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Radio World (ISSN: 0274-8541) is published bi-weekly with additional issues in February, April, June, August, October and December by Future US, Inc., 11 West 42nd Street, 15th Floor, New York, NY 10036-8002. Phone: (703) 852-4600, Fax: (703) 852-4583. Periodicals postage rates are paid at New York, NY and additional mailing offices. POSTMASTER: Send address changes to Radio World, PO Box 1051, Lowell, MA 01853.



Future plc is a public company quoted on the London Stock Exchange (symbol: FUTR)
www.futureplc.com

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NAB Show returns

Proof of vaxx required at the door



Paul McLane
Editor in chief

It was 15 months ago that the National Association of Broadcasters made the decision to postpone this year's NAB Show from April to October. The fall of 2021 seemed so distant at the time, but here we are. Yet even with that necessary postponement, it will be an ambitious undertaking to stage a big annual event during an evolving pandemic. We're about to find out what the show

looks like in this context.

And it's not just the NAB Show. Like a large planet, the convention has pulled a number of satellites into its orbit. Taking place in Las Vegas that week will be the Radio Show (Oct. 13-14), NAB's Sales and Management Television Exchange (Oct. 8-9), the AES Show (Oct. 11-13) and the national meeting of the Society of Broadcast Engineers (Oct. 9-11).

Our entire culture has been feeling its way through recent complications from the Delta variant, with some in-person activities proceeding cautiously and others being cancelled. The broadcasting industry is no different; we've had regional and state conferences go on successfully in recent weeks but others postponed again. For its part, the NAB as of the beginning of September was moving ahead, with the caveat that all participants will have to provide proof of COVID-19 vaccination, a prudent and sensible requirement.

Realistically, attendance to the main event will be smaller than usual, if for no other reason than the practical problems involved in international travel, which normally generates a quarter of the attendance. Domestic health concerns will keep others at home, and some attendees may object to the vaccination requirement; I know at least one leading engineer who changed his plans for that reason.

But those who attend, and the companies who exhibit, will have the welcome chance to interact in person again, to catch up with friends, network and learn about technology. I'll be there, with my vaccination card in my hand and a mask on my face. If I see you, let's bump elbows.

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Swiss FM shutoff reverts to original date



The shutdown of FM broadcasting in Switzerland will take place on its original schedule, not on an accelerated schedule after all.

That's according to a digital working group run by the country's radio industry and its government regulator.

DigiMig (for "Digital Migration") announced that VHF radio licenses will expire Dec. 31, 2024, the originally planned switch-off date established in 2014.

DigiMig has estimated that almost three quarters of radio use was digital as of the end of last year, a level of penetration that prompted a plan to advance the shutdown of FM to August of 2022 for the Swiss Broadcasting Corp. (SRG) and to January 2023 for private radio.

But now the group says that, although broadcasters in German- and Italian-speaking Switzerland were mostly ready for the earlier schedule, not enough broadcasters in French-speaking Switzerland would be prepared.

A later date also helps consumers who may need to retrofit older cars. (New vehicles are almost all DAB+ compatible, DigiMig said.)

Further, broadcasters will save money with the postponement because stations won't have to broadcast in both formats for an extended period of time.

The website Radio Central reports that in recent months, the shutdown has become more of a political issue, and that more voices had called the FM sunset into question.

In 2017, Norway became the first country to migrate from FM to digital. 



Broadcasters convince FCC on fee question


Broadcasters succeeded at avoiding big increases in their FCC regulatory fees this year.

The final FCC order setting fees for FY 2021 was issued, and rates for radio stations are pretty much what they were last year, instead of being increased. Many rates actually ticked down.

The National Association of Broadcasters and state broadcast associations had pushed back on the planned hikes, citing the pandemic but also arguing that the way the commission allocates such fees is unfair, putting too much onus on commercial radio and TV stations and none on "Big Tech" companies that directly benefit from commission services. Noncommercial radio and TV stations are exempt from these fees.

The original proposal called for increases of 5% to 15%, while NAB noted that the FCC's general salary and expenses budget increased by only 0.5%.

NAB estimates that the industry saved about \$5.3 million this year because of the decision.

The FCC also has a notice of proposed rulemaking regarding several fee issues, and invited comment on further fee reform. 

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This QForce custom-configured mapping drone is an advanced RF spectrum collection platform. It is shown with broadcast towers serving Salt Lake City.



Photo courtesy of iHeartMedia Communications

5

Writer
Randy J.
Stine

RW's longtime lead news contributor interviewed iHeartMedia engineering veteran Charlie Wooten in the Sept. 1 issue.

Drones become part of radio's toolkit

More and more unmanned aircraft are buzzing around broadcast towers

Unmanned aircraft systems (UAS) are rapidly carving out an important place in the toolkit that radio broadcasters use to manage tower sites more efficiently.

Drone-based tower structure surveys are used widely now to diagnose the health of RF systems and broadcast structures. In addition, tech departments use drones to take elevated RF

measurements to analyze signal coverage and validate antenna radiation patterns.

The Federal Aviation Administration approved the commercial use of drones in August 2016. Industry experts say this unleashed an industry loaded with potential applications for broadcasters, including using video and still photos of broadcast antennas and their structural components for preventive maintenance measures.



At NAB Show

At least four sessions in the Broadcast Engineering & IT Conference explore drone technology and its broadcast applications.

Below

A drone-based FM and HD Radio measurement system from SixArms

"This is still a relatively new industry, where there's so much creativity and potential. The integration of the technology has made a dramatic impact on broadcast operations," one executive-level engineer told Radio World.

The FAA's small unmanned aircraft rules (Part 107) allow a range of businesses, such as radio broadcasters, to use unmanned aircraft that weigh up to 55 pounds including their onboard systems. Drones must remain within line of sight of the remote pilot and be used during daylight hours.

The maximum altitude is 400 feet, though an exception allows more height when operating within 400 feet of a tall structure such as a broadcast tower.

"When surveying a tower, a drone is commonly permitted to fly an additional 400 feet above the top of the tower, if the aircraft remains within 400 feet of the tower laterally," according to one expert.

Advocates say drones can more easily determine the integrity of transmission lines via infrared camera

“This is still a relatively new industry, where there’s so much creativity and potential.”

inspections and more safely and accurately assess antenna performance by limiting the amount of tower climbing and drive-by coverage analysis. While nothing can replace an actual physical inspection, they say a drone can help reduce the number of climbs, verify asset locations and heights on a structure, and increase safety.

Blossoming services

A number of broadcast tech companies have expanded into unmanned aircraft services since 2016 as UAS have gained in popularity.

Paul Shulins, president of Shulins Solutions, said drones, used effectively, can help cut costs and increase safety margins for both humans and broadcast systems.

"The main operations that broadcast engineers use drones for are visual tower inspections, thermal tower inspections and antenna pattern verification measurements." He said broadcasters are quickly discovering the advantages.

"Costs for tower crews vary wildly across the country, but in general it is fair to say that drones are less expensive to operate than hiring a tower crew. They can also be deployed with very little notice, operate in a wider range of weather conditions and provide perspectives not possible with a tower crew," Shulins said.

Unmanned systems are becoming a preferred method for RF pattern verifications,



Courtesy SixArms

“When your competitors ask what you put on the air, you can chuckle knowingly.”

“marvelous”

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“obvious choice”

Best-Seller.

“perfect”



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“right out of the box”

“You must hear this processor to believe it”

“That’s a powerful clipper!”

“loud, clear on-air sound”



he said, for reasons of both cost and safety.

"Drones have a clear advantage because typically these measurements can be made within a single day, where ground-based measurements can take several days or even weeks to accomplish. Helicopters are commonly used for pattern measurements as well, but are much more expensive to operate and are limited on how low they can fly."

Recently, affordable, gyroscopically controlled infrared cameras have come on the market at a reasonable cost, Shulins said, though he added that drones will never replace human tower climbers for certain operations.

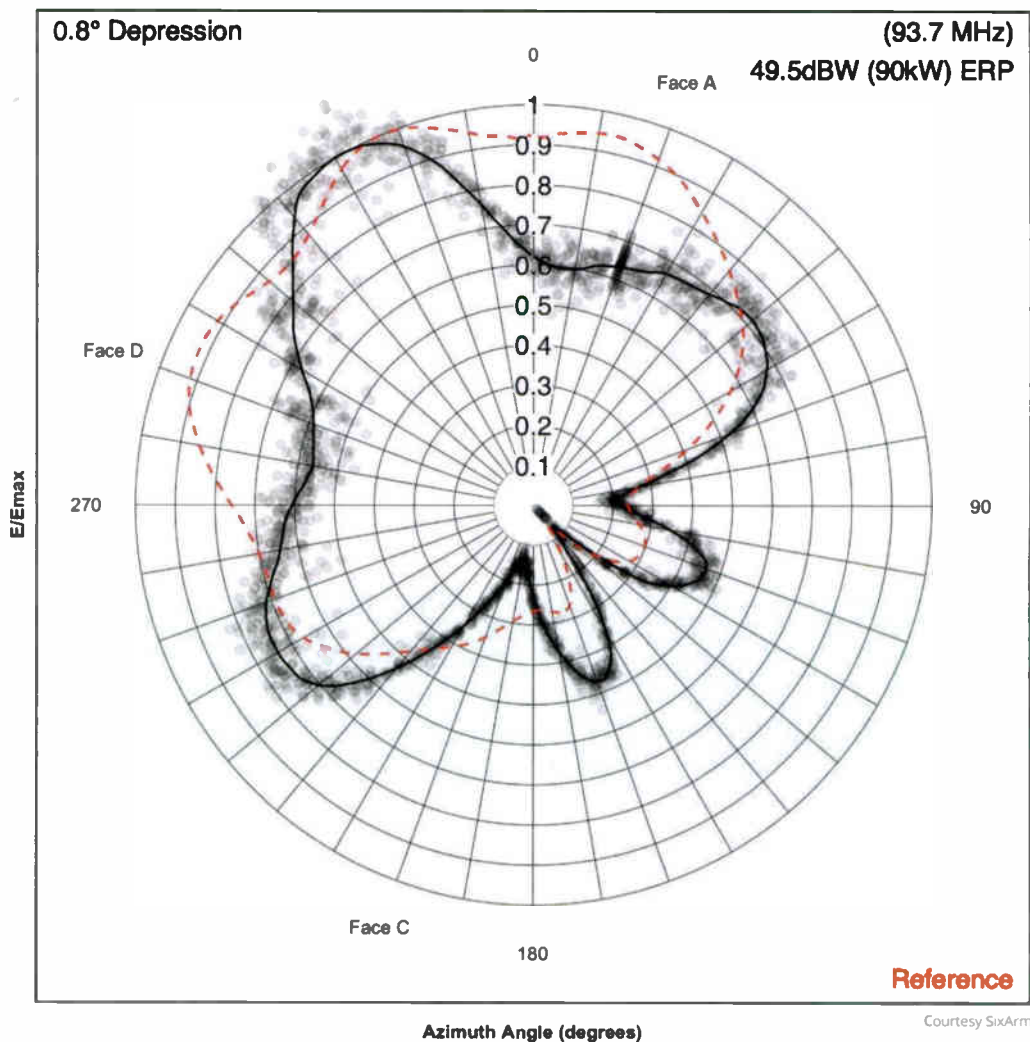
"What (drones) can do is help tower crews by pointing out areas in advance where problems exist through photos, saving time and labor."

