80, file configuration through FTP enabling compatibility with third-party automation software and debugging tools integrated for UECP and ASCII commands. Also: **WorldCast Manager** — Award-winning M&C platform for broadcasters and media powerhouses. Across its unified, intuitive and easy-to-use web interface, users oversee real-time status of large and complex ecosystems, centralize data and streamline the management of a variety of products and platforms, both locally and remotely. Soon available SaaS offering. Also: **Ecreso Switch Controller (ESC)** — A centralized unit that automatically moves RF switches at transmitter sites for analog/digital radio/TV. Facilitates and secures complex, often high-risk maintenance and antenna switching operations. Functions include local/remote control and monitoring of up to five antenna switches, status verification via dynamic synoptics and front-panel, flexible configuration and more.

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optimize deals and sell against available/pending digital and linear inventory. Also: **WO Digital Ad Solution** is a suite of products to manage, monetize and measure streamed and on-demand audio content. Also: Purpose-built for media, **WO Payments Suite** is an A/R management platform that focuses on workflow efficiencies to streamline end-to-end accounting operations and improve cash flow. Also: **WO Analytics** — Media companies struggle to leverage data from multiple systems to analyze business performance, detect inefficiencies and identify revenue opportunities. **WO**

**Analytics** creates a unified view across channels, markets and platforms by consolidating data from WideOrbit and third-party systems within a single database, providing actionable insights via pre-built and customizable dashboards. Also: **WO Program** simplifies royalty management and allocations, improves content management across platforms while saving time and reducing errors by automating content broadcast and streaming rights. A powerful content, rights and channel management solution, **WO Program** integrates with WideOrbit and third-party solutions.

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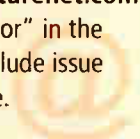
See box, page 36

**WorldCast Systems**

See box, left

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# Exploring the Inovonics 674 AM Monitor Receiver

Useful features should appeal to those working with or for AM broadcasters

## PRODUCT EVALUATION

BY TOM VERNON

As the radio broadcast ecosphere shifts towards streaming and digital delivery, the number of new products for the AM broadcaster seems to be on the decline. That's why it was a delight when Inovonics unveiled their 674 AM Monitor Receiver in 2019. Part of the INOmini series, the 674 fills the niche for a versatile but inexpensive AM confidence monitor.

This software-defined DSP receiver has many cool features.

As a global product, it can either tune in 10 kHz increments for the Americas, or 9 kHz increments for Europe. Audio outs are available in analog and digital, each with independent level adjustments.

The multicolor, backlit LED display continuously shows received signal strength and audio levels. Combined with the jog wheel, this display also facilitates system setup. The 674's programmable front-panel alarms with rear-panel tallies indicate low or no signal and audio program loss.



Alarm conditions also cause the display to flash against a red background, a move guaranteed to get your attention. Tweaks and upgrades to the firmware are easily uploaded through the front-panel USB port.

Around back, there's an F connector for the 50 ohm antenna input as well as terminals for the alarm tallies, including ground, +5 volts, low signal and

audio loss. There's also an AES digital audio output and analog line outputs labeled left and right.

And no, analog AM stereo is not making a comeback, these are really dual monaural outputs that are adjustable from -15 dBu to +15 dBu. The logic behind the left/right nomenclature is that most studios are wired for stereo, whether the programming is or not.

### PRODUCT CAPSULE

**INOVONICS 674**  
Monitor Receiver

#### Thumbs Up

- + Independent audio level controls for analog and digital outputs
- + Programmable front alarms with rear-panel tallies for low signal and audio program loss
- + De-emphasis and IF bandwidth options for best audio quality

#### Thumbs Down

- English-only display
- No presets or easy to A-B compare stations

Price: MSRP \$880

Contact: Gary Luhrman at Inovonics at 1-831-458-0552 or visit [www.inovonicsbroadcast.com](http://www.inovonicsbroadcast.com).

Finally, two paralleled coaxial power connectors can take the +12 VDC and daisy-chain it to two additional INOmini devices, useful if the 674 is rack mounted with two companion units.

The front-panel headphone jack will accommodate any stereo phones with a 3.5 mm plug. When the headphones are plugged in, the LCD menu will auto-

