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Wait, wait ... news can be fun!

Behind the scenes with public
radio's popular quiz show.

Triple Tuner trial

Jeremy Preece evaluates
the new Inovonics 677 EAS
Monitor Receiver.

It's in the bag

Readers tell John Bisset about
tools they can't live without.

Is your metadata healthy?

Here's what NAB staff found
when they drove around
Detroit and Little Rock.

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How healthy is your metadata?

... or do you not have any at all?



Paul McLane
Editor in Chief

Take a drive around Little Rock, Ark., in a new Dodge Charger and sample the FM radio band on the infotainment screen. You'll find more than half of the stations transmit no RDS information at all.

Staff from the National Association of Broadcasters discovered this disappointing fact last year in preparing to update NAB's "Digital Dashboard Best Practices Report," which was released recently.

They conducted "radio audits" in both Detroit and Little Rock, driving around in rental vehicles and observing how stations appear on dashboards of late-model vehicles. These audits were modeled on similar drives done in 2017 by Jacobs Media and engineering consultant Glynn Walden in multiple cities.

"The results obtained from these audits serve to reinforce the message that more broadcasters need to be paying attention to their metadata," the NAB wrote in the updated report.

U.S. broadcasters have in fact done much to improve the appearance of radio on the digital dashboard in the past six years, it found. But there is significant work yet to be done, especially by stations in small and medium-sized markets.

The report is well worth reading. We all need to pay closer attention to how our industry's product is being experienced by our listeners.

Detroit 2023 Audit: RDS Radio Vehicle, Midday		
Score	Number of stations	Percent of total
Green	3	9%
Yellow	9	26%
Orange	19	56%
Red	3	9%

Little Rock 2023 Audit: RDS Radio Vehicle, Midday		
Score	Number of stations	Percent of total
Green	1	3%
Yellow	14	39%
Orange	1	3%
Red	20	56%

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Left The results of the 2023 audits with respect to transmission of RDS metadata. The color codes range from green (stations utilized the full functionality of the digital dashboard) to red (there was no display functionality).

As Radio World's Nick Langan wrote in a story about the report on our website, "The key takeaway is that it's crucial for radio stations to ensure that their metadata, especially from RDS and HD Radio systems, meets benchmarks so that radio listeners get an experience commensurate with what they see from satellite radio, streaming services and other media in car dashboards."

The report found that, at least in Detroit and Little Rock, metadata apparently is not being checked or properly edited before broadcast and that no one may be monitoring the station or market for mistakes.

Stations with HD Radio may not be using the Artist Experience feature consistently, ignoring album art or delivering art that doesn't match the audio. (Stations with HD Radio may also not be paying sufficient attention to their RDS. In fact these audits were done in vehicles that did not have HD Radio reception, and the authors reminded broadcasters that the RDS data stream is probably the only metadata service available to broadcasters in many such vehicles.)

And while the report focuses on FM, it reminds AM

“ Broadcasters need to strengthen their hold on this turf by improving the user experience on auto dashboards. ”

broadcasters to pay attention to metadata on their translators as well as any AM HD Radio signals.

I strongly encourage you to take the time to read this report, which includes a number of useful visuals and recommendations. It explores important topics like RadioDNS, DTS AutoStage, RDS "chunking," middleware services, multicast branding and how to get the most out of Artist Experience.

"Gone are the days when the radio industry had this real estate to itself," the NAB report states. "Broadcasters need to strengthen their hold on this turf by improving the user experience on auto dashboards."

Find the report and additional useful resources at www.nab.org/innovation/digitalDashboardAudit.asp.

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Writer



James Careless

The longtime Radio World contributor wrote about the surprising resilience of shortwave radio in the Sept. 1 issue.

Above

Tom Hanks filled in for Peter Sagal in 2017. Panelists were Paula Poundstone, Luke Burbank and Faith Salie.

Right

Lorna White

Behind the scenes of “Wait Wait ... Don’t Tell Me!”

Its technical director and production manager provide us a glimpse

The witty news quiz show “Wait Wait ... Don’t Tell Me!” from NPR and WBEZ was first broadcast from Chicago on Jan. 3, 1998. It originally was assembled with content from NPR studios in Chicago, Washington and other locations as needed, until settling in for many years at Chicago’s Chase Auditorium.

“Wait Wait” continued undaunted during the pandemic, when productions from Chase were replaced by Zoom meetings from the homes of host Peter Sagal, the show’s panelists and audience participants.

Today, “Wait Wait” is back before a live audience at Chicago’s Studebaker Theater and in venues across America.

In December 2023, the New York Section of the Audio Engineering Society hosted an event at Mercy University, providing a look behind the scenes of the show. AES Fellow David Bialik hosted “Wait Wait” Technical Director Lorna White



and Production Manager Robert Neuhaus.

The “Wait Wait” website states that White “began working at NPR in 1984 as a child” and that she was assigned to the show “when she was old enough to tell fart jokes.” And it says that Neuhaus “has spent a lifetime creating funny noises and helping other people hear them” and that for NPR “he has recorded everything from important politicians to squealing hogs, and still manages to tell the difference.”

Here’s a sampling of the AES talk and a link to a video archive.

A fast and cheap birth

Recorded in front of a live audience on Thursday night and edited Friday for broadcast that weekend, “Wait Wait” has become a cherished public radio anchor show, nourished by the wry snappy patter of Sagal; the warmth and humor of the late Carl Kasell, the official judge



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Above
Chicago's Studebaker Theater is now the home of "Wait Wait" when the program is not traveling. The crew sets up in front of the set of whatever stage show happens to be running at the time.

Right
Robert Neuhaus pauses to appreciate the crowd at Red Rocks Amphitheatre in Morrison, Colo., in 2014.



and scorekeeper until 2014; and Kasell's equally sagacious successor Bill Kurtis.

Regular panelists over the years have included the likes of Paula Poundstone, Tom Bodett, Bobcat Goldthwait, Roy Blount Jr., Peter Grosz, Helen Hong and numerous others, many of them comedians. It also has had numerous celebrity guest hosts. The program is heard on 741 stations by an estimated 3.1 million people, and the podcast gets 1.3 million downloads.

For such a popular radio show, "Wait Wait" had a short gestation.