Jason Schreiber is managing director of RF measurement and consulting firm SixArms, which has developed specialized RF measurement payloads to attach to drones. He says new RF measurement instrumentation can be adapted and installed on a drone and allow for automation and reliable data capture. In addition, the data can be used to optimize antenna patterns and verify radiated power.

"The automation, accuracy of signal capture, ease of flight, large altitude range and easy deployment make drone-based RF measurements a more attractive setup than the traditional van with a 30-foot pump-up mast. All broadcast standards can be measured, including AM radio, DRM, FM and HD Radio, VHF and UHF ATSC and DVBT as well as DAB," he said.

SixArms uses its off-the-shelf Airborne Radio Measurement Systems (ARMS) software and hardware to measure and characterize broadcast antenna patterns to help identify any installation and manufacturer defects.

He said the use of machine learning and AI to capture critical RF information will continue to grow and further expand the applications of drones for RF measurement.



“Typically these measurements can be made in a single day, where ground-based measurements can take several days or even weeks.”

Above
An azimuth pattern from SixArms showing an incorrectly installed FM antenna. The black trace shows the drone measurement, the red shows the theoretical designed pattern.

Drones are being used not only to perform visual tower inspection but to identify damage and structural defects, Schreiber said, by making use of thermal imaging for hot spot analysis as well as being fitted with LIDAR (light detection and ranging) to help with automated structural analysis.

"Sophisticated capture algorithms interweaved with drone-based positional data allow for unprecedented accuracy and reporting functionality."

INSIDER

What's Inside?

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Neuhoff Media Consolidates Multiple Markets with Gateway

By Kerri Cawley

Kerri Cawley is IT Director/Contract Engineer for Neuhoff Media with a diverse engineering background in radio and TV facilities, and experience in IT. Kerri recently streamlined operations by consolidating 3 markets and 12 stations into one backend facility in Springfield, IL.

I recently designed new centralized network operations for Neuhoff Media with 4 stations in Springfield, 5 stations in Decatur, and 3 stations in Bloomington. These markets cover most of central Illinois. Tieline Gateway codecs, Nexgen automation and Wheatstone AoIP are integral components of the setup.

Gateway Setup

We purchased Tieline's Gateway 16 channel codec with a WheatNet-IP card for the studio to interface with our AoIP network. Its main purpose is to provide audio feeds for two of our markets - either direct to STLs, or to processing at the remote transmitter sites. We also installed a Gateway 8 channel codec at one of our transmitter sites in Decatur, which feeds our various RF STL feeds to the other sites. Backup Bridge-IT units at each site offer fail-over if the main site goes down.

The Gateway codec's high channel density was helpful in saving rack space and being able to integrate directly into our WheatNet AoIP network was a factor in deciding what codec to use. Having direct WheatNet routing from the codecs makes it much more efficient for studio connections and routing.

I've handled most of the install and network design and integration of the codecs was fairly straightforward. Jacob and the Tieline crew in Indianapolis have been helpful when I had any questions. Overall, I'm pleased with the performance and reliability of the Tieline codecs and system generally.

Tieline 
The Codec Company



The Tieline Gateway below a Genie Distribution and Wheatstone Blades

Site Connections

At our studio we use a Comcast EDI fiber with secondary EPL connections to each market for feeding Wheatnet AoIP to remote studios. For the transmitter site feeds, DSL and wireless is used in our Bloomington market, as well as a couple of our sites in Decatur along with Comcast Business HFC connections. At a few of our transmitter sites internet connectivity can be an issue, but we have recently added an Airfiber link to our Bloomington market as our primary connection to the transmitter sites and Tieline codecs as a backup.

Our fiber connections are very stable, as are the HFC connections. DSL and wireless can be a bit sketchy, which is why we opted for a Gateway and STL direct feeds from one of our main towers with a robust IP connection, with backup LTE. IP brings the flexibility of sending audio anywhere I need it,

(Continued on Page 2)



compared to RF STL systems, where you're limited by distance or obstructions. In this project, I combine the two technologies to make the path as reliable as possible. Without it this project wouldn't be possible.

I usually run AAC-LD 44k/256kbps with auto jitter buffering. It seemed to be the most reliable and low delay. I like to keep our feed delays to a minimum without having buffer underruns.

Gateway Delivers AES67, ST 2110, NMOS & MUCH More...

Tieline has specialized in IP streaming for nearly 2 decades. After developing industry-leading cellular GSM, 3G, 4G, and 5G codec technologies, largely deployed at the remote end of connections, technology in the Gateway focuses on AoIP on the studio side.

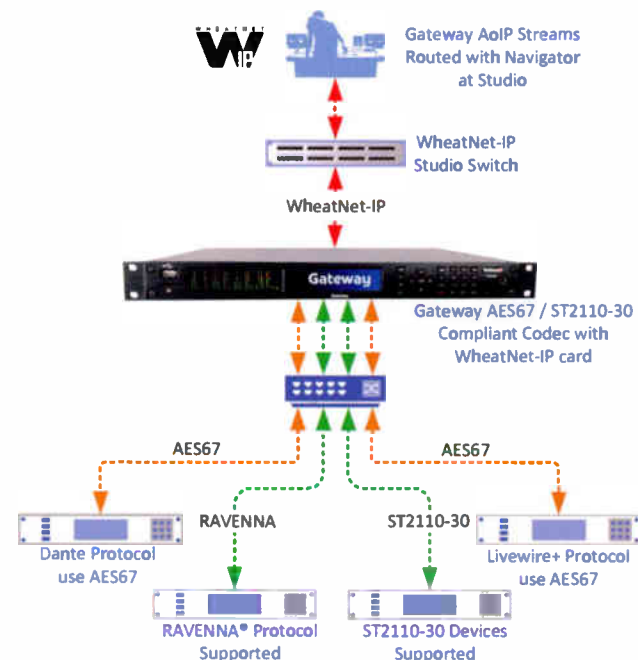
AES67 and ST 2110 at the Studio

The Gateway is compliant with AES67 and SMPTE ST 2110-30 for audio transport. These standards provide the framework for transporting uncompressed PCM audio around the broadcast plant. The AES67 and ST 2110-30 standards support Session Description Protocol (SDP) for configuring the number of audio

Tieline's Toolbox Web-GUI is ideal for configuration and control of codecs. It's also convenient for doing firmware updates. All feeds are inside the network over site-to-site VPN for security, so nothing is exposed to the outside. I also use the Cloud Codec Controller, but haven't set it up yet with all the sites. It nice to manage multiple codecs with one software program instead of opening a bunch of browser links.

channels per stream, encoding format, bits per sample, sampling frequency and number of samples in a packet.

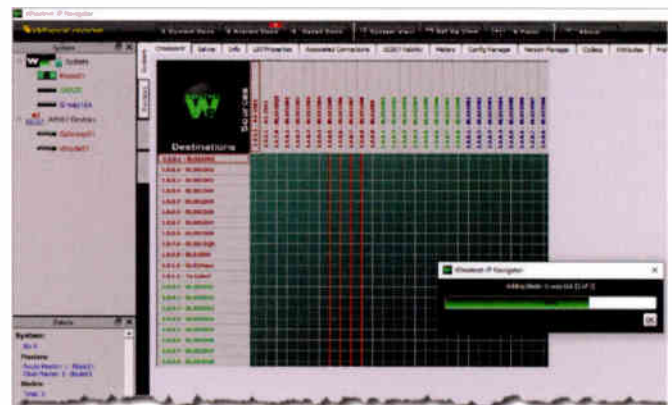
As a result, Gateway and Gateway 4 codecs can stream AES67 digital IP audio between a range of equipment that won't ordinarily connect using different protocols, but that support AES67. These devices would normally employ proprietary AoIP protocols for routing AoIP audio throughout a broadcast plant. However, in the real world broadcasters want to connect equipment from different vendors. Examples of proprietary AoIP protocols include WheatNet-IP, Livewire & Dante. This is where AES67 and ST 2110-30 provide minimum standards for communicating between devices from different AoIP vendors.



The Gateway AoIP codec supports connecting with proprietary AoIP protocols and using AES67/ST2110-30

No Discovery in AES67/ST 2110

AES67 and ST 2110-30 only address stream transport, packet setup and synchronization (timing). Nothing is mandated regarding discovery.



Gateway in Wheatstone's Navigator software

Tieline offers optional WheatNet-IP cards at purchase to interface directly with a WheatNet-IP network. Codecs then appear as Blades and seamlessly support discovery and control using Navigator software.

Discovery & Control with NMOS, RAVENNA® and Ember+

Gateway and Gateway 4 codecs are compliant with AMWA NMOS standards IS-04 and IS-05 which delivers the missing link: discovery, registration, and ultimately control for ST 2110 AoIP streaming. NMOS data models and open standard APIs deliver a new level of interoperability and control with networked equipment throughout the broadcast plant. More straightforward interoperability between products allows end users and service providers to build better systems.

Tieline Gateway and Gateway 4 codecs now also support RAVENNA for discovery and control, to interface more easily over RAVENNA AoIP networks. The Gateway and Gateway 4 also support Ember+ which is an openly available control protocol allowing equipment to interact more easily. Ember+ control software can easily manage devices from different manufacturers by integrating them into a single user interface.

Gateway 4 Codec Provides New AoIP Options

Tieline's new Gateway 4 codec was released earlier this year and hundreds have already been shipped to broadcasters across the US and around the world. The Gateway 4 includes support for AES67, ST 2110-30, NMOS, Ember+, RAVENNA, AES3 and analog I/O as standard, and an optional WheatNet-IP card is available when purchased.

IP Streaming Options

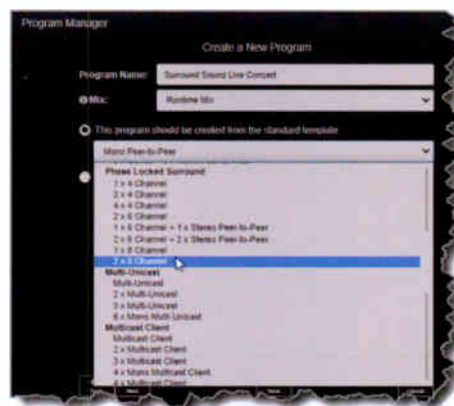
The Gateway 4 has four channels and is ideal for transmitter sites, remote trucks or rack-mounted remote kits. It provides two stereo connections, or one stereo and two mono connections, or up to 4 mono connections. The codec also supports multiple unicasting to up to 20 endpoints and multicasting.