## PRODUCTS & SERVICES SHOWCASE

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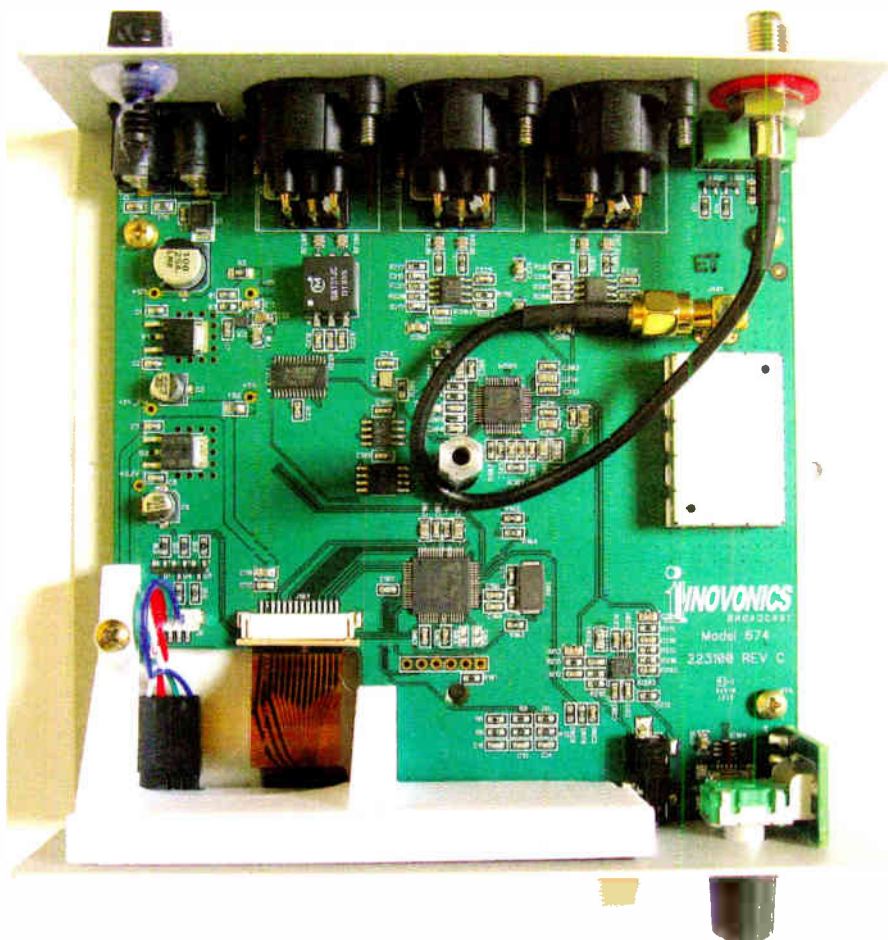
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matically switch to the headphone volume screen, and you can adjust volume with the knob. Press the knob again and you're returned to the previous menu.

Menu screen 6 gives a bargraph presentation of program audio level. The meters are peak-responding with a floating peak-hold function. One-hundred percent carrier modulation corresponds to 0 dB.

**GETTING THE SIGNAL**

As a practical matter, the 674 can operate with just about any type of antenna. The 50 ohm antenna connector is insulated from the rear panel to create a quasi-balanced configuration. The instructions recommend connecting the shield to an external ground.

Getting a strong, interference- and noise-free signal can be difficult in some locations, and Inovonics offers as an option the 637-01 passive AM loop antenna, with a figure 8 pattern, which can assist with some of the more challenging AM reception environments.

Two menu screens determine how the 674 will sound. The standard NRSC truncated 75  $\mu$ s de-emphasis may be switched in or out. The manual suggests making a decision based on which sounds best to you. A second screen enables selection of IF bandwidth. Your

options are 2, 3, 4 and 6 kHz. These settings mark the -6 dB points.

Your selection is really a tradeoff between background noise and fidelity, with the 6 kHz setting being as close to high fidelity as you're going to get.

The days when you could troubleshoot broadcast equipment and make

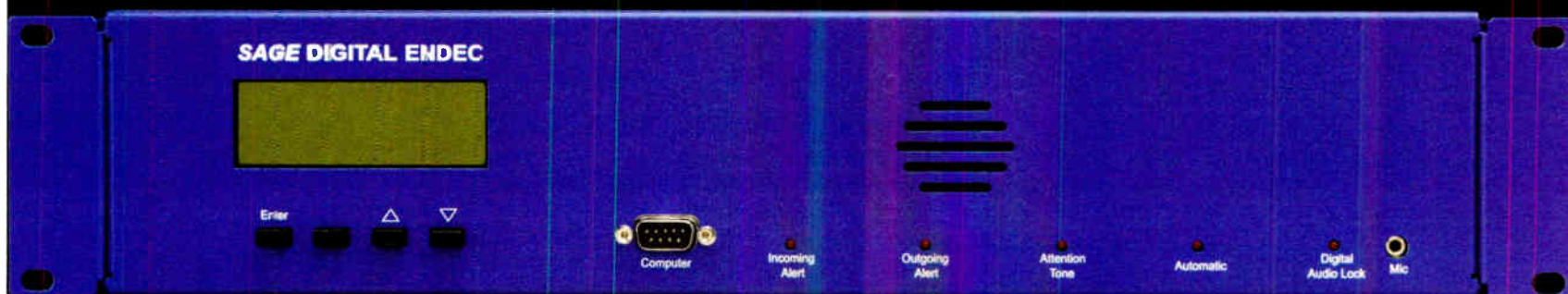
**The 674 fills the niche for a versatile but inexpensive AM confidence monitor.**

the repairs yourself are long gone. As with most modern gear, the Inovonics 674 is designed around surface-mount technology and chips with firmware, so the company recommends returning equipment to the factory for repairs.