"NPR said, 'We're going to start this new show in six weeks and you're going to record it over at the local public radio station, which is WBEZ, and edit it and put it out for broadcast,'" recalled Lorna White.

"We had to just sort of kludge together the equipment that we had because there was no budget for this; it's public radio."

The program began traveling to other cities in 2000. Its first road show was at Westminster College, a small liberal arts school in Salt Lake City.

"We needed production elements," she recalled, "so we had Carl walk around the stage with a large sign that said, 'I'm Carl Kasell. NPR bigwigs are listening.' We'd elicit laughs and applause so we could use them to cover edits later in the show.

"The way we do production is kind of old-school but it works for us."

Taking the program to other markets gives NPR stations there a boost, though it's a lot of work. "When we came to a venue — which in the early days were tiny regional theaters, a church in Baltimore, a synagogue in Boston, whatever the public radio station could find for us — we used them as fundraising shows for the station," White said.

"They would put us in whatever venue that they could find or get on a trade. It wasn't always ideal, but we would figure out how the show would work. ... You come in, you load in, you hang in the banner, you find the tables, [then] you wait for the tablecloths. Because the tablecloths are never there and you can't put anything on the table until there's tablecloths.

"Sometimes we've gone to venues where we can't get to the stage until afternoon," she continued. "We usually like to hit the stage at 10 a.m. just to try to get everything plugged in before lunch at 1. Sometimes we've done festivals where that's not possible. We can't get on the stage till 2 o'clock, so we'll set up backstage

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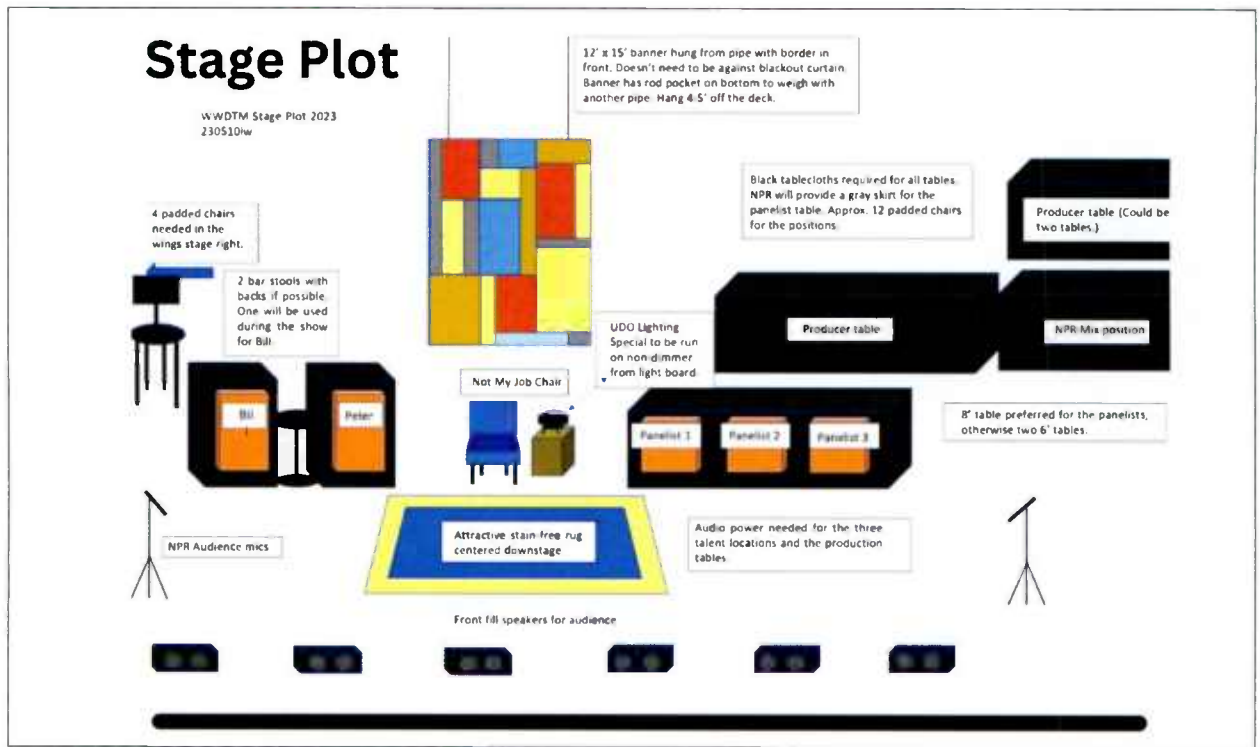
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Right
Stage plot. "The way we do production is kind of old-school but it works for us," White said.



and then they'll carry the tables out for us and we can do some fast plugging in and hope it all works that way."

The show owns two sets of audio gear. One stays at the home theater in Chicago, and the second is shipped around the country. Even shipping the road cases of production equipment from city to city comes with risks.

"We don't have our own truck, we don't have a driver," White said. "They go out by freight, and the freight company holds them for us so that we're not doing a complete round trip every show. They'll go from Portland, Maine, to New York City, then we just ship it onto the next place. We go out about once every four or five weeks." She said the road cases themselves "never seem to last very long, when a forklift goes through them."

Bialik asked if the team brings redundant equipment in case of a problem. "No, no," Neuhaus replied. "We live dangerously."

No snow here

White and Neuhaus — who report to Executive Producer Mike Danforth and are supported by about 10 others, including writers — shared a few anecdotes.

Actor Tom Hanks has had a long-time association with "Wait Wait," even filling in for host Peter Sagal. (You can listen to his episode at www.npr.org/programs/wait-wait-dont-tell-me/archive, follow the menu to the episode for Jan. 14, 2017.)

Hanks also provided support during COVID when he sat in on a Zoom recording session — though the usually talkative and witty actor didn't say a word: "He just watched the whole show," White recalled. And Hanks was among the celebrities who called in for Kasell's last show (President Barack Obama was another).

White said that the script isn't always ready on time.

"Once we performed in Fairbanks, Alaska, and a university spokesperson announced the show before the staff was ready. Luckily Paula Poundstone was there and did a short warmup for us until everyone was in place. Then Adam Felber had to pull her off so we could start."