For affiliates and smaller stations, it is often used to

More NMOS and Ember+ features and capabilities will be developed over time and Tieline's Gateways will continue to evolve and integrate new functionality via firmware updates.

Multichannel Phase-Locked Options

With demand for multichannel and surround sound streaming options increasing, up to 8 channels of digital phase-aligned multichannel audio are supported in Gateway to provide a range of flexible alternatives. Selectable options include 6 channel (5.1 or 6.0), 8 channel (7.1 or 8.0), and 4 channel phase-aligned audio streams.



transport studio-to-studio links, or a primary stereo STL path with a backup link, or an STL path can be combined with a stereo or dual mono remote links. Customers with higher channel requirements usually gravitate towards the Gateway multi-channel codec supporting up to 16 channels.



The Gateway 4 codec

Interoperability and Redundancy

The Gateway 4 seamlessly integrates with all Tieline

IP codecs and delivers hitless packet switching using SmartStream PLUS redundant streaming, plus bandwidth aggregation using Fuse-IP technologies over internet connections. The codec features dual internal power supplies, dual LAN ports and dual AoIP ports.

Gateway 4 is interoperable with all Tieline IP codecs and compatible over SIP with all EBU N/ACIP Tech

3326 and 3368 compliant codecs and devices. The Gateway 4 is configurable through an embedded HTML5 Toolbox Web-GUI interface and is also fully controllable using Tieline's Cloud Codec Controller.

Don't miss test driving the Gateway and Gateway 4 codecs during NAB2021 at booth N3234. If you can't make the show, email sales@tieline.com to request a personal test drive of the codecs via Zoom.

Read How to Win a Bridge-IT Codec

At NAB2021 you will have the opportunity to WIN a FREE Bridge-IT codec simply by scanning your pass at the Tieline booth!

Thousands of broadcasters around the world rely on Bridge-IT and Bridge-IT XTRA codecs for live broadcasts every single day. The codecs are ideal for affordable, high performance STLs and backup links over IP.



The team from Radio Alabama Won a Bridge-IT XTRA at NAB2019

How to Enter:

1. Visit Tieline booth N3734 & scan your pass to win.
2. Winner will be notified by SMS or Phone.

Terms & Conditions:

1. Dealers and Tieline staff ineligible.
2. Prize is not redeemable for cash.
3. One prize per person only.

Bridge-IT and Bridge-IT XTRA are also perfect to install at the studio for low-cost remotes using Tieline's Report-IT Enterprise app, or to connect to another Tieline codec.

So don't miss your opportunity to WIN and visit Tieline at NAB2021 in the North Hall at booth N3734.

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* The Gateway 4 codec supports 4 channels only and is not upgradable to support more channels.

Full-time coverage

The burst of drone activity in U.S. broadcasting is leading to more innovative tools and ways to use data, said Phil Larsen, VP of airborne operations for QForce, part of QCommunications.

"The RF contour is not just a report to be filed away anymore. It is now a tool, one to assist broadcast engineers and help the listener receive a better signal. The drone allows for engineers to review data immediately upon the aircraft landing," he said.

Larsen hopes to see the broadcasting industry reach the point where a fixed drone is stationed at all tower locations that can remotely operated or programmed to fly routinely or whenever needed.

"Drones and the sensor capabilities are by oneself growing expeditiously, thus the use case will increase." He said QForce offers a means of installing a drone at each location and the ability to fly inspection operations at any time of day all year long without the need of a pilot, autonomously. "This is specifically useful for hard-to-reach locations."

There are some limitations to using drones near broadcast towers. The FAA has specific rules surrounding the inspection of broadcast towers. Operators must be familiar with FAA Part 107.65 rules, experts say.

In addition, Larsen said some broadcast tower applications do require FAA waivers or special permissions.

Antenna modeling

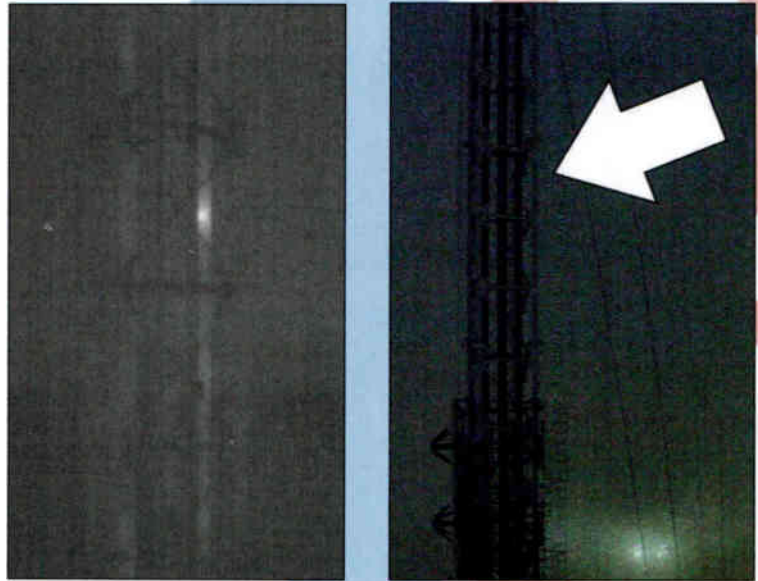
Keith Pelletier, vice president of antenna manufacturer Dielectric, said drones are a much more economical way of collecting data than traditional field measurements and equipment.

"Dielectric has developed a way to characterize the antenna azimuth and elevation patterns with the data collected by the drone. Typically this was done with a van with a large mast, which included multiple runs of data and thousands of points of collection to be analyzed to determine if the antenna was performing per the antenna manufacturer's specifications," he said.

The company's involvement began when drone measurement companies started having difficulty with the waivers required and time spent on waiting for approvals. Dielectric came up with a method of collecting all the data required at the 400-foot level so no waivers were required.

Dielectric is able to assess whether electrical characteristics of the antenna are correct when measured only in the near field. "The Dielectric solution is to draw the entire array to analyze the near-field elevation pattern and compare that data to the near-field elevation pattern measured by the drone. The 3D rendering and analysis is done utilizing High Frequency Simulation Software, or HFSS," Keith Pelletier.

Essentially the antenna's far-field elevation pattern as simulated in HFSS is compared to what Dielectric measured



Courtesy Shulins Solutions

Above


Paul Shulins provided this photo, taken by drone, of a tower line section that was heating up. "Through this image I was able to identify for the client exactly where the defect in the line was. The height on the tower was just over 950 feet AGL. The heating can be seen in the IR photo on the left, while the right photo is a visual image of the same area."

at the factory to validate if its modeling is correct, said Pelletier.

"We then take the near-field elevation data collected by the drone to see if it matches up to the same cut in HFSS; and if so we know the far-field elevation pattern when formed is correct."

There are several training programs available to get FAA Part 107 licensing, which is required for any type of commercial work. The exam requires an applicant to become familiar with FAA airspace regulations and a variety of other rules.

"It's important to keep airspace safe. The hobby-type drones are fun but are not necessarily safe around towers, guy wires and high RF environments," Shulins told Radio World.

"Either training and licensing yourself to operate a drone, or hiring a skilled licensed pilot with the right equipment and skillset to safely fly your tower and accurately interpret the results, is the smart thing to do." 

“Sophisticated capture algorithms interweaved with drone-based positional data allow for unprecedented accuracy and reporting functionality.”

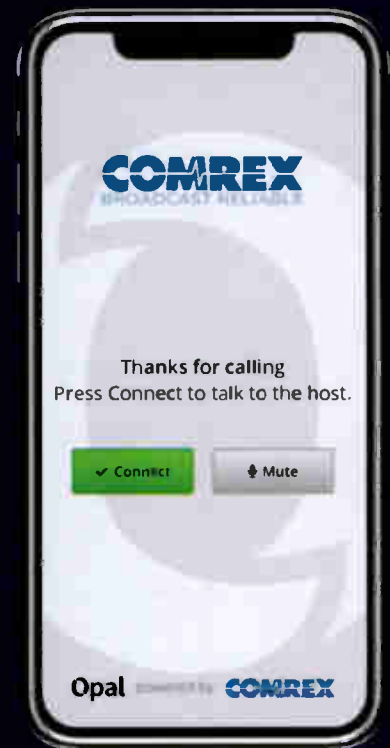
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World Radio History

Amp up your bathroom visits

Here's an option for station monitoring around the building



John Bisset
CPBE

has spent over 50 years in broadcasting and is in his 31st year of Workbench. He handles western U.S. radio sales for the Telos Alliance. He is a past recipient of the SBE's Educator of the Year Award.



Ideas welcome

Workbench submissions are encouraged and qualify for SBE recertification credit. Email johnpbisset@gmail.com.

Broadcast engineer Dan Slentz writes that when he was a teen working at WJER(AM/FM), the chief engineer had installed a speaker in each room wired with multiple 70-volt audio lines to a rotating switch and volume control. "You could listen to the AM station, FM station or any of the three production rooms," he said.

Being 70 V, the audio quality wasn't especially great, but when you were working after hours and you went into a room, you could monitor Air or what was going on. Dan says every station he has ever worked at had audio monitoring in the bathrooms. Even at CBS station WLWQ, "QFM" in Columbus, where the bathroom was in a public area down the hall, all occupants of the ninth floor of Nationwide Tower 2 could listen to QFM or Z-rock FM.

Dan recently visited the Monoprice website, www.monoprice.com. He loves it for its really good cables with lifetime warranty, and he says you can find other cool items on the site, of the sort that the old MCM Electronics used to have.

One such item was this 40-watt, wall-mount amplifier with a touchscreen, Bluetooth, auxiliary inputs and USB and microSD slots. The amp even has an infrared remote control. And it provides an FM receiver and stereo output.

Dan notes that of course, this is made offshore. But all this comes in a compact footprint and costs only \$120.

The accompanying images show the USB and microSD slots on the underside of the module, and the wiring connections on the rear.

If it's time to retire your old 70-volt speaker wiring or you're thinking of adding a speaker monitor system, this module might be the solution. Consider mounting it in the breakroom, reception area or in your bathrooms. At monoprice.com, search part number 36375.



“ This 40-watt, wall-mount amplifier has a touchscreen, Bluetooth, FM receiver and other nifty features. ”

Right
This 40-watt amp from Monoprice has microSD and USB ports hidden under its lower lip.

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Sound Screw

If you're planning new studio construction next year, you may want to discuss with your architect or acoustic consultant the newly released acoustic Sound Screw, developed in Sweden.

Imagine a screw, the "head" of which is separated from the threaded body with a coiled spring. It's an inexpensive method of reducing vibration from joists into the drywall, as the spring dampens the vibration transfer.

Although it is only available in Sweden at the moment, Akoustos AB is approaching companies outside Sweden to license its technology.

The company says that in lab tests, a 9 dB reduction of sound transfer was measured. This calculates to about half the perceived sound transferred using traditional drywall screws to hold sheet rock panels.

Check out www.akoustos.se.