Nevertheless, curiosity dictates that it be taken apart just to see what it looks like inside. The board work, sheet metal and paint jobs are all up to Inovonics' usual high standards.

*(continued on page 40)*

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## INOVONICS

(continued from page 39)

Our evaluation 674 performed well with a long-wire outdoor antenna. The use of the traditional cold water pipe as an antenna ground turned out to be ill-advised. Smart meters dump large amounts of noise into the ground wiring. A stake driven into the ground outside the window worked much better.

As expected, local stations could be set for NRSC off and 6 kHz with good fidelity and no noise. The AGC range of the 674 is broad enough to seamlessly handle day/night power reductions and antenna pattern changes. Although not intended for DXing, distant stations can easily be received, and are listenable with NRSC on and reduced bandwidth. Of course, noise from summer electrical storms is always a problem.

While the firmware in the 674 works as expected, other features could make it much better. As it stands, there is no way to store settings for multiple stations. That could make it inconvenient for users who work for a cluster. A preset function would also be useful if you want to do an A-B comparison between your station and the competition for the purpose of setting up audio processing.

While the 674 is geared to a global market, the display is only offered in English. A menu selection of languages might make it more user-friendly outside the United States and other English-speaking countries.

Your happiness with the 674's performance may depend to a large degree on how much thought and planning has been put into its antenna. Back in the day, a frightening number of stations used a short piece of wire and a clip lead as an AM antenna for EBS and EAS boxes, and even for mod monitors. It was never a good idea.

Today, the proliferation of smart meters, LED and fluorescent lights, computers and switching power supplies all combine to create very high noise levels across the LW, MW and SW frequency bands. An outdoor antenna connected to the 674 via coax is almost mandatory for good reception.

## MARKETPLACE

**Hail, Heil:** Heil Sound has launched its new PR 37 vocal microphone.

Aimed towards professional vocalists, the new microphone is said to have an upper mid-range response designed to cut through a mix. It features a 1.5-inch diameter dynamic element and has a frequency response from 50 Hz to 18 kHz and output level of -51 dB @ 1000 Hz.

The company worked with several FOH mix engineers, both with the initial design and subsequent field testing of the new microphone. The company said sound techs who do front-of-house work for prominent bands comment on the mic's transparency, rejection of stage noise and sturdy casing.

The PR 37 is expected to begin shipping in July, retailing at \$269.

Info: [www.heilsound.com](http://www.heilsound.com)



**Making an Audio Connection:** The Kybio Media end-to-end monitoring and control platform from WorldCast's Connect group is expanding beyond its on-premises offering to a new cloud-based software-as-a-service offering.

Kybio is designed to assist with ensuring operational continuity and efficiency across the entire value chain from media acquisition, production to distribution. As a SaaS offering, the system will now be available to consumers who may not have the man-power to deploy and maintain a full on-premises system.

Kybio as a SaaS service will be offered with a monthly subscription that will provide access to Kybio's entire range of functions, while platform hosting, administration and general maintenance will be handled directly by Connect.

There will be automatic software updates and corrective patches as well.

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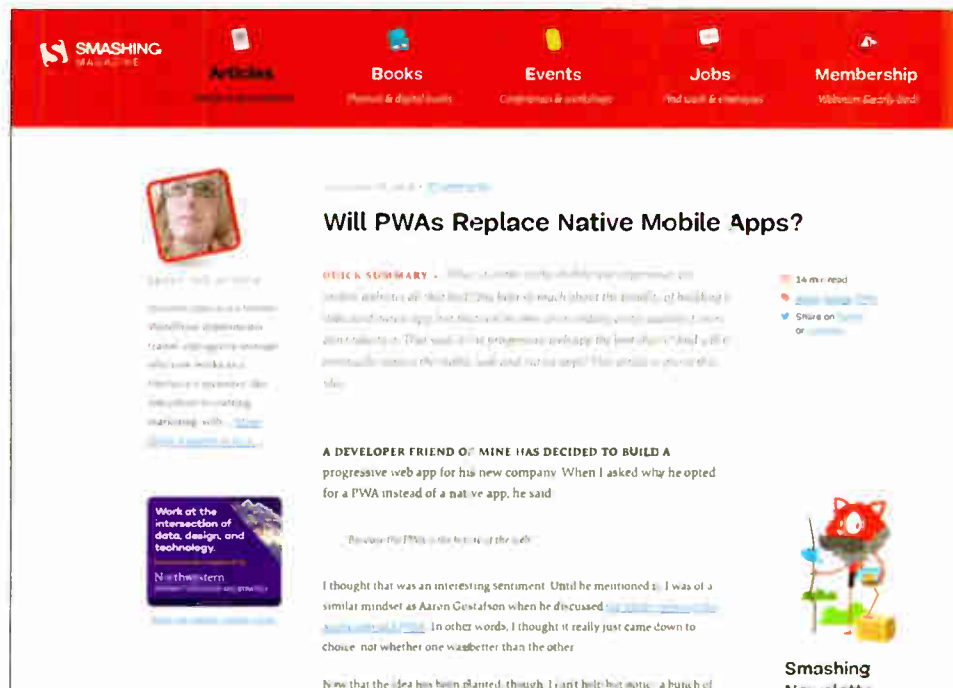
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# Apps Are Key to Radio's Relevance in 2020