Another memory involved a three-day snowfall in Chicago in February 2011, known as the Groundhog Day Blizzard. According to the National Weather Service, it was the third largest snowstorm on record for the city.

Had things gone to plan, "Wait Wait" would have been leaving the chilly Midwest for the beaches of Miami that week. Neuhaus heeded the weather warnings and flew south early, as did Sagal. But everyone else on the program staff ended up running the show from home, after the

“ We needed production elements so we had Carl walk around the stage with a large sign that said, ‘I’m Carl Kasell. NPR bigwigs are listening.’ ”

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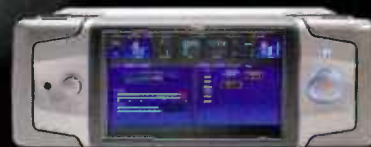
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city was snowed in. But with the help of an engineer who flew in from L.A. and an NPR staffer who came down from Washington, the "Wait Wait" team managed to get two live shows recorded and edited on location.

"By Friday everybody [in Chicago] was back in the office," said Neuhaus, who was still in Florida. "I was emailing with a producer and teasing him by saying, 'Hey, I need to wait a minute. I'm editing out on the balcony of my hotel room and the sun is too strong.' He replied, 'That's OK, I need a minute to empty my trash can onto your desk.'"


Back in the groove

After 18 months of virtual productions, "Wait Wait" returned to the in-person format with live audience with a show from the Mann Center for the Performing Arts in Philadelphia.

"It was crazy how we felt out of place," White said, "how much we forgot, how much the backstage crew had forgotten. We just weren't in our groove. It was great to be working like this again."

Today, when the show isn't traveling, it appears on stage at Chicago's Studebaker Theater. It also has appeared in iconic venues such as Carnegie Hall and Tanglewood, though large musical venues that are acoustically very "live" can be challenging.

"We play better in theaters than in concert halls because of the resonance of the hall," Neuhaus said. "But we adapt and we count on the staff of each venue to make it sound right."

You can watch excerpts of the AES panel interview on Facebook video at <http://tinyurl.com/rw-wait>. 



The Workflow

Lorna White described the program's workflow for Radio World:


We think the audience wants to see a radio show, so for a road show we set up everything onstage, including our mix position. In our home at the Studebaker Theater in the Fine Arts Building in Chicago, we have a booth in the third balcony. FOH mixing is done by the local stage crew.

We use six omnidirectional DPA d:fine headset microphones and Sony MDR-7506 headphones instead of stage monitors. Peter Sagal wears Sensaphonics custom ear molds for his Sennheiser IE 200 earbuds (shown).



Audience reactions are captured with two Sennheiser MKH 416 microphones on stands. The audio is fed into a Midas Venice 24-channel console, along with additional sources for audio clips, sound effects and listener calls. Special guests can be onstage or brought in via Zoom and projected onto a screen so the audience can see them.

The show is mixed live to stereo and recorded onto two Sound Devices 722 recorders. The show audio files are copied onto CF cards and handed out to five staffers at the end of the night.

All post-production happens on Friday, with three producers each editing a different segment on MacBook Pros running Adobe Audition CC. Sessions and other files are shared via Hightail. Robert and I then master the broadcast and podcast, which are distributed that weekend. 

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Right
The first in-person
show in 18
months. The Mann
Center for the
Performing Arts
in Philadelphia,
August 2022.

CRISTA uses streams to help spread The Word

Careful monitoring and good analytics are important tools for this Christian ministry

CRISTA Ministries is a family of five ministries based on a campus just north of Seattle. Its CRISTA Media arm broadcasts Christian music to northwest Washington on KCMS(FM) in the Seattle area and KWPZ(FM) in Bellingham, as well as religious teaching on KCIS(AM) in Seattle. Each station has a simulcast stream; CRISTA (the name stands for Christianity in Action) also offers online streams called Quiet Time Radio and Lift Radio, the latter of which is also heard on the HD-2 channel of the Seattle FM.

We interviewed Chief Engineer Aaron Hume for the ebook "The Ecosystem of Streaming."

RW Describe your streaming "air chain."

Aaron Hume: For most of our streams we go out of RCS Zetta, through our consoles and EAS boxes, then to our silent sense boxes, and then right into the encoder or off to the air chain. ...

I've been here 11 years now, and one of my first big projects was the streaming coders, which was a good learning ground. I built them in 2012. We've been using Orban Optimod-PC 1101 cards and they are awesome. However we plan to migrate to Wheatstone StreamBlades. ... From there, we send it out to our StreamGuys, our CDN. We have two server operations that we connect to in different parts of the country, so if some of the backbone goes down through our main infrastructure, we should be able to still hit the secondary server in a different part of the country.

Writer
Paul
McLane
Editor in Chief

Find Out More

Read the full interview. At <http://radioworld.com/ebooks>, scroll to "The Ecosystem of Streaming."

On top of that, we have two internet providers at our broadcast facilities, so if Comcast goes down, we still have Zippy or vice versa.

It's important to make sure our stations are easy to find on smart speakers. When Amazon Echo came out, it worked great because we were already set up with TuneIn as a registered service. When iHeart took over the search portion of that with the default "hey, I want to listen to a radio station" sort of vibe, everything broke, so we ended up putting in specific Amazon Skills through StreamGuys. Then we could say "Hey, enable the Skill on your speaker," and it would go by our prompts at "Play Spirit 105.3," whereas before it would come up with some really weird station that was not in line with our organization or our content.

Since then Amazon has taken the reins back and said, "We want to help radio stations, let us get you listed properly so it's easy for people to find you." We still have our Skills with StreamGuys, but we also have a direct connection with Amazon that should have been there from the beginning.

Google Home has options to set up radio stations with their equivalent of a Skill.

RW Do you have a sense of what percentage of the audience uses various platforms to listen?

Hume: One of the things that we are able to do with StreamGuys is split out aliases, so to speak. You can take one stream and say "This is my Icecast main stream," then they can replicate it and call it the Amazon stream or




another stream. We can give that URL to Amazon or whomever, and dedicate it for analytics collection, even though we're only sending one stream out.

That has been useful to me as I go through monthly stats for our staff and salespeople to give them human numbers that Nielsen can't — unique IP addresses, that sort of thing.