Keep fans quiet

In an age when nearly everything seems to be in short supply, you may be tempted to substitute a fan in a piece of equipment. All fine and good, but contract engineer Stephanie Donnell has a caution if you're installing a DC "brushless" fan in this situation. It could result in an EMC noise issue due to the current pulses generated by the driver circuit that operates the field coils of the fan motor.

EMC, electromagnetic compatibility, refers to the interaction of equipment with its electromagnetic

“Installing a muffin fan? Consider a model rated for 220 V but run it at 110 V.”

Left
The amplifier module includes a touchscreen.

Right
The module features compact wiring interconnection.

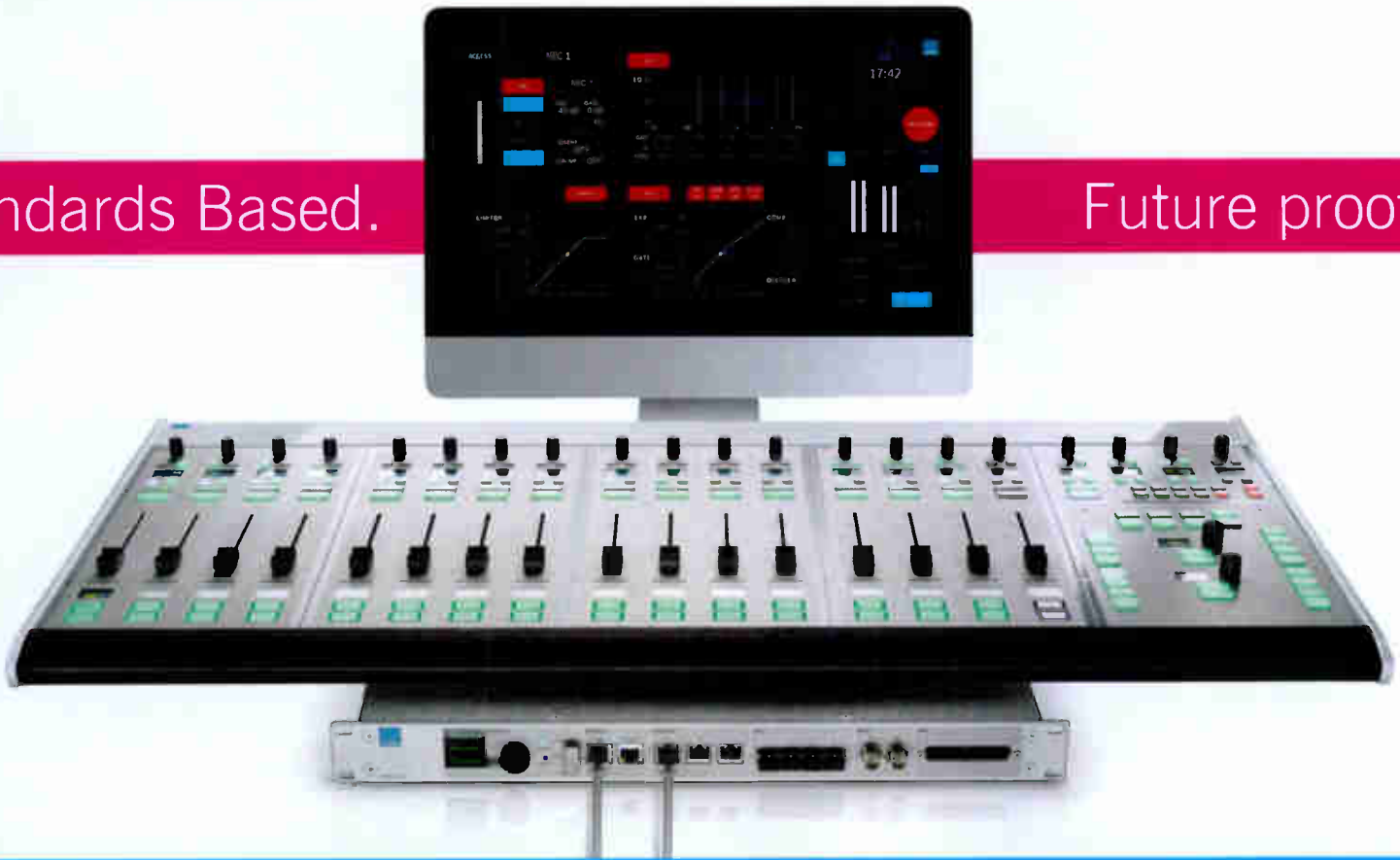
environment and other devices. These electromagnetic fields could result in something that sounds like spark plug noise. You can correct this by adding a simple R/C filter on the fan's "+" voltage lead.

Another tip involving muffin fans is to use models rated for 220 VAC but run them at 110. This is helpful in a situation where you need to improve ambient cooling around any equipment but where you don't want a fan that produces a miniature hurricane or the noise associated with high-speed operation. Stephanie has used 220 V fans over the years to help cool everything from a very old computer to a Larcant-TTC TV translator.

Stephanie also saw Steve Tuzeneu's recent tip about discouraging bees from nesting in satellite feed-horns. She adds that WD-40 brand spray lubricant works great for dealing with bees. We may not always have a can of flying insect spray, but who doesn't have a can of WD-40 handy? 🐝

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About This Section

It has been 2-1/2 years since the NAB Show was held in person. The 2021 iteration of the show hopefully will represent a step toward normalcy in the industry's ability to convene and confer face to face.

In this issue, we sample the topics that will be part of the Broadcast Engineering & IT Conference. Next issue we will preview the fall Radio Show, which also will be held that week.

16



Though this year's show won't actually occupy the new West Hall of the LVCC, for most attendees this will be their first look at the spectacular expansion of the facility.

Photo: Robert Leppke, Las Vegas Convention And Visitors Authority

BEITC serves "the gods of the machines"

NAB's engineering conference turns 75 years old

For many Radio World readers, the Broadcast Engineering & IT Conference is the main event at the NAB Show.

The conference turns 75 this year. We asked NAB Senior Vice President, Technology Lynn Claudy about it.



How did the conference get started?

Lynn Claudy: NAB consultant and former staffer Skip Pizzi wrote a NAB PILOT blog about this very subject in early August at nabpilot.org. Here's an excerpt:

"The year: 1947. The place: Atlantic City, N.J. The event: The first NAB Broadcast Engineering Conference (BEC) — subsequently renamed the Broadcast Engineering and Information Technology (BEIT) Conference — held

What

NAB Show 2021

Where

Las Vegas Convention Center

When

Oct. 9-13

How

nabshow.com

How Much*

BEITC registration for NAB members is \$399, for non-members \$599. Various packages, a la carte options and student discounts.

COVID-19 info

All participants must provide proof of vaccination. For more info visit nabshow.com, click Attend, then Health & Safety

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continuously on an annual basis thereafter, making the 2021 BEIT Conference the 75th such event.

"Prior to this conference, NAB's Engineering department had collaborated with the Institute of Radio Engineers (IRE), the University of Illinois and Ohio State University to produce a standalone broadcast engineering conference hosted by the universities, dating back to 1938. That event was curtailed after the 1942 program due to World War II, and NAB was involved again when it restarted in 1946.

"But the following year NAB decided to launch its own engineering conference, to be held in conjunction with the 25th NAB Convention in Atlantic City, and the NAB BEC was born. Among the presentations there was a demonstration of 'Unusually High Frequencies in FM Relays' by Major Edwin Armstrong.

"The first BEC was a one-day event, held on Sept. 15, 1947, at the Atlantic City Convention Center, renowned for its many years as the site of the Miss America Pageant. The conference grew to two days at the 1948 NAB Convention in Los Angeles, expanded to three days the following year and settled on a four-day length at the 1950 show in Chicago. It later expanded to a fifth day when partner content was added, a length it currently maintains at the 75th conference, to be held Oct. 9-13 in the South Hall of the Las Vegas Convention Center.

"That growth over the years indicates the conference's popularity, and historically it has had the highest attendance — and the greatest longevity — of any NAB Show educational offerings."

RW Lynn, who conceived it and who were the early drivers of its success?

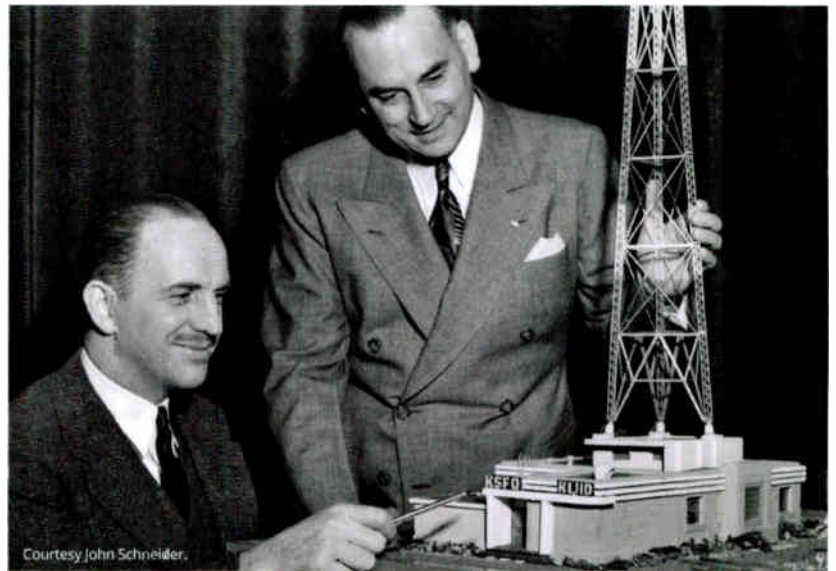
Claudy: Much of the thinking and strategy behind launching the Broadcast Engineering Conference may be lost to antiquity, but a lot of credit should go to then-NAB President Judge Justin Miller and NAB Director of Engineering Royal V. Howard.

Miller, a former associate judge of the Court of Appeals for the District of Columbia, served as NAB president from 1945-1951. Howard, former VP of engineering at KSFO in San Francisco, was director of the engineering department at NAB from 1947 to 1950.

In those early days, questionnaires were sent out to the broadcast engineering community each year seeking guidance as to topics for technical papers for presentation at the NAB Convention. The NAB Conference Committee, which still exists today with a slight name change, supervised the final conference agenda to conform as much as possible to the survey results.

RW An anecdote from the early days?

Claudy: According to the conference transcripts, the first conference was opened by Royal Howard with the following auspicious statement: "My name is Howard. Most



Courtesy John Schneider.

“ NAB President Justin Miller told engineering attendees in 1947, ‘I have always been inclined to regard you folks more or less as the gods of the machines.’ ”

Above
Royal V. Howard, left, was NAB's director of engineering in 1947 when the BEC was born. He's shown with Wesley Dumm, owner of Associated Broadcasters, in a 1942 photo.

people think that I am the director of engineering for NAB; actually I am the coordinator of confusion."