PWAs, also known as progressive web apps, have shown promise for several years now, as discussed in this 2018 article. However, more widespread adoption is stalled because they are not yet compatible with all browsers (read it at <https://tinyurl.com/rw-mobileapps>).

Stations can broadcast anywhere and everywhere, but consumers need to have a receiver to hear them

A colleague asked me recently how many apps I had on my phone. I guessed that I had about 50. She told me point-blank that my sense of reality was seriously impaired, so I did the count. The answer astounded me. I currently have 176 apps. Talk about a lack of self-awareness!



With 128 gigs of storage, I don't think about running out of memory until, of course, I do.

According to *socialmediatoday.com*, the average smartphone user devotes 2.3 hours daily to app use. This stat is reflective of those with about 30 apps, and much of this time spent is with the big social media companies or huge national media brands.

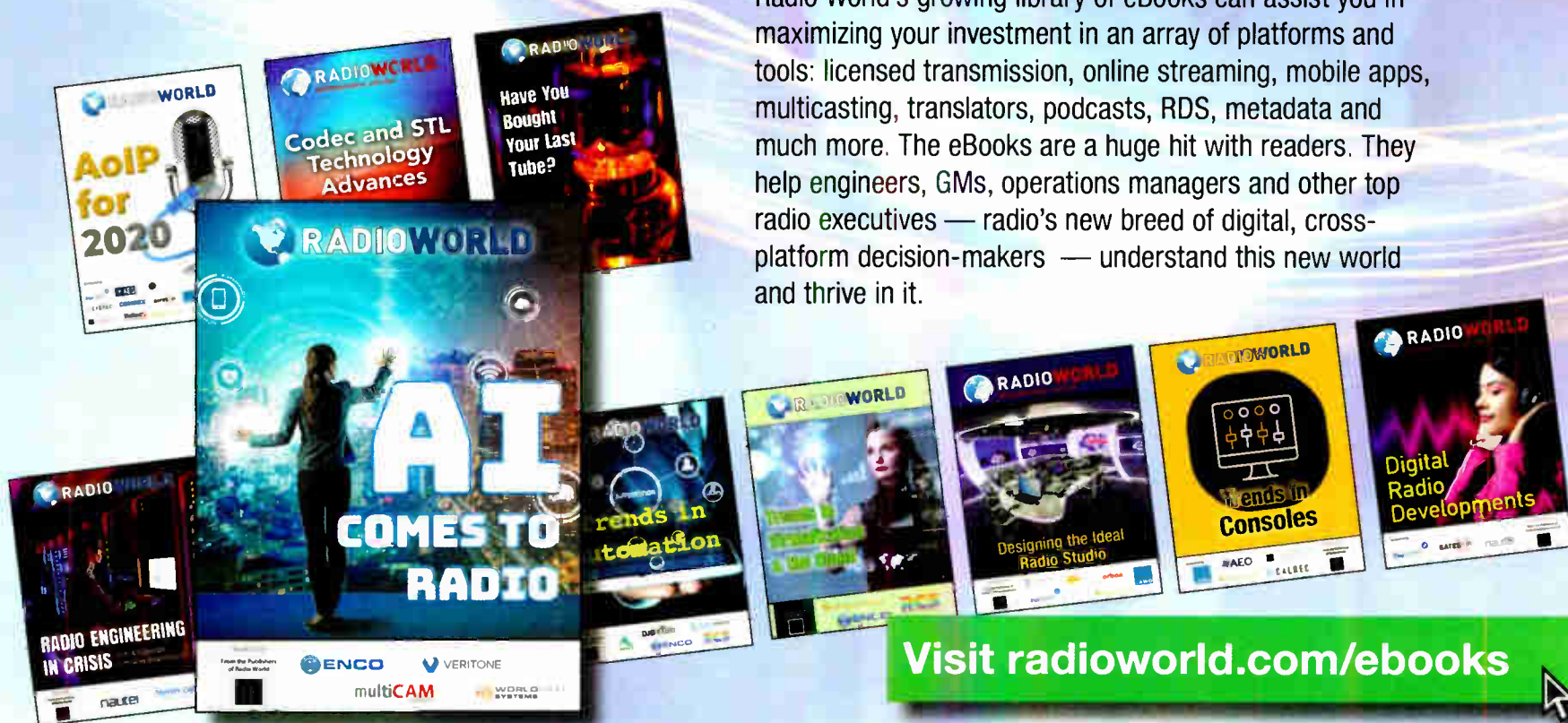
For radio stations owned by the major groups, decisions about apps are made, generally, at the corporate level and then messaging is pushed down.