I'd guess a third to half of our listeners now use smart speakers — it's way up there. A lot also use our mobile app, and a good chunk use the iHeart platform, which we're listed on. We try to be everywhere, as much as possible.

SoCast produced a dedicated app for us. It's a way to give listeners a lot more information. We've got contests and information on there, and events.

The next big thing is going to be platforms such as the DTS AutoStage, with hybrid radio switching the over-the-air reception to streaming, for people driving out of market. It will be a small percentage of drivers at first but I can see that sticking because automakers want "new and fancy." 

Above right
Aaron Hume



John Bisset
CPBE

The author is in his 33rd year of writing Workbench. He handles western U.S. radio sales for the Telos Alliance and is a past recipient of the SBE's Educator of the Year Award.

Useful tools for your travel bag

Audio testers, first aid kits ... and don't forget the Klein 9s

We asked you to tell us what's in your toolbag. John Cone doesn't carry one; he uses a Pelican brand equipment case. And he says the most important tool inside is a Dymo Rhino Pro label maker.

John says that many radio stations seem to have been built without labels for their wires and cables. So when he is working on a facility and identifying wires and cables, he also takes the time to label them.

In his case he also carries a tone generator and probe; the latter is invaluable as an audio signal tracer. He also has a CTP Systems DBbox3 audio tester, again for analog audio signal tracing.

On the RF side, John has a small AEA vector network analyzer. He uses this instrument when he has a dozen unmarked coax cables inside the transmitter building and would like to be able to tell which one is for the 950 MHz STL. He also carries a small, very nice TTI spectrum analyzer

as well as an old Pira.cz USB FM analyzer to assess whether a station is over-processed.

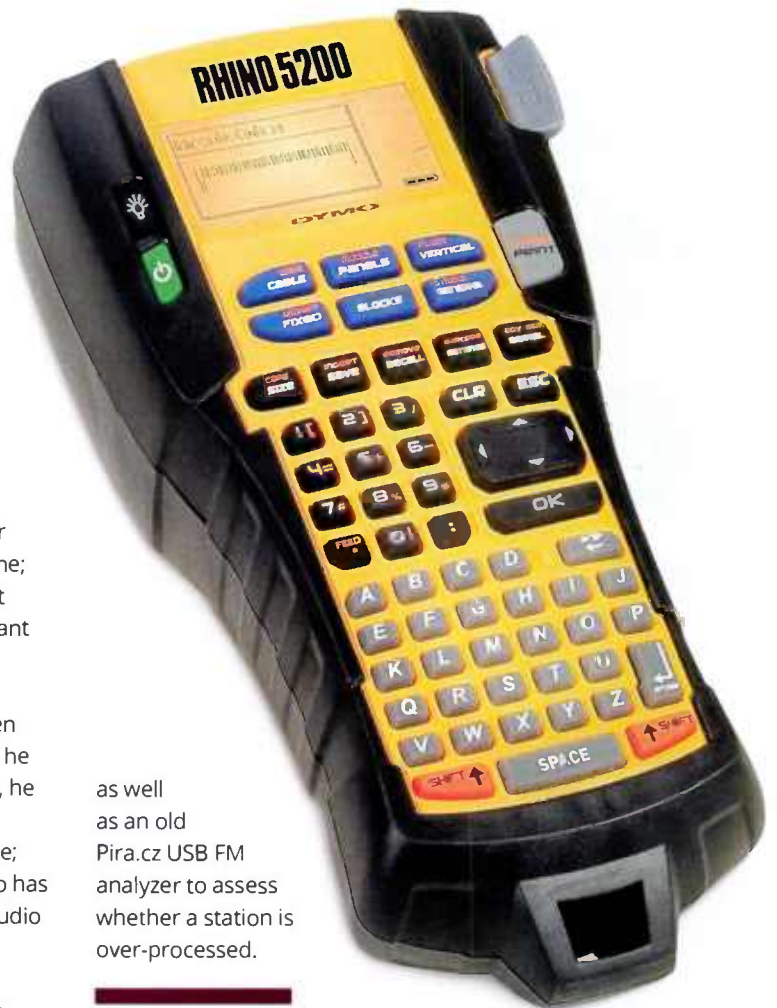
Bright at night

Ed Walters, K8DI, is with The Solution LLC in southwestern Michigan. At the top of his list of "must have" tools is a decent LED flashlight. Ed likes the Nitecore P10. He calls it "stupid bright" and says it's not so expensive that he worries about losing it.

Ed says that at his age a magnifying glass also comes in handy, as does a small first aid kit that includes bandages, tweezers and antibiotic cream. Thinking of safety, Ed includes a box of latex gloves and a face mask, helpful for cleaning up rodent messes or in a medical emergency.

He makes sure he has a fully charged cell phone, with reliable coverage for emergency calls and a camera for documentation.

It's important to include at least one pair of pliers, a wrench or a crimper that's big enough to hit something with! Ed's preferred



Tips Wanted

Give us the benefit of your infinite wisdom! Send your tips and ideas to johnpbisset@gmail.com.

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Above

Keep a Dymo label maker in your tool bag. You will find many uses for it around your facility.

Right

Ed Walters likes the Nitecore P10 LED flashlight.



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Above & Right
A simple adapter adds length to an interview mic. Note the rubber O-ring, which makes for a snug fit.

solution is a pair of Klein Tools electrical lineman's pliers. (See our earlier column "New Uses for Your Handy Klein 9s," which you can find at radioworld.com, put "Klein" in the search field.)

These days Ed installs audio gear in theme parks, but he recently converted an RCA BTA-1R1 into a ham radio transmitter. He says those "relics" are fun to work with. He says his rig has no PCB capacitors, just a wonderful old smell!

News tool

Electro-Voice and Shure both make long-handle versions of their handheld omnidirectional mics that are so popular for news work, the EV635 and Shure SM63. It's interesting that adding just a little more "reach" makes for much better audio.

But what if you already own the classic shorter versions and would like to get that extra reach?

Jim Schultz of Schultz Communications in Warren, Conn., offers a solution. He purchased an XLR male/female extension adapter from Amazon (\$8.99 for two). The adapter easily adds 2.5 inches to your microphone and is the same diameter as those EV and Shure models. Jim added a 5/8-inch O-ring on the female side to make for a snug fit into the microphone, as you can see in the photos.