Right before lunch, the group was addressed by NAB President Judge Justin Miller, who said: "Mr. Chairman, I am very happy to be with you this morning. I have not been going to most of these clinics, but I felt a particular obligation to the engineers, especially because NAB may seem to have been neglecting you during the last couple of years preceding this one. As a matter of fact, I have always been inclined to regard you folks more or less as the gods of the machines. I confess that if there is anything I do not know about in broadcasting, it is engineering."

RW Can you give us sampling of radio technology topics that appeared on the agenda over the years?

Claudy: The BEC and the current BEITC have always, by design, centered on the important topics of the day

Continued on page 22

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for broadcast engineers. Because of how papers and presentations are sought out and selected, it has been high on the relevance scale for technologists and engineers attending the show, and a great educational adjunct activity to visiting the exhibits on the show floor.

It's pretty hard to pick out the important topics at any given point in time. But a sampling of four presentations might be illustrative of the value and, in retrospect, the perspective that the conference has provided over the years:

1 Going back to the first NAB Engineering Conference again, one of the talks was on "FM Broadcast Station Construction" presented by Paul A. DeMars, a consulting engineer with the Raymond Wilmotte organization. He ended his talk with the following, which tells you something about the times:

"We hear a lot about the coming atomic age. There have been a lot of serious and semiserious statements made that because of the vital importance of broadcasting in our national life, broadcasting stations, at least a

building? The entire transmitting plant could be shipped to the site, the walls bolted together in typical prefab fashion and the various circuits joined by terminal boards. Ridiculous? Today, possibly ... not in the radio station of the future." ...

"Monitors could be heading for obsolescence. Transmitter crystals have been improved to the point where it is actually true that some modern transmitters are more stable than the companion frequency monitors." ...

"The radio station of the future will eventually use some form or some adaptation of automatic programming. Many point to the operator who is required to be on duty and to the possibility that a so-called 'robot' operation would result in programming devoid of personality. Perhaps a compromise will be the semi-automatic operation, in which the operator on duty can select or cue any desired record by pushing a button."

3 The NAB Broadcast Engineering Conference has long sought reports from standards organization and other groups to report their progress at the annual convention.

“The entire transmitting plant could be shipped to the site, the walls bolted together in typical prefab fashion and the various circuits joined by terminal boards. Ridiculous? ... Not in the radio station of the future.”

certain number of the large key ones, may have to be put underground in order to prevent a national panic in the event that our present facilities should be totally wiped out," he said.

"Possibly the large number of FM stations that are technically feasible and that will in all probability be built scattered all over the U.S. within the next decade may furnish the national service, even in the event of atomic war, that will take the place of the almost impossible problem of putting the old standard facilities underground."

2 A talk from the 1957 conference titled "The Radio Station of the Future" presented by John M. Haerle with the Collins Radio Company showed a perspective on how radio might be changing in the future. Here are a few of the ideas from that talk, both prescient and otherwise:

"Would it be beyond the realm of possibility to envision a transmitter built in open fashion on the walls of its own

For radio, the National Radio Systems Committee has been a consistent presence at the conference since the early 1980s, whenever announcements were timely.

Formed in 1958, though, there was another NSRC, which stood for National Stereophonic Radio Committee. At the 1960 conference, C.G. Lloyd, former NSRC chairman, presented the progress of that committee's quest to deliver stereophonic broadcasting and had just delivered a report to the FCC on the subject. The NSRC had received 14 proposals for FM systems, at least seven for AM and four for TV sound. Each of these broadcast platforms eventually followed different circuitous paths to stereo — 1961 for FM stereo, 1984 for television sound and 1993 for AM stereo — but the NAB Broadcast Engineering Conference helped engineers understand the process from the beginning.

4 Radio has endured many technical controversies, with digital radio being a particularly salient example.



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At the 1991 NAB Broadcast Engineering Conference, NAB sponsored a demonstration of the Eureka-147 DAB system with transmissions from the top of the "H" on the Las Vegas Hilton Hotel next to the convention center (now the Westgate) and a repeater installed on the roof of the Golden Nugget Hotel downtown. A 40-seat bus fitted with a receiver and headphones drove attendees around Las Vegas showing the consistently crystal-clear audio quality of the system.

At the Broadcast Engineering Conference, an entire afternoon was devoted to the different technical approaches to digital broadcasting, Eureka-147 included, but also a presentation from Paul Donahue from Gannett Broadcasting and Tony Masiello from CBS titled "Project Acorn: Compatible DAB."

Those who have been around awhile or studied radio history will recognize that this was the original concept for the system that eventually became HD Radio. At the time, NAB had officially endorsed the Eureka-147 DAB system and was favoring an allocation for DAB in the L-band. This issue was hotly debated at the 1991 convention at various levels, and of course, in-band, on-channel technology eventually won the argument for NAB and for U.S. broadcasters.

It's notable, though, that the Broadcast Engineering Conference program did attempt to present all sides of the proponent technologies and kept the politics to a minimum, as the advocates had a forum where they could plead their respective cases on a technical basis.

RW How is the BEITC different today?

Claudy: The conference has moved with the times, such as adding "Information Technology" to the title of the Broadcast Engineering Conference, recognizing the importance of IT skills in the modern broadcast plant. Other than that, NAB Technology still has a committee of broadcast engineers that meets several times a year, albeit virtually these days, to organize topics, review papers, assign session chairpersons and so forth, all the things that go into planning a top notch technical conference.

This year the chair of the BEITC Committee was Jim DeChant, vice president, technology at News-Press & Gazette Broadcasting, and we're really proud of the program that he and the BEITC committee members have produced, along with help from NAB consultant Skip Pizzi.



Courtesy John Schneider.

“ Among the presentations at the first conference was a demonstration of ‘Unusually High Frequencies in FM Relays’ by Major Edwin Armstrong. ”

Above
FM pioneer and
BEC alumnus
Edwin Howard
Armstrong.

We also work with partner organizations including the Society of Broadcast Engineers, the IEEE Broadcast Technology Society and the North American Broadcasters Association (NABA) to provide program content that will be relevant to the BEITC audience, and they have each produced excellent program offerings for 2021.

RW Describe how BEITC content is found and chosen today, and by whom.

Claudy: The timing this year is a little different because of the switch to October for the NAB Show, but in a normal year, a call for papers is released in the fall, and the BEITC committee and NAB Technology staff review the submissions and accept

papers that will be presented late in the year.

Papers that will be published in the proceedings must be submitted by mid or late January. We will typically get submissions that would occupy at least twice the space that we can accommodate, so it's a pretty competitive process. If there ends up being gaps in the program, or important topics identified where there weren't any submissions, NAB Technology staff may solicit additional speakers. **R**



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Sessions highlight in-car experience and hybrid radio

Engineering conference also looks at digital AM in EVs

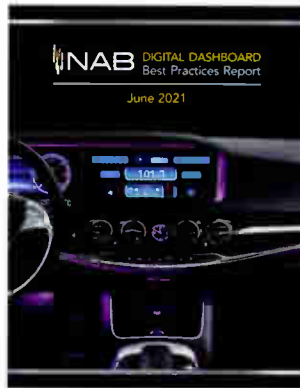
David H. Layer, the vice president, advanced engineering at the National Association of Broadcasters, will take part in several prominent sessions of the Broadcast Engineering & IT Conference at the NAB Show.

RW David, the activities of the Radio Committee of the North American Broadcasters Association will be part of the discussion. What role is NABA playing right now in regards to the auto infotainment landscape?

David Layer: NABA serves as a bridge between Canada, the U.S. and Mexico regarding radio and TV broadcasting technical and regulatory issues. NABA's Radio Committee has two active projects, one involving development of a NABA In-car User Experience (ICUE) guideline that is based upon — and complements — an ICUE document developed by WorldDAB, the other on hybrid radio and metadata.

This second group is developing resources and guidance for North American broadcasters on how to effectively support hybrid radio platforms and regarding the importance of having good textual and visual metadata which will make radio look as good as it sounds.

NABA is supporting the 2021 NAB Show by programming a session, "NABA Insights — Radio's In-Car User Experience"



Above
The NAB this summer updated and reissued its Digital Dashboard Best Practices Report.

on Tuesday, Oct. 12 from 9 to 10:20 a.m. in room S224/225 of the Las Vegas Convention Center. During this session an update will be provided on this NABA work.

RW Hybrid radio has occupied a lot of your attention recently. What's your key message for broadcasters regarding hybrid radio?

Layer: It's a straightforward message: for each station to provide good metadata support for their over-the-air and streaming audio products.

At NAB, we've been reaching out to broadcasters with this message and backing it up with information on specific metadata suggestions that are relevant to different types of stations.

For example, all analog FM stations and AM and FM HD Radio stations should be registered with RadioDNS, a non-profit organization that develops and supports open technical standards for hybrid radio — unfortunately, analog AM stations are not at present supported since they have no data-carrying capability.

NAB recently updated and reissued the NAB Digital Dashboard Best Practices Report, which provides lots of detail and recommendations for broadcasters on how to implement and improve their metadata operations. I would encourage your readers to download and read this report. [Find it at [https://www.nab.org/innovation/digitalDashboardAudit.](https://www.nab.org/innovation/digitalDashboardAudit)]

RW U.S. broadcasters seem cautious about building the infrastructure to support hybrid radio.

Layer: I believe there are many broadcasters who have actually been bullish on hybrid radio and eager to provide top-notch support, encompassing both medium and large radio groups. I do not sense a lack of interest among broadcasters but I definitely think that there are resource issues contributing to a slower-than-desired rollout of support. And not surprisingly, these resource issues have been exacerbated by the pandemic.

RW What specific make and models of cars now have hybrid radio available in North America?

Layer: I know that Audi, using their MultiMedia Interface or MMI, and Mercedes, using DTS AutoStage, are shipping cars with hybrid radio receivers to North America, but I do not know the model breakdown. Also, there are BMW cars in North America that use RadioDNS for station information and logos but do not support streaming audio service following.

“ I believe there are many broadcasters who have actually been bullish on hybrid radio and eager to provide top-notch support, encompassing both medium and large radio groups. ”

I expect more brands will be doing hybrid radio soon but I expect that the "chip shortage" we've been reading about, where the computer chips needed by automobiles are in short supply, will lengthen this hybrid radio rollout.

RW A session will discuss reception of all-digital AM radio in electric vehicles. Why is this important?

Layer: I've been privileged to work with a fine group of Xperi employees on an all-digital AM in electric vehicles project, most recently with Pooja Nair, an Xperi communications engineer who is my co-author for a paper on this subject in this year's NAB Broadcast Engineering and Information Technology Conference Proceedings.

Also, a special thanks to Dave Kolesar of Hubbard Broadcasting for making all-digital AM station WWFD at 820 kHz in Frederick, Md., available for electric vehicle-related testing.

One of the topics covered in our BEITC paper is a comparison of the coverage of all-digital AM radio using both internal combustion engine or "ICE" vehicles and electric vehicles, or EVs. While only a limited amount of all-digital AM testing has been done in electric vehicles to date, the clear indication is that all-digital AM works well in



Above
David H. Layer

electric vehicles and is much more resistant to the electrical noise generated by the motors than is analog AM.