iHeartMedia is to be commended for its "all-in" strategy and promotional roll-out across its stations. However, I've never heard or seen iHeart advertise their app to target a new audience that might never or rarely listen to broadcast radio. Perhaps they do so and I've just never encountered it. Marketing

(continued on page 41)

## eBooks: Tools for Strategic Technology Decision-Making

Radio World's growing library of eBooks can assist you in maximizing your investment in an array of platforms and tools: licensed transmission, online streaming, mobile apps, multicasting, translators, podcasts, RDS, metadata and much more. The eBooks are a huge hit with readers. They help engineers, GMs, operations managers and other top radio executives — radio's new breed of digital, cross-platform decision-makers — understand this new world and thrive in it.



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**APP***(continued from page 41)*

apps via digital advertising, in app stores and with Google search terms could be an opportunity for stations and groups who want to grow total audience.

For small groups, standalones and non-commercial stations, what's the app situation for 2020 and beyond?

I don't think it's debatable that every station in America has to be available via mobile phone and tablet in some form or another.

**Radio must create and maintain a presence on mobile devices or risk relying completely on in-car listening, where even that piece of audio real estate is no longer the exclusive domain of broadcast stations.**

On-demand behavior is driven by the desire for immediate gratification, most frequently obtained with the device in one's pocket. A radio in the car or even on a different floor of the house won't cut it anymore. I've stayed at four Airbnbs in the last six months and none of them even had a radio receiver.

The least costly approach to streaming comes via radio station aggregation apps like TuneIn. The disadvantage of this platform is that it's easy for your station to get lost among so many listening opportunities; listeners may not even bother looking for your station once they stumble upon so many wonderful choices.

For those who can afford to build and maintain a standalone app, there are three choices to evaluate. While there is no clear-cut best choice, it does seem that the future is moving toward the latest technology.

**NATIVE**

The most common type of app is called a "native" app. This type is developed specifically for device use, primarily on iOS and/or Android. Native apps are the most expensive to build, maintain and market.

They must be approved by Apple and/or Google to ensure they contain no malware or serious bugs. Each time you update your app, it has to be updated in-store. Plus, when Apple or Google roll out a new operating system, you may have to make your app compatible with their update.

Because the native app has to match the user interface and software standards, the experience is often smoother and more intuitive for the user.

On the other hand, the volume of competitors in the app store is enormous, potentially mitigating the discoverability benefits of that marketplace.

**WEB**

Your next choice is a "web" app. This sort of app is really a mobile website built to look like and function as a native app. In fact, it's often difficult to tell the difference between a web app and a native app.

Web apps are much cheaper to build and maintain because they don't have to comply with a phone's oper-

ating system or meet standards for placement in an app store. Web apps run in a browser and auto-update each time they load. Yes, you can even make an icon shortcut that looks like a native app and resides on a phone home screen.

The downsides are: not all functions may work offline; they are less intuitive to use; they can be slower to load; and they may appear less premium to users.

**PWA**

Your third choice has a ton of advocates and shows significant promise. It's basically a hybrid between a native app and a web app. It's called a "progressive web" app, or PWA.

Unlike a web app, a PWA can use push notifications and access some device features, such as gestures.

Unfortunately, this type of app does not yet work on all types and versions of browsers. This is ultimately slowing its adoption.

I have never built one of these apps, so I can only repeat what I've read — and the reviews so far are mostly positive and optimistic.

If Apple and Google don't get greedy with their walled-off stores and instead encourage the development of PWAs, it will lower the barrier of app entry for all and provide an improved user experience. This seems inevitable, but there are no guarantees yet.

One thing is certain though: We Americans love our phones and our apps. Radio must create and maintain a presence on mobile devices or risk relying completely on in-car listening, where even that piece of audio real estate is no longer the exclusive domain of broadcast stations.

*Mark Lapidus is a multi-platform media, content and marketing executive and longtime Radio World contributor. Email mark.lapidus1@gmail.com.*

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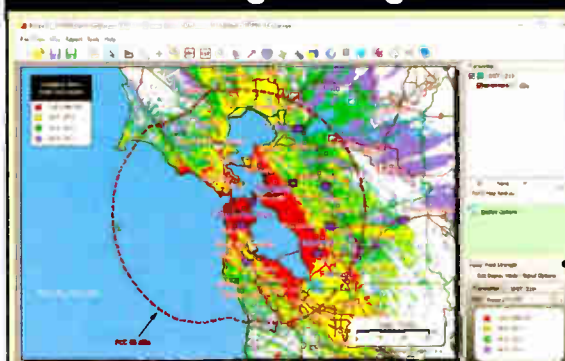
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like KGO, KFRC, KSFO, KTAB, KDIA, KWRB, KSFX, KOBY, KCBS, KQW, KRE, KTIM, KYA, etc, I will pay for copies... Feel free to call me at 925-284-5428 or you can email me at [ronwtamm@yahoo.com](mailto:ronwtamm@yahoo.com).