Wave the sensor around any wiring that you plan to touch. Not everything has a shorting stick! An inductive probe can keep you from getting bit, or worse.

Like Ed Walters, Dale recommends a good camera phone. Take pictures of wiring before you disturb it, and you'll have an easier job when it's time to put everything back together.

Dale uses the photos to document his work in the transmitter logbook, which helps him address recurring problems. Those pictures also can be used to provide a progress report to the boss.

And Dale agrees that your travel bag should include a well-stocked first aid kit. Scotch #3 makes for poor bandaging.

What's in your bag that you can't live without? Email me at johnpbisset@gmail.com. 📧

A lifesaver

Dale Lamm is director of engineering at Alpha Media's WHBC(AM) in Canton, Ohio. At the top of his list is a good non-contact AC voltage sensor (search "inductive AC voltage sensor" for a variety of models). Prices range from \$20 to \$30.

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CSRE, DRB

The author is director of engineering for the Educational Media Foundation.

The Inovonics 677 impresses

It's no wonder this new Triple Tuner EAS Receiver is popular

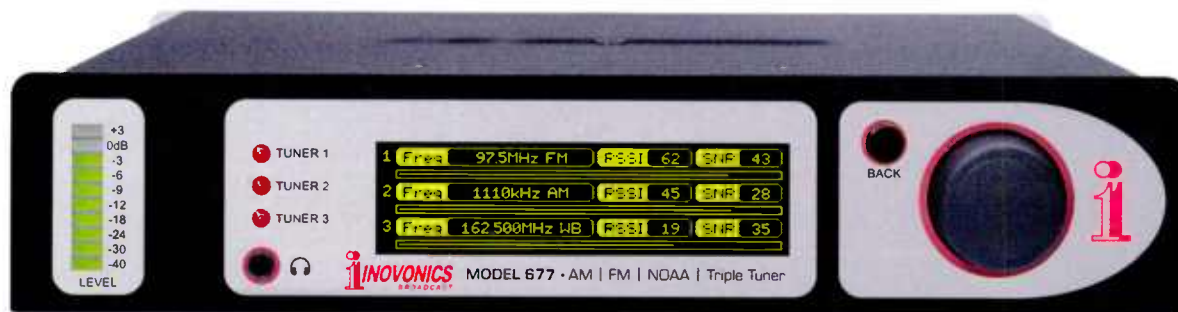
While upgrading your station's Emergency Alert System receiver may not be at the top of the GM's to-do list this year, having clean audio and reliable reception of EAS sources is not only good for your listeners but is also required by the FCC. Unfortunately, the availability of broadcast-quality EAS receivers has dwindled over the past few years, leaving a sizable hole in the market. However, that just changed with the new 677 Triple Tuner from Inovonics.

Released in December 2023, the 677 combines three discrete AM/FM/NOAA receivers into a sleek 1RU, half-rack unit. Designed primarily for the reception of EAS Local

provides a summary with band, frequency, signal strength and audio activity of all three tuners. Configuration of the receivers' frequencies, audio output levels, GPO triggers and IP address can be accomplished through the front panel, while more advanced features are setup via the web interface.

As internet connectivity of some variety moves toward being standard at broadcast facilities, having every device in the rack capable of remote access is a must. The 677 is equipped with the same rich, responsive web interface we see on other modern Inovonics models.

Navigation through the menu structure is simple and intuitive, so much so that one can set up and install this device without ever opening the plastic wrap on the



Primary (LP) stations, the 677 is the ideal upgrade to the outdated or obsolete receivers installed in racks today.

The Inovonics 677 is equipped with three tuners, each capable of receiving AM, FM or NOAA weather channels, so configuring it to match your local EAS plan takes just a few mouse clicks. Of note for certain areas: The 677 is not able to receive other VHF/UHF frequencies or DTV audio.

On the rear panel you will find three separate 75-ohm F-type jacks, so it is easy to use multiple antennas or share one with a splitter. The audio for each tuner is brought out to its own balanced analog-mono (L+R summed) XLR male jack. There are six configurable GPO closures for alarms and an RJ-45 network port for remote access.

The unit even includes an extra power port if you wish to add a redundant 12VDC power supply. The simplicity makes physical installation quick and efficient, and I was delighted to finally do away with the terminal block audio

connections on the old receiver I decommissioned in the process.

The front offers an orange LED display that is easy to read and navigate, three red indicators for active alarms, an audio meter for the selected receiver, and a 1/8-inch headphone jack. The default display



user manual.

While the 677 can certainly be a "set it and forget it" EAS receiver, the web interface provides a lot of data to the station engineer through both desktop and mobile browsers. Details on each receiver's performance are available at a glance on the home page, and histograms are offered to help fine-tune reception and troubleshoot issues.

The unit can provide an Icecast or UDP stream of any one of the tuners (selectable through the web interface) for instant or continuous remote monitoring on an internet radio, such as the Inovonics 611, or any web browser. The stream audio is encoded using HE-AACv2 and has a user-selectable range from 18 kbps to 64 kbps, so it is bandwidth-friendly even on cellular and VSAT connections.

Above top
The LED display shows the frequency, signal strength and audio level of each tuner.

Above bottom
The 677 features a bright LED display that is easy to read.

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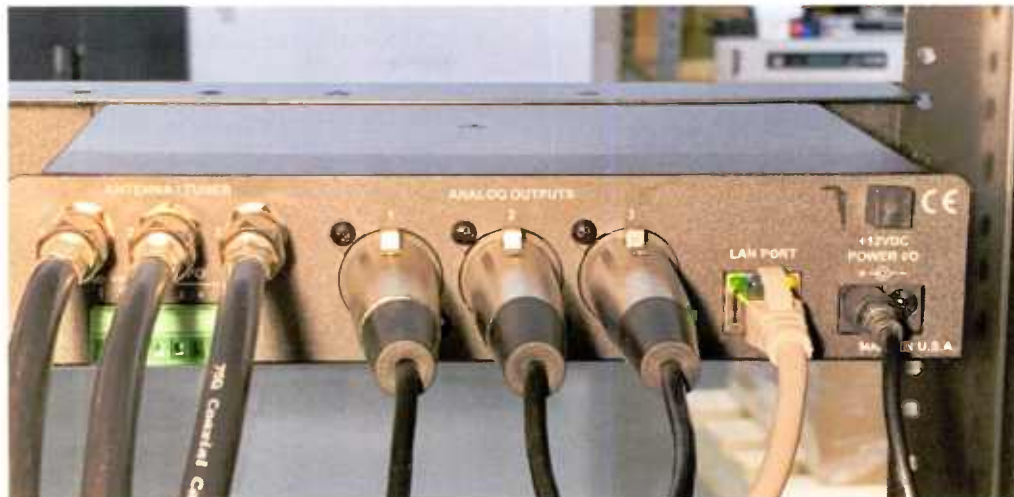
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Product Evaluation