This is important information for automakers as they make decisions affecting radio technology in electric vehicles.

RW What else should engineers know about the work that NAB PILOT is doing?

Layer: An interesting recent development is the installation and upgrading of the PILOT radio test bed into the Technology Lab at NAB's new headquarters building at 1M Street SE in Washington, D.C.

This test bed, built for PILOT by Cavell, Mertz & Associates, was housed at their office in Manassas, Va., prior to this move, and while in Manassas was used for a number of important projects including co-channel interference testing for all-digital AM radio and testing of FM-band HD Radio mode MP11 which adds an additional 25 kbps of throughput to digital FM radio signals.

Bringing this facility to the new NAB building will provide us with new opportunities to use the test bed for technology demonstrations to NAB members and others, and will allow NAB and PILOT to continue exploring radio technology and assisting in its development. **R**

See the following pages for more about the presentations described above.

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Xperi wants carmakers to know about the benefits of the MA3 mode

On Tuesday of the NAB Show, the BEITC will feature a session on "Reception of All-Digital AM Radio in Electric Vehicles."

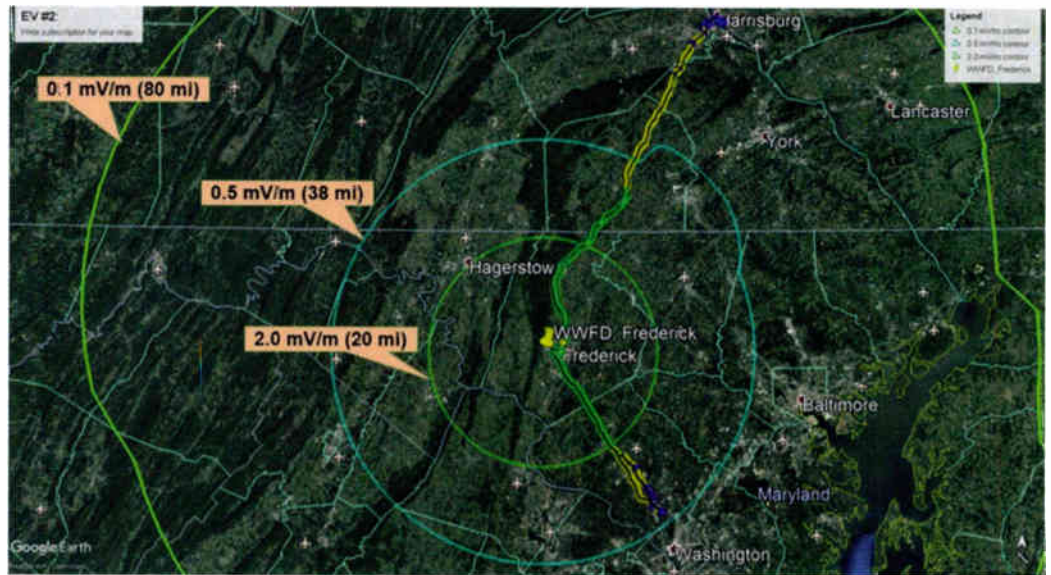
Pooja Nair, communications systems engineer at Xperi Corp., will co-present with David Layer of NAB.

RW **Why is this topic important?**
Pooja Nair: EVs are

becoming increasingly available to consumers, but some automakers are considering removing AM radios from their EVs. We believe that it is not only important to automakers to retain radio in the vehicle dash — especially as seven out of 10 vehicle owners say radio is indispensable or highly important, with nearly 80 percent of Millennials valuing radio in the dashboard — but also completely possible to retain high-quality performance. Our goal is to highlight to the auto industry the benefits of all-digital AM HD Radio in EVs.

RW **Early experience with electric vehicles has generated anecdotal reports of noise issues with AM reception in general. How would you characterize the attitude of carmakers toward AM in electric vehicles?**

Nair: There are several sources in EVs that generate electromagnetic interference (EMI) with the potential to cause static and noise in AM radios. Although some automakers have started removing AM radios from their EVs due to the noise, this interference has been reduced by many EV manufacturers using appropriate EMI mitigation techniques. Digital AM broadcasting delivers a greater quality of reception than analog AM in EVs, which is why we encourage



Top

All-digital AM reception in an EV with OEM receiver as tested by Xperi and NAB PILOT. Green trails show reception of both HD Radio all-digital core and enhanced audio; yellow is core-only audio; blue means the receiver is muted.

Above
Pooja Nair

EV automakers to continue to support in-dash AM radio, especially AM HD Radio in their vehicles.

RW **At present there are only three or four AM stations in the United States operating in MA3, the all-digital mode of HD Radio. How much**

real-world data is there to judge the performance of electric vehicles?

Nair: As part of our all-digital AM HD Radio reception performance study, supported by Hubbard Broadcasting at WWFD in Frederick, Md., and NAB PILOT, we field tested using two internal combustion engine vehicles and two EVs. We reached our conclusions on the benefits of all-digital AM HD Radio signals in EVs based on results obtained from analysis, testing and information gathered through research on EMI in EVs.

RW **What would you want someone who couldn't attend to know, as your main point?**

Nair: All-digital AM HD Radio signals are more robust and more resistant to EMI than analog AM signals. EV carmakers should not remove AM radio functionality from their vehicles, particularly AM HD Radio functionality, because AM HD Radio technology provides a better consumer audio experience than analog AM, and because the majority of consumers want radio as the anchor for their in-vehicle media diet. Additionally, EV automakers and receiver manufacturers can use appropriate EMI mitigation techniques to control noise in AM radios and maintain AM radio services in their vehicle lineup.

RW **What else should we know about this topic?**

Nair: We are conducting additional all-digital AM HD Radio reception performance field tests using EVs, and plan to present those results during the NAB Show session. **R**

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NABA focuses on listeners in the car

Working groups aim for a high-quality, consistent product for North America



Photo: IBC

A session at the NAB Show is titled "NABA Insights — Radio's In-Car User Experience." Michael McEwen is director-general of the North American Broadcasters Association. Its mission is to identify and take action on technical, operational and regulatory issues affecting North American broadcasters.

RW What has been happening at NABA on this topic?

Michael McEwen: Our attention has focused on the radio in-car user experience over the last couple of years, with HD Radio providing new opportunities, and hybrid radio becoming a marketplace reality.

It's important that as these services mature, they do so in a way that reinforces the core of any system's audio offering: traditional radio from local AM and FM transmitters. It's what the listener expects and, in many cases, needs when it comes to information about their community and the environment surrounding it.

RW What work has been done recently or is being done now?

McEwen: We've established a working group on metadata/hybrid radio chaired by Jeff Detweiler from Xperi. Its mandate is to create a document with a series of recommendations for broadcasters and guidance for manufacturers that will result in a high-quality product universally available to consumers, while providing a consistency of both products and services in the North American market. Their work should address all current analog and future digital platforms.

A second working group is focused on the overall in-car user experience and is chaired by David

Above Michael McEwen

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AMB-22-4E	AMB-16-4E MINI	HMB-14-4E	HMB-8-4E

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Layer from the NAB. David is working with the WorldDAB In-Car User Experience Group, which includes both broadcasters and automotive companies and has developed guidelines focusing on DAB radios.

Many of their recommendations apply to the North American market and provide some good lessons learned, but North America also has some unique aspects. The NABA In-Car User Experience Group will focus on getting those documented — for example, a strong requirement for local focus and a mix of analog and digital product — and built into recommendations for automakers supplying the North American market.

Obviously, there is great collaboration between the two NABA working groups, which is why our session at the NAB Show will combine presentations from both areas to update the broadcast community about where we are in this process. Our session will be chaired by Jeff Detweiler and feature presentations from David Layer, Joe D'Angelo from Xperi, Ben Husmann from Quu Interactive and others.

RW **What key factors will change the dashboard environment even more than it already has? Thinking here about passenger video, Android Automotive, hybrid radio or anything else that may make today's electronic screens seem simple.**

McEwen: That is the challenge, isn't it? Our interests are focused on keeping things as simple and straightforward as possible. And of course, safe. These services should enhance the audio experience, not clutter it, and our advice to the automotive and broadcast communities will be exactly that. But won't it be wonderful that, with a hybrid radio, you can listen to your local station even as your transmitted signal fades and the radio automatically switches to that signal streaming over the internet. Nice.

RW **How would you characterize the success to date of broadcasters at working with carmakers and other stakeholders, to assure radio's place in the next generation of high-tech dashboards?**

McEwen: I think the automotive community wants our input and ideas. They also want their product to have a successful market take-up in North America.

By working together, we can create an orderly transition to new technology that enhances the audio experience and start realizing the benefits of 21st century technology in car dashboards. We all have an interest in making this happen.

RW **What would you want someone who couldn't attend the session to know, as your main point?**

“It's important that as these services mature, they do so in a way that reinforces the core of any system's audio offering: traditional radio from local AM and FM transmitters.”

McEwen: This is a progress report on where we are in the development and services enabled by advanced technology in the car dashboard. Our industry needs to be aware of how quickly things are moving, and they also need to engage with the process and prepare their station(s) to provide services and content that enhanced capabilities will provide.

This is very much “a work in progress” and it hasn't been made easier by the pandemic. But the speed of our work will pick up as we move to the new normal and as product becomes available to the market. Broadcasters need to be ready. **R**

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Writer



Phil Owens

Sales engineer, Wheatstone

Appliance or cloud-based app?

What will the future of broadcast engineering be?

We seem to be headed down two tracks on our way to the broadcast facility of the future. One is the appliance track, where we are migrating away from the model of apps running on a Windows PC and moving functions instead onto one dedicated appliance that isn't subject to the finicky PC.

These are generally specialized AoIP or automation appliances that are Linux-based and therefore do not require Windows drivers, updates or PCs. Good examples are streaming appliances like Streamblade or Wheatstream that replace multiple PCs by putting everything streaming related into one AoIP Linux appliance.

The other is the app track, which takes us to the cloud and away from hardware in the rack room.

Here, we are offloading functions to the cloud where they can be remotely reconfigured, maintained and provisioned on a case-by-case basis. At its most ideal, centralized cloud-based applications will give us the ability to dial up encoding, IFB, routing, mixing, playback and even the kind of console needed for a given show or operator skill level.

Wheatstone, Xperi and other broadcast product makers are working on cloud-based apps using cloud technologies such as container platforms like Docker that will make it possible to transition from the entirely fixed-location studio to a more virtual operation.

Already, many of these apps exist. We know of broadcasters who are containing audio drivers in a virtual

machine onsite in preparation of eventually offloading that part of their operation to the cloud and others who are putting multiple studio workflows from multiple locations in a one-stop virtual interface.