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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](mailto:ronwtamm@yahoo.com).

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# A Better Way to Revitalize All U.S. Radio

Put DRM to use in North America; interference issues will vanish and receivers will be cheap

BY ALAN HUGHES

The FCC has said it declined to reconsider the selection of HD Radio as the U.S. digital radio standard. But Alan Hughes, a broadcast technical writer in Australia, believes the industry should not convert to all-digital HD Radio on the AM band but should consider Digital Radio Mondiale in the 47–88 MHz

band, which he notes has been “virtually vacated by TV.” He says available DRM channels are more than enough to cover existing AM and FM stations, plus new entrants.

The following is from comments he filed to the FCC about proposal to allow the MA3 all-digital mode of HD Radio for AM stations in the United States. It has been lightly edited for style and clarity.

Currently, radio in the USA is in an interference-fueled mess.

**VHF Band 2 (FM band)** — According to the FCC database, there are nearly 14,000 FM broadcasters with over 10,000 translators, causing this band to be overcrowded and getting worse, particularly with the addition of FM translators for AM broadcasters, and FM/digital HD Radio sharing half of the channels either side of them which are used by other broadcasters. Digital power is 4–10% of their FM power to

prevent digital interference to their own signal and others. This substantially restricts the coverage area before the receiver goes back to FM or, if it is HD2–HD4, drops out altogether.

There are no pure digital HD broadcasters in VHF Band 2.

**Medium Frequency (“AM band”)** — In the FCC database there are 4,616 AM broadcasters in North America; 240 are authorized for HD operation but this does not include broadcasters who have switched off HD.

Interference from electrical disturbances is caused by electrical switch

(continued on page 46)

## Pure Digital System Comparisons

Characteristic	Medium Frequency		VHF band 1	VHF band 2	Comment
	DRM BW 10 kHz BW 20 kHz*	HD Radio (MA3) BW 10 kHz BW 20 kHz*	DRM BW 100 kHz	HD Radio (MS1-5) BW 400 kHz*	
Carrier power	Nil	Carrier is rated transmitter power.	Nil	Nil	Carrier is 89% of HD MA3 and contains no info. Wastes electricity
Digital Signal power	Almost all of the transmitted power. All digital signals equal power	Primary 6.3% Sec 0.16% radiated transmitter power.	Almost all of the transmitted power. All digital signals equal power	Primary = FM power, secondary 1% power	Comparison to transmitter's specified power
Error correction	Reed Solomon forward error correction 255,235	Reed Solomon forward error correction 255,191	Reed Solomon forward error correction 255,235	Reed Solomon forward error correction 255,191	Makes reception more reliable near coverage edge
Maximum Bitrate (kbit/s)	26.6, 55	20, 40	186	96 if primary & secondary are used.	The higher the bitrate the greater the possibilities
Image quality	Rectangular, sharper images like most phone screens	Square images	Rectangular, sharper images like most phone screens. Can refresh faster	Square image	Can be used for photos, drawings, maps, advertising
Sound quality	New xHE-AAC compression good speech @ 12 kbit/s	Proprietary system designed before 2001	New xHE-AAC compression will give more data to music	Proprietary system designed before 2001	Low bitrate music gives poor quality sound
Sound sample frequency	48 kHz current standard production frequency	44.1 kHz old CD mastering frequency	48 kHz standard production frequency	44.1 kHz old CD mastering frequency	HD radio requires frequency shift which reduces sound quality
Emergency Warning System	Wakes radio and listeners to an emergency in specified area, selects the frequency & program stream then by loud aural, text & visual messages. Normal program can be continued to those unaffected	Wakes the radio	Wakes radio and listeners to an emergency in specified area, selects the frequency & program stream then by loud aural, text & visual messages. Normal program can be continued to those unaffected	Wakes the radio	It is much more reliable than the internet and cell phones because it can be radiated from outside the area where there is power and no damage.
Alternate Frequency System	Retunes radio to the most reliable broadcast of that network		Retunes radio to the most reliable broadcast of that network		Broadcasts where else the network is found
Program Type ID/ Language ID	Comprehensive list	SIS only identifies station call sign & location	Comprehensive list	SIS only identifies station call sign & location	Radio only lists programs of interest
Electronic Program Guide	Lets listeners know when their program is on	Nil	Lets listeners know when their program is on	Nil	
Geo Targeting listeners	Zones down to Within 7 km North/South and <7 km East/West	Not specified	Zones down to Within 7 km North/South and <7 km East/West	Not specified	Good for EWS and can target countries
Indexed text	Like an electronic newspaper with a table of contents	Not specified	Like an electronic newspaper with a table of contents	Not specified	
Traffic condition broadcasts to GPS	Yes	Not specified	Yes		GPS then reroutes traffic to preferred roads. More reliable than cell phones, particularly in an emergency