One thing missing from the 677's streaming options, which is found on other Inovonics receivers such as the 568 Sophia, is the ability to push audio to Dante and AES67 devices. While the absence of this feature certainly reduces the cost of the unit and is perhaps not a broad need at this point, as more air chain devices are virtualized and with the hope of a virtual EAS encoder/decoder down the road, the ability to have all rack audio in an AoIP environment is a big plus for broadcasters.

The most important feature of any radio is its reception quality. With modern software-defined radios (SDRs) it is not uncommon to get excellent signal-to-noise ratios and rejection even in difficult environments. Even so, the 677 outshines its competitors in this area.

For initial testing on the bench, I used an outdoor discone antenna with about 75 feet of RG-6 coax feeding an inexpensive three-way splitter to provide an RF source for each receiver input. I purposely tuned the 677's receivers to distant AM, FM and NOAA weather stations. For comparison, I had an identical setup on the bench



with another popular EAS receiver. To say the results were impressive would be an understatement.

The 677 was able to provide reasonably good audio on a weather station with an indicated RSSI of 2 dB. The competitor's receiver returned only static. AM and FM performance was similar, where weak signals were received with acceptable noise for this application. Our Sage Endec easily decoded alerts from these sources during the course of a couple of weeks of testing.

Above
The 677's rear panel provides discrete RF inputs and audio outputs for each tuner.

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Under the category of “why not,” I slid a paper clip into one of the F-type antenna jacks and tuned a local FM station. I was greeted with full-quieting audio and an indicated RSSI of 31dB. And similarly, with the same paper clip, I was able to pick up a 5 kW AM station about 10 miles away with only some light crackle and hum — satisfactory for EAS reception. Simply stated: If you have a site where reliably receiving your assigned LP is challenging, the 677 may be your solution.

Another unique and notable feature of the 677 is that it can trigger a GPO, SNMP or email notification when EAS tones are received on any of the monitored sources. This is especially helpful when tracking down a missed alert or simply verifying the Endec is configured properly. If you only have two LP sources to monitor, consider using the third tuner to monitor your own station to validate that your alerts are being transmitted.

The 677 includes SNMP, which can be easily interfaced to a modern station remote control, allowing a centralized location for alarm captures and logging. It can also send customized email notifications to up to 10 recipients. An alarm for RDS PI Code Error is included, the idea being a means to verify that the source you

Right
The well-designed web interface is simple but rich with features.



Online demo

Try the 677 yourself. Visit www.inovonics-broadcast.com/product/677 and scroll down to the online demo button.

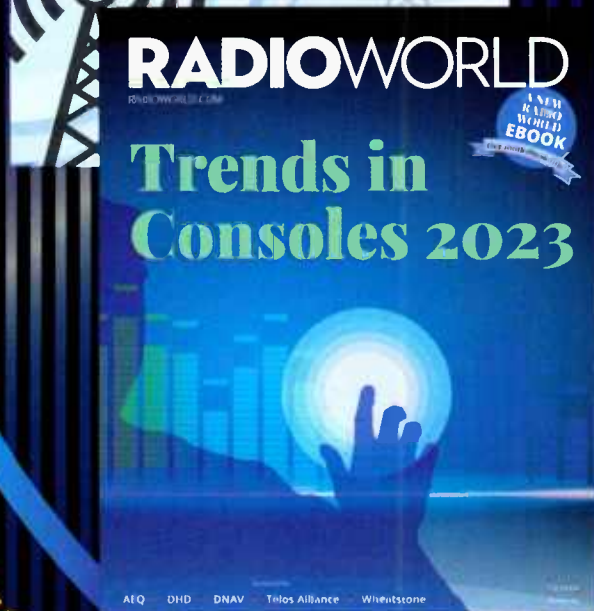
are supposed to be receiving is what you are receiving. The received PI code is viewable only in the alarm configuration, but no other RDS data is brought out to the web UI or front-panel interface. While not required, the ability to see FM RDS data would be a nice touch to this otherwise novel feature.

Can the 677 Triple Tuner be used for more than just an EAS audio receiver? Absolutely. If you have a couple of signals to keep tabs on while working in the engineering office, the 677 provides a simple way to monitor three stations at once. The individual audio outputs could easily be interfaced to a speaker switch and the mono output works great for a single Fostex 6310B sitting on the workbench. And with the built-in streaming and comprehensive alarm capabilities, using the 677 as a remotely steerable multiband radio could make sense when your stations are a long way from home.

Overall, the 677 Triple Tuner is a fantastic little box that reveals how Inovonics continues to listen to and support the needs of the industry. Simple, easy to use and packed with a host of powerful features to help ensure your EAS reception is the best it can be, the 677 will make a great addition to your station rack. **RW**

“ While the 677 can certainly be a ‘set it and forget it’ EAS receiver, the web interface provides a lot of data to the station engineer through both desktop and mobile browsers. ”

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Nick Langan

The author profiled Bruce Robertson of Weather-Monster in the Jan. 17 issue.



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Kernen keeps Crawford on the air in the Motor City

Part of his job is keeping a 10-tower AM array happy

When Mike Kernen came to Crawford Broadcasting as its Detroit market chief engineer in April 2020, he brought with him 32 years of experience, having supervised engineering at Greater Media's Motor City properties and then serving Beasley Media for four years after it acquired the cluster.

Crawford's market stations brought a unique challenge. In addition to stalwart WMUZ-FM on 103.5, Crawford owns three AM stations in the region, all running directional arrays, most notably 1200 WMUZ(AM), "The Salt of Detroit." Licensed to Taylor, it has a complex directional antenna system for its nighttime pattern.