Moving it all to the cloud can downsize space requirements in the rack room and shift engineering management to an offsite provider. Eliminating any piece of gear in the air chain along with its connectors and potential points of failure is a good thing, and that goes for specialized appliances too, because these can replace more generic PC-based functions and also reduce space requirements and engineering management.

Coexistence


There are advantages and disadvantages of both the cloud-based app model and the appliance model.

Offloading functions to Microsoft, Amazon or other cloud provider takes away the cost and upkeep of hardware in the rack room but leaves you subject to third-party vulnerabilities. On the other track, having an appliance onsite gives you some of the consolidation benefits of an all-in-one rack unit similar to the cloud model, although at the additional expense of on-premise infrastructure and upkeep.

It doesn't have to be one way or another, fortunately. There are many different ways to divide and subdivide that signal chain between functions in the cloud and functions onsite in an appliance.

For example, it's possible to have automation and mixing functions in the cloud but maintain control from a local virtual or hardware interface. If your playback is being done mostly off a cloud server, you might have a virtual control surface in the studio that is talking to a mix engine in the cloud. Similarly, you could also be receiving your mic audio from a codec that's in the cloud.

More likely, the broadcast facility of the future will use a combination of both: appliances for consolidating functions into a single 1RU box that eliminates a bank of Windows PCs yet the use of cloud for shared mixing, routing or removes streaming and automation without the real estate, upkeep and of the Windows PC.

We'll likely arrive at the future broadcast facility from both tracks, and not entirely from one or the other. 

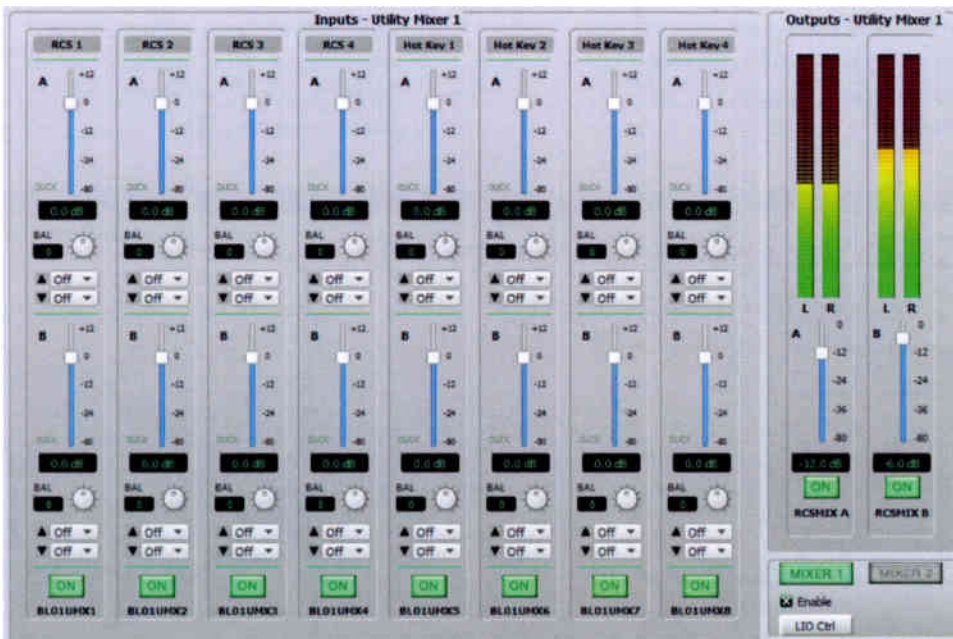


In person

The author will present the session "App vs. App (Application vs. Appliance)" at the NAB Broadcast Engineering & IT conference.

Below

Utility mixers in Wheatstone's I/O Blades are routable on the AoIP network, a step toward the app model discussed in the article.





NAB Show Booth List

A sampling of companies of interest to Radio World readers



Exhibit Hours

Sunday
Oct. 10
10 a.m.–6 p.m.

Monday
Oct. 11
9 a.m.–6 p.m.

Tuesday
Oct. 12
9 a.m.–6 p.m.

Wednesday
Oct. 13
9 a.m.–2 p.m.

For a complete show list and map, see <https://nabshow.com/2021/attend/exhibits/>.

Company	Booth
AEQ S.A.	C3651
Aldena Telecomunicazioni s.r.l.	C7625
Altronic Research Inc.	N4035
Amazon Web Services	C1707
American Radio Relay Lg. (ARRL)	LN1
Arrakis Systems	N3831
Associated Press/AP ENPS	C6113
Audacy	Encore Parlor - C
AudioScience Inc.	N3834
Audio-Technica U.S. Inc.	C8815
Barix	C2739
Blubrry Podcasting by RawVoice	N4039

Company	Booth
Blue Elements	C1754
Bonneville Distribution	W285
Broadcast Pix	N619
Broadcasters General Store	C6915
Calrec Audio Ltd.	C8008
Clark Wire & Cable	C4809
Clear-Com	C6608
Comrex	C6116
Continental Electronics Corp.	C3246
CPI	N2931, C3205
Dalet	C5625
Dan Dugan Sound Design Inc.	C9521
Delta Meccanica s.r.l.	N3738
DH Antenna	SV1000
Dialight Corp.	C1736
Dielectric	C7125
DiGiCo	C8008
Digital Alert Systems	C4249
Digital Broadcast	C3637
DJB Software Inc./DJBRadio	N2636
Electro-Voice	C5508



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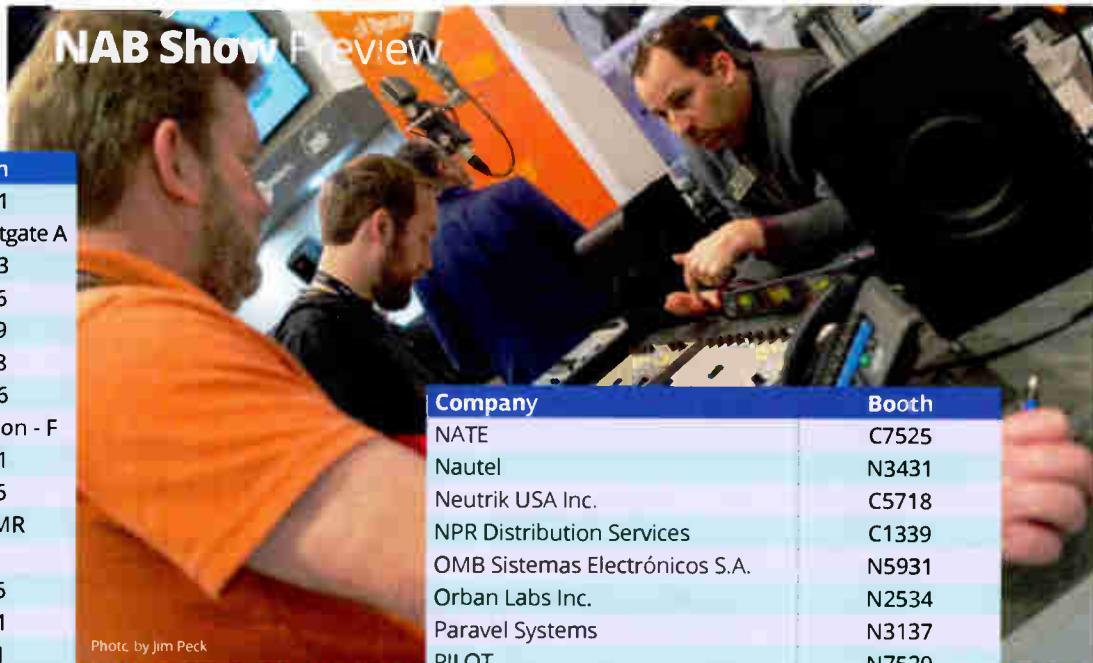
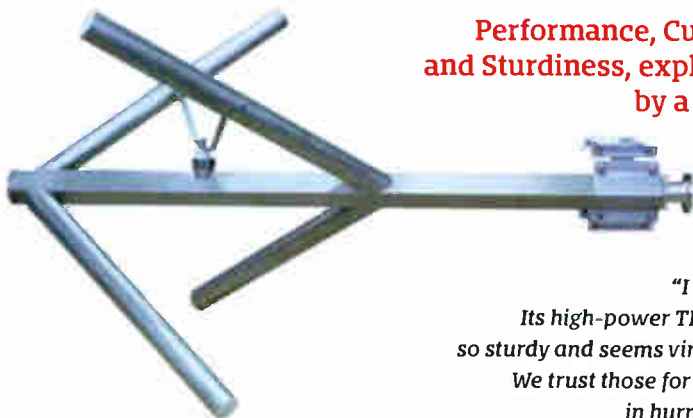


Photo: by Jim Peck

Company	Booth
ENCO Systems Inc.	N4631
ERI-Electronics Research Inc.	C5630, Westgate A
Eventide Inc.	N2533
FEMA IPAWS	C1836
Flash Technology	C8819
Fraunhofer-Gesellschaft	C3018
Futures Park Welcome Desk	N7416
Futuri	Encore Salon - F
GatesAir	N3131
GlenSound (UK)	C6906
IABM	N110LMR
IEEE Broadcast Technology Society	LN3
Independent Audio Inc.	C5516
Inovonics Inc.	N4431
Intelsat US LLC	C3621
Jampro Antennas Inc.	C5721
JDA.media	W181
Kathrein Broadcast USA Inc.	C6130
Katz Media Group	Encore Salon - G
Kintronic Laboratories Inc.	N5631
Lawo AG	C6108
Live365	N4138
Logitek Electronic Systems	C6316
Lynx Technik AG	C6619
Marketron	Encore Salon - C
Moseley Associates Inc.	N2531
Multicam Systems	N4806
MusicMaster	N4636
Myat Inc.	C8240
NAB Leadership Foundation	LNU1
Nagra	C6150MR

Company	Booth
NATE	C7525
Nautel	N3431
Neutrik USA Inc.	C5718
NPR Distribution Services	C1339
OMB Sistemas Electrónicos S.A.	N5931
Orban Labs Inc.	N2534
Paravel Systems	N3137
PILOT	N7520
Radio Act	N2538
Radio Design Labs	N6531
RadioFX Inc.	W295
RadioMax	W295
RCS	N5231
RF Specialties	N3938
Rohde & Schwarz	N1815
RTW	C7712
RymSA RF	C6117
Sabre Towers & Poles	N2836
Sennheiser Electronic Corp.	C6613
SES	Ren VIP - A
Shively Labs	N4331
Shure Incorporated	C5225
Sierra Automated Systems & Eng.	N3731
SixArms	C7628
Solid State Logic Inc.	C8008
Sonifex Ltd.	C5515
Sound Ideas Music & Sound Effects	N3714
SoundExchange	N3237
Staco Energy Products Company	N3428
Stainless	C8140
StreamGeeks	N4219
Superior Electric	N2937
SWR LP	C6706
Thermo Bond Buildings, LLC	N4135
Thermodyne Cases	C6621
Tieline	N5235
TSL Products	C6721
Vertical Bridge	Wynn Parlor - A
VocalBooth.com Inc.	N5522
V-SOFT Communications, LLC	N2934
Wheatstone Corporation	N2631
WideOrbit	N3238, Encore D
WireCAD	C1730
WorldCast Systems	C3916
XPERI / HD Radio / DTS	N6231
Yellowtec GmbH	N4635

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DAVID HOXENG, ADX Communications, Pensacola, Florida

* TFC2K arrays can be rated up to 75 kW power handling.