Table 1

BW = Bandwidth; Asterisk (\*) means uses half of each adjacent transmission channels

Sources: <https://www.drm.org/wp-content/uploads/2019/02/DRM-Handbook.pdf>; [https://www.etsi.org/deliver/etsi\\_es/190/04/01/02\\_60/es\\_201980v040102p.pdf](https://www.etsi.org/deliver/etsi_es/190/04/01/02_60/es_201980v040102p.pdf); <https://www.nrcsstandards.org/standards-and-guidelines/documents/standards/msc-5-d/mrc-5-d.pdf>

## DIGITAL RADIO

(continued from page 45)

mode power supplies, which are in virtually everything electrically powered including LED lighting, and electric cars when charging and moving. Petrol-powered engines can cause interference. Electric power line insulators also can cause considerable interference.

On AM this causes annoying static but also unreliable digital reception, particularly for AM/HD where the digital signal is only 1% of the carrier power.

Interference between broadcasters is caused by AM broadcasters sharing half of their channels used by other broadcasters; this also occurs with HD Radio and is worse in its mode AM/digital mode. This is why many AM broadcasters have stopped broadcasting digital at night.

There are no high-powered pure digital HD broadcasts in the MF band. There is only WWFD, a city-wide station, on air.

Vehicle manufacturers have stopped using long telescopic antennas, which gather more signal for this band than

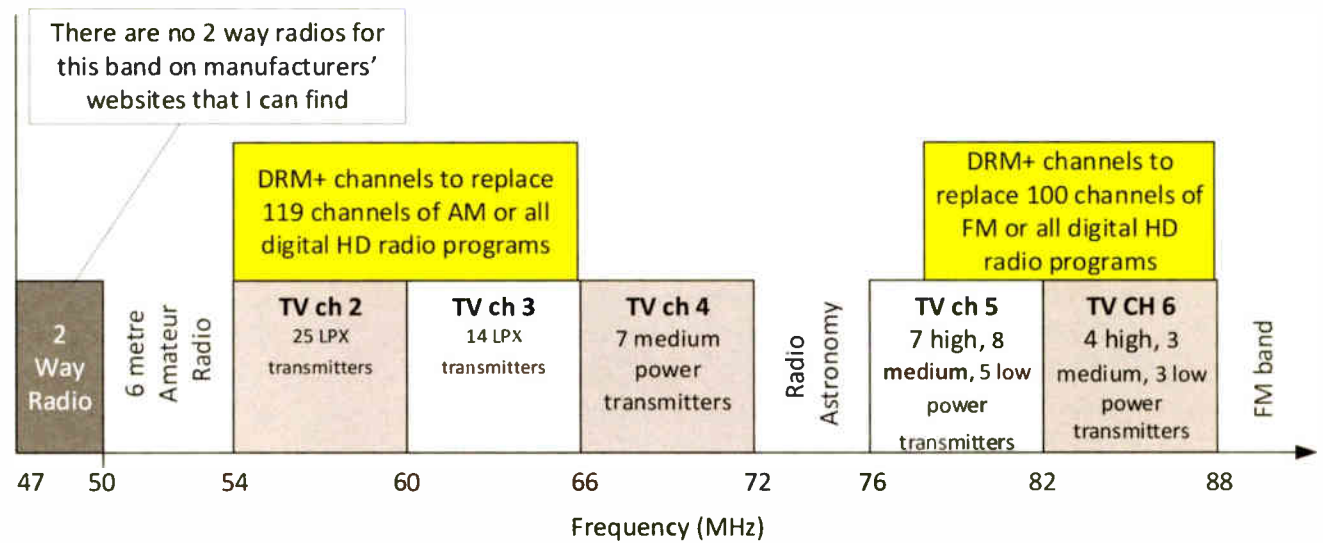


Fig. 1: VHF band 1 uses from the FCC. High power is to cover a region, medium a district, low a city and LPX a village.

the "Shark Fin" type, which is just too short. The "Shark Fin" antenna contains an amplifier that overloads on strong interference and will then affect the reliability of reception.

The FCC needs to do an independent

survey to determine what proportion of the population actually listen to HD Radio. Since the HD standard has existed for 19 years some radios will have died. One would have expected that analog AM and FM should have been superseded by now.

### OPTIONS FOR IMPROVEMENT

*Hybrid Digital (HD) Radio* is not feasible because the digital signal has to be so weak and because listeners have to remember whether it is AM or FM, the frequency and if it is HD1-HD4. This approach seems to have not been able to produce a national conversion to digital.

*Pure digital HD Radio* in VHF Band 2 in this mode still requires 400 kHz (two FM channels) to transmit one broadcaster's programs. Interference will continue when all broadcasts are pure digital in Band 2. In the medium-frequency band a signal can fit in a non-interfering channel but the sound quality is poor and it lacks the ability to carry data information, alternatively the wider channel will cause interference to broadcasters in the adjacent channels.