"I was nervous about taking on the 10-tower array," Kernen said. "I knew the theory behind AM broadcasting and had some experience maintaining (AM 760) WJR. But just the complexity with the setup, at first, was intimidating." Kernen credits Cris Alexander, Crawford's director of engineering and Radio World contributor, with giving him the tools he needed to succeed.

"Cris showed faith in me that I could be an AM guy," Kernen said. "I've come to love it; it's the most exhilarating part of my job given its intricacies."

At Crawford's Detroit-area properties, Kernen oversees everything technical, from ensuring that the grass at the transmitter and antenna sites is well-maintained, to managing its computer networking.

Troubleshooting

WMUZ's AM antenna array is located about 19 miles southwest of the center of Detroit in Huron Charter Township, nestled in a field between greenhouses and a



couple of churches, in landscape that is quintessential outlying lower Michigan.

The station signed on in 1990 as 25 kW day and 1 kW night. A frequency change by a co-channel station in Frankenmuth, Mich., a few years later made 50 kW day possible, and with the addition of more towers to narrow the directional pattern, 15 kW night was authorized as well in 1993.

Crawford acquired the station from Radio One in 2017. The station was silent for several months that year, and its antenna site needed

some upgrades.

"The site was in remarkably good shape overall," Alexander said. "The biggest change we made out of the gate was replacing the main transmitter with a new Nautel NX50. That allowed us to operate the station more efficiently and in the hybrid MA1 digital mode."

"It has been terrific, it works like a hose," Kernen said of the NX50. WMUZ(AM) also has a 5 kW GatesAir transmitter for auxiliary purposes.

The next order of business was troubleshooting the AM's automatic switching from its 10-tower, 15.8 kW nighttime pattern to its four-tower, 50 kW daytime pattern.

Intermittently, Kernen would receive alerts at sunrise that at least one of the 10 Kintronic Labs custom-made antenna tuning units had failed to switch, leading to an inability to transition to the daytime pattern. Consequently, the station would be off the air.

The intermittent nature of the failures, and the variety of components subject to failure, led to a Whac-a-Mole process of troubleshooting.

"You would make a change, see a response and the next thing you knew, the same issue would occur," Kernen said. He replaced microswitches within the ATUs, changed coils on contactors and identified bad coil within the site's phasor, which Kernen said is the size of a small bus. Yet the issue persisted.

Kernen decided to measure the voltage coming back from the ATU with a multimeter. He found that the relay inside Tower 10's ATU was receiving only 16.7 volts, indicating that over 9 volts were being lost across the loop of wire going to tower 10 and coming back to the controller.

"There's no way the length of the cable would be

Right
Mike Kernen

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Left
At the tower site.

responsible for that great of a voltage drop," Kernén said. The ultimate culprit? A wire inside the transmitter building wasn't seated properly. Opening the screw on the terminal block and retightening the wire fixed the issue entirely.

"A valuable takeaway from this experience," Kernén said, "is that often, we can get caught up in the complexities and, based on our past experiences, overthink issues. Sometimes the answer lies in simplicity. It's important to be aware of our tendencies and occasionally approach problems from a counterintuitive angle."

Alexander agreed and noted some common patterns savvy engineers like Kernén pick up on. "Other than the size of the components, AM antenna systems use the same basic blocks of LC circuits you would find in any RF device," he said.

Freshened up

Alexander has composed several documents that he shares with engineers during the on-boarding process. "I wrote a white paper years ago on dealing with problems in AM directional antenna systems," he said. "In that document, Rule Number One is don't try to fix antenna problems with phasor controls! Find the underlying cause and deal with it."

Kernén is proud of the progress he and the team at Crawford have made at WMUZ, and the work has continued. Following his recommendations, a new storage building was constructed 50 feet from the transmitter building, for tractors and other equipment. New security cameras were installed at the site, along with interior and exterior illumination for the new structure.

A new roof was installed on the transmitter

building this year, followed by a repaint. New gravel was paved on the road to the site, and the west doors to the building were replaced; the previous ones had rusted due to the strong westerly wind that often blows in from the field.


"For me, it's a thrill, to go from a station left to go dark, to a site that we are proud of," Kernén said, adding that he regularly receives QSL reports on 1200's nighttime signal from as far away as Finland.

There are, of course, other challenges that any engineers with complex sites in semi-rural settings can attest. WMUZ's antenna site is in a very low area built on a former landfill and thus is prone to standing water, which means water intrusions can be frequent.

"A contractor comes in once a month to deal with mice, wasps, bees and mosquitos during the warm season," Kernén said, recalling a particularly challenging day last August when he was stung four times by bees.

"Nowadays, managing the 10-tower array is less challenging than overseeing the other two AM sites," Kernén said. The transmitter site of WCHB 1340 in Royal Oak, Mich., took in an inch of water during one weather event; this was corrected with the installation of a whole new drainage system. The third Crawford AM in lower Michigan, 560 WRDT Monroe, broadcasts from separate sites for its daytime and nighttime patterns, and it has a separate 107.1 FM Detroit translator as well, all of which keeps Kernén often on the go.

Kernén appreciates Crawford's support for AM and expresses pleasure in his daily role.

"The saying is true, if you love what you do, you never work a day in your life," Kernén said. "It's a profound feeling, knowing that what you've worked on reaches millions. It's truly inspiring." 



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Mark Lapidus

is a veteran multi-platform media and marketing executive.

Get to know WhatsApp

It's time for American radio to explore this evolving product

Because much of my work is international, I was a relatively early user of WhatsApp. It became my free long-distance call and multifaceted messaging service for keeping in touch with businesses and friends around the globe.

But for quite some time, when I'd mention it to folks here in the United States, many would say, "WhatsApp? What the heck is that?"

While the app was introduced in 2009 and subsequently became a global juggernaut, adoption in the U.S. was slower — yet it is steady and growing. eMarketer pegs the U.S. at 67.6 million users for 2023 and projects growth to 70.2 million by 2027. Other sources say it's much higher.