Orban Releases XPN-Enterprise

Orban announced initial deliveries of XPN-Enterprise.

"This Linux-based system is an easy-to-use, customizable processing platform for multiple broadcast stations or streaming services, with centralized control."

It provides Orban OptiCloud processing for up to 16 FM/HD/DAB+ and streaming processing channels in a 1 RU package, using an enterprise-class SoftGear server and the appropriate Optimod XPN-Enterprise Nodes.

President David Day said XPN-Enterprise is suitable for broadcasters who need high density and are managing multiple signals, in an age when more operations are moving to centralization and virtualization.

Content to be processed is brought to one location via AES3, AES-67, SMPTE-2110-30, Dante or Livewire+. The system then creates the necessary outputs (FM composite, DMPX, uMPX and DAB+HD) using the appropriate Orban XPN-Enterprise Nodes for distribution to each transmitter site.

Processed channels intended for streaming are handled by the XPN-Enterprise softGear server, which sends those outputs to the appropriate streaming devices.

Each signal coming into the Optimod XPN-Enterprise server can be individually processed. OptiCloud presets give users a quick start for each format. "Less-More" controls simplify "dialing in" the desired sound by combining multiple processing parameters with a handful of controls. Kantar or Nielsen watermarking for each broadcast channel is provided via the appropriate node.

Info: <https://orban.com>



New Features From WorldCast



APT codecs from WorldCast Systems recently got an upgrade. The announcement applies to APT IP, AoIP Multichannel and MPX Multichannel codecs.

According to the announcement, System Release 4.0 adds APTmpX, a nondestructive MPX/composite signal compression algorithm that should save network bandwidth without compromising signal quality.

Also new is SynchroStream technology, which is intended for "precise and stable time-synchronous IP transmission and playout of audio content." It synchronizes multiple transmitters used in a single-frequency network with use of an external 10 MHz clock.

Both are available as software options.

Other additions include NAT transversal connection mode for assuring codec connections, and NTP content-alignment for coordinating programming across a multi-frequency network by using IP packet time stamps.

Info: www.worldcastsystems.com

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Miscellaneous Equipment

Burk ARC Plus/PlusX ICRU
ARC Plus Touch/PlusX IIU
Inovonics 531 Mod Monitor

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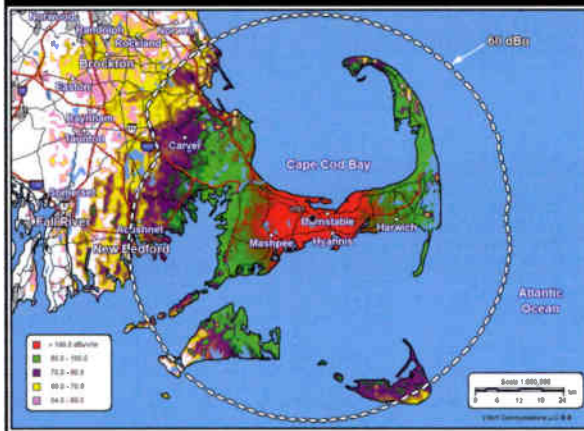
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Equipment lifespans

Excellent article in Radio World by Mark Persons ("Analog veterans in the digital world," May 12 issue).

Count me among those who started out in the analog world but quickly became "digitally native." I would be hard-pressed to recommend a new analog buildout these days, even for smaller stations. It just makes so much sense and is so much easier to make changes after the fact.

The biggest drawback is that unfortunately, digital equipment does tend to have a shorter lifespan than analog, simply because of the rapid pace of technology improvements, and often quicker part obsolescence. Lifespans of 10 to 20 years for some equipment have now become more like five to 10, or three to five, not because it has failed but because technology has improved.

That said, in some cases the labor saved in maintenance and ongoing changes can often offset some of this cost. It's just something that needs to be budgeted for, much like upgrades to desktop computing technology.

Shane Toven
Educational Media Foundation



How to submit

Radio World welcomes comment on all relevant topics. Email radioworld@futurenet.com with "Letter to the Editor" in the subject field.

only know what they hear, and it's generally without being analytical.

Whatever that mystique is that makes one station sound better than another certainly contributes to why the station is a favorite.

Every element is a little percentage point towards making a station number one. And it's like dominoes. You break the chain and the result will disproportionately affect the outcome.

As they say, "The chain is only as strong as the weakest link." The secret of being a number one station is doing all those little percents the right way; but with the microphone it's a lot more than 1%. It's the product that the listener hears upon which they make their preference judgments.

Comparing the quality of the air sound to the budget of whether you can use the microphone as a hammer and evaluating the choice of what to purchase is just plain outrageous.

I am often reminded of the quote by Ken Levine, a former DJ with us at a couple of L.A. stations and writer, director and producer for "M*A*S*H," "Frasier" and "Cheers": "Enough is a feast to an idiot." And that's exactly the mid ground "rollover and play dead" mentality of stations that just sound mediocre. It is super easy to beat them in the ratings because I maintain that the listener most certainly can tell the difference.

Of course personality factors into it as well, but put the same personality on a station that is superior in these other elements we are discussing, and it's a slam dunk that they will have an edge. No details and listeners don't really ever know why — except "It just sounds better."

Don Eliot

The author is a veteran voice talent and owner of Schwab MultiMedia in Hollywood, Calif.

Yes, mics matter in ratings

A nice collection of comments about mics in the May 26 issue ("Today's microphones offer a buffet of choices").

But I have a comment about the quote in the first piece that "No radio station ratings have ever been tied to the mic used in the studio."

I wholeheartedly disagree. If you ask a listener, they're not going to flat out tell you that they love a station's compressor, particular jingle, studio, microphone or one particular recording. They

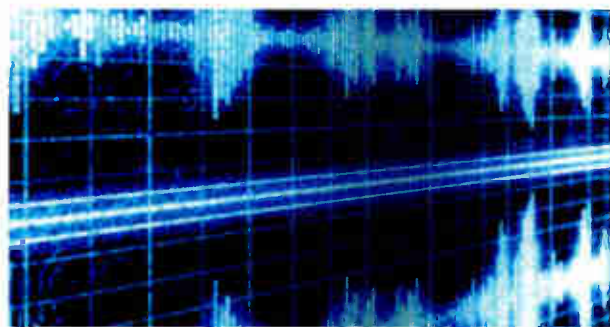


Rethink the radio bands

Regarding Larry Langford's commentary "Sweeten the Pot to Entice AM Digital" (*radioworld.com*, search "sweeten"):

My initial concern is what a 100% digital signal will do to co-channel and first-adjacent stations who are operating in analog with listeners in the fringe. Should these analog AM stations be given compensation for the loss of coverage? Should they be given companion channels of operation to replace lost coverage?

I still recall a rather contentious debate in a broadcast list some decade or more ago. The CE of a Class 1B station was bragging about his IBOC, while some people were complaining about how it chewed up analog stations some 100 to 400 miles away at night. The fellow justified the use of power and propagation as being "necessary to cover the station's market area, roughly 45 miles in radius."



So to cover a 45-mile radius of market, we have to ruin a 400-mile radius of spectrum? Isn't this like playing your 250-watt stereo at full volume in an apartment complex because you're deaf and unconcerned that it's bothering the neighbors?

I still think that in the scope of protecting what we have and need for public service, the FCC should revise the frequency tables, using the recent incentive auction as a model.

Move TV broadcasters out of Channels 5 and 6. Allot that spectrum to digital radio broadcasters with a caveat that after five years on the air, they surrender their analog service. Mandate that all new radios (especially mobile) be outfitted with the new DM band. And since most 1A/1B broadcasters see no financial value in long-distance transmission, cap all transmissions to provide a 45-mile radius.

Working the math, you could get all the wannabe digital stations into the new band, and over time analog would pass. However it won't be killed off by those wanting digital more than the need of listeners wanting analog.

Frederick R. Vobbe |



Above
Ford promo image

Preset panic

I am shocked. I just took delivery of one of Ford's most popular SUVs, a 2021 Explorer Limited. It has the new Bang and Olufsen Radio, HD with analog AM and FM, and it has Sirius.

Can you believe that there are only 15 presets?! A total of 15 for all of this. The dealer rep says, "Man, you need more than 15?"

Ford Customer Service thinks I am complaining about a defective radio. They are as obtuse as they can be. I am sounding an alarm, here. We're in trouble.

Jonathon R. Yinger
President and CEO
The Christian Broadcasting System &
Broadcast Properties LLC

A digital caution flag

Re: "New Talk for New York is all-digital" (*radioworld.com*, keyword WFAS):

Commercial viability of Cumulus Media's digital AM 1230 HD conversion relies on deep penetration of digital AM radios in the consumer marketplace, essentially new vehicle sales. Given the broad propensity to retain legacy vehicles many years before replacement, it would take at least a decade to achieve critical audience mass sufficient to lure advertisers to digital stations. Cumulus' deep pockets will keep WFAS 1230 on air, not sales. Station owners and equipment manufacturers eyeing AM digital conversions should keep a wary eye on this experiment and view it a cautionary tale before taking the plunge.

James B. Potter |

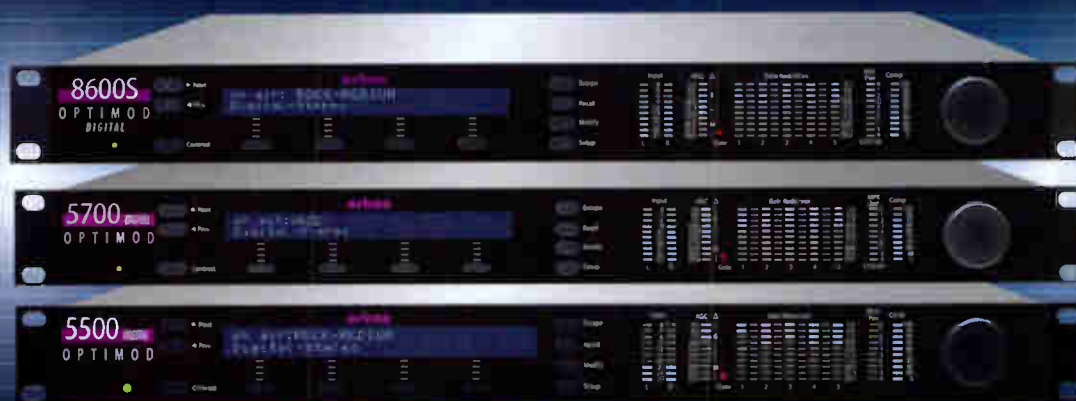




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