*DAB+* is in widespread use outside of North America but cannot be used because TV is using nearly all the available DAB+ channels.

*DRM in VHF low band (TV Channels 2-6)* in this mode only requires 100 kHz. Thus four DRM transmitters can replace a pure digital HD signal in Band 2. Each of these DRM transmitters can carry three sound programs. DRM has not been trialled in North America. It does not use any of the existing bands used by broadcast radio. This means it can be broadcast in addition to any existing broadcasts without interference with existing services and also without power limitations caused by existing broadcasters. There is no sharing with adjacent channels.

See the accompanying graphic (Fig. 1). 66-72 MHz provides 59 channels

that can be used around the locations of the above TV transmitters with the exception of TV Channel 4. Where radio broadcasters are near the seven medium-power TV transmitters they can use 47.1-49.9 and 76.1-77.9 MHz.

The FCC needs to allocate DRM frequencies to all broadcasters in groups of six consecutive channels, allowing broadcasters to share transmitters, antennas and towers. DRM can use the same frequency over the whole licence area including repeaters in black spots. There are enough channels for both AM and FM broadcasters, leaving the medium-frequency band for low population density areas such as Alaska and Arizona.

See Table 1, page 45.

### CONCLUSION

In 1998, when Australia was selecting which system to use for digital television, our Communications Lab did a side-by-side performance tests (see <http://tinyurl.com/rw-hughes>) between DVB-T and the Advanced Television System Committee's systems.

As a result the only countries to take roll out ATSC were the USA, Canada, Mexico and South Korea. The rest of the world use DVB-T, its upgrade DVB-T2 and a later Japanese 1DSB.

The FCC should follow this example and do the same trials for radio. There are two United Nations' International Telecommunications Union standards for digital radio, DRM and DAB+, which should be adopted in North America to make receivers cheap for all, just like AM/FM. This will enable a rapid rollout of an interference-free system.

I have no commercial interest in the outcome of your decision.

*The author is a broadcast technical author from Australia and has spent a lifetime in training technicians. Radio World welcomes opinion and points of view on important radio broadcast industry issues.*

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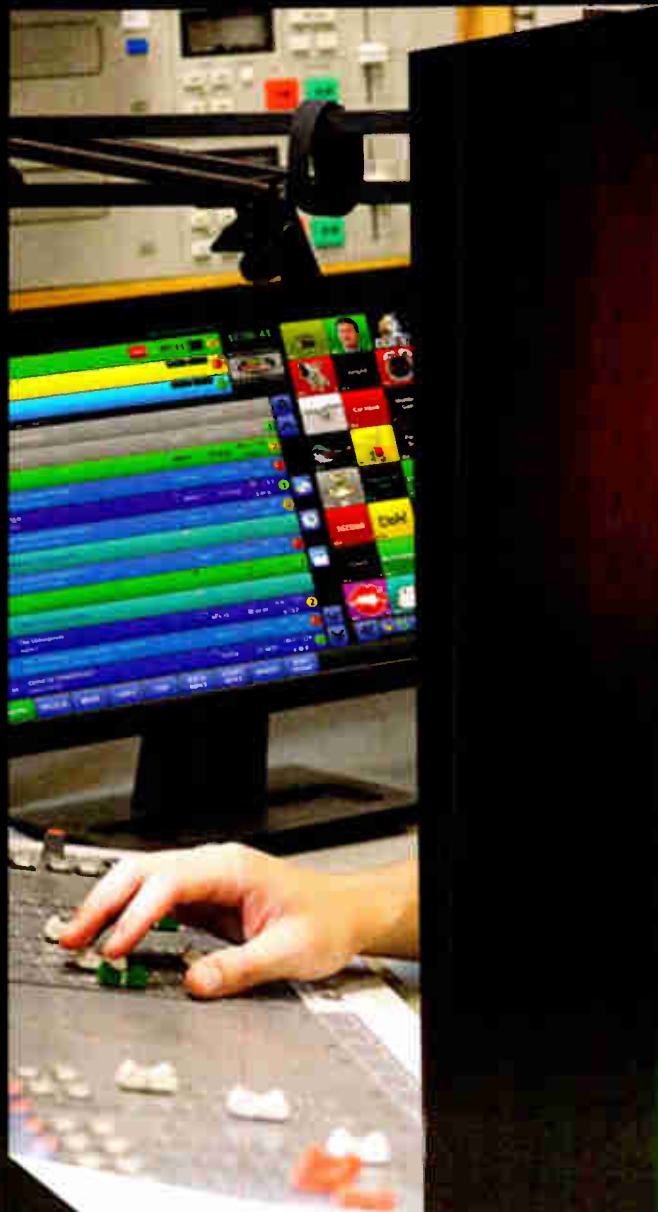
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