I'm convinced that WhatsApp will grow rapidly here as it adds more services and Americans increase international travel, spurring them to try the product. Many American businesses have already added WhatsApp to their communication process for consumers. With WhatsApp's new "Channel" functionality, it's time for American radio to explore this evolving product.

What's not to like?

Get ready for WhatsApp Channels. It launched in September so that users could follow celebrities and brands for updates. At this writing, there is indeed a waiting list for creating a new channel; however, I've found several sources reporting that WhatsApp will be allowing access to all at some point soon.

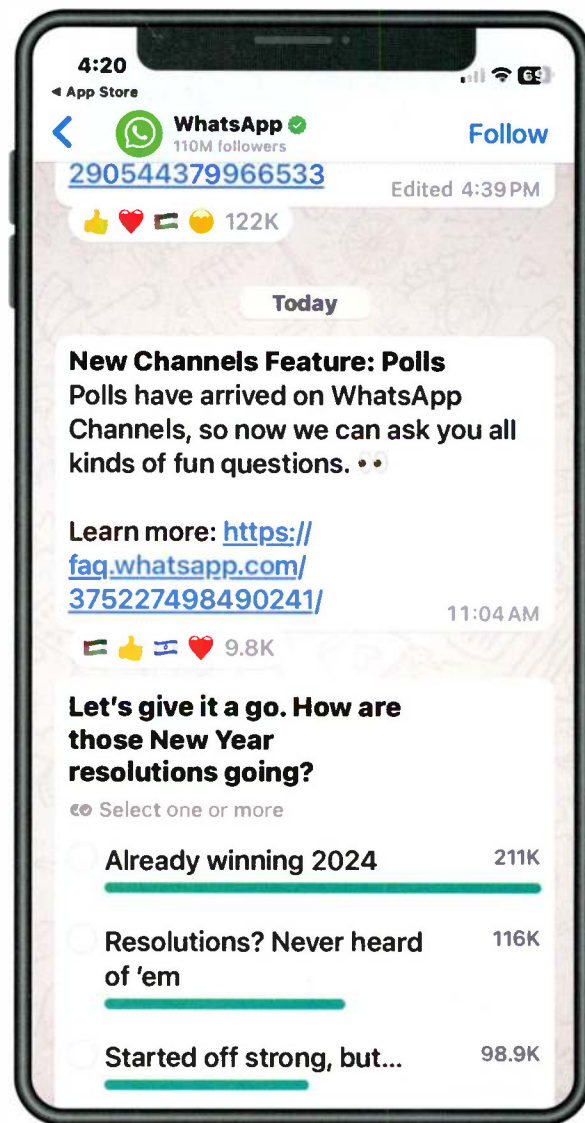
Unlike WhatsApp Chats, the Channels feature is one-way broadcast communication, all coming from the brand or personality. Users subscribe to specific WhatsApp Channels to receive updates. This is most definitely a no-brainer for news/talk and sports formats but could also work quite well to highlight personalities and station benefits.

If you search "radio" or even "FM," you'll see how stations around the world are already using the product to communicate to their listeners.

Bluradio in Bogota, Columbia, has more than 650,000 followers. For comparison, Major League Baseball has surpassed 1.5 million. Although there may be some U.S. stations on

board, I could not easily find one.

Currently, 16 people can function as the "admin" for your WhatsApp Channel, so the creativity and work can be spread around your station. But plan wisely. For example, the help



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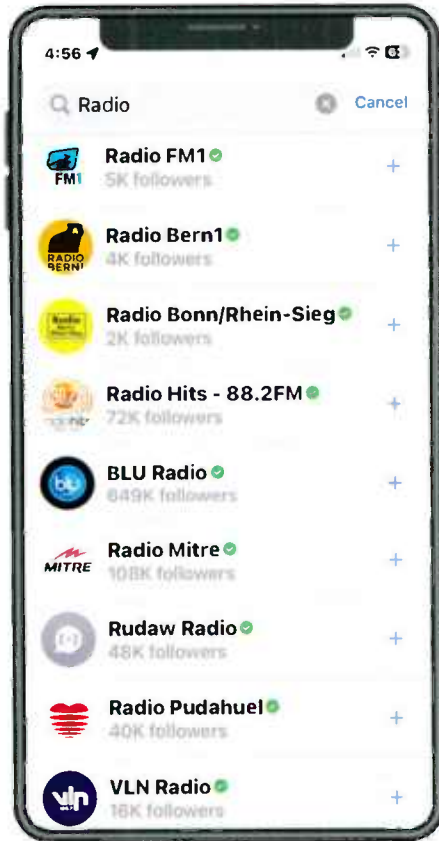
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“If you search ‘radio’ or even ‘FM,’ you’ll see how stations around the world are already using the product to communicate to their listeners.”

center makes a great point when it recommends that “channel admins should be respectful of their followers and avoid sending too many or low-quality updates, which could lead recipients to unfollow their Channel.”

Recently, WhatsApp Channels introduced voice messages, which means you’ll be able to send clips of shows or bits to followers. It’s not possible yet to embed videos, but links may be used. However, just like any other platform, I caution against linking out unless you don’t want followers to stay on your Channel. Once you link out, it’s unlikely the user will return, and often they bounce from the outbound link because they really do want to stay on the platform. You may also conduct polls on your WhatsApp Channel, a handy way to get your audience engaged in real-time, while you talk about it on-air.



One more benefit to WhatsApp is using Community or Chats to accept two-way communication. It’s an excellent way for listeners to send you voice notes from their phones that you can use on-air. The advantage over phone calls is obvious: You can easily edit and utilize at your complete convenience. The sound quality is also excellent.

By the way, WhatsApp Chats are terrific for internal use. Use your WhatsApp Chat Group to stay in touch with your on-air staff or sales organization. It’s much more efficient than email and will speed up your communication process.

What’s not to like? When the time comes, I am looking forward to watching American radio grow on WhatsApp and can’t wait to subscribe to your Channel.

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Sage Releases Required EAS Firmware Update

In February, Sage Alerting Systems released the important Rev 96 firmware update for the Sage ENDEC. Users of those EAS boxes in the United States must install it by March 11.

"This provides support for the new FCC rules on CAP prioritization, and text for national alerts," the company said. "It also includes updates to digital certificates used to verify FEMA CAP alerts." Sage says it has also added several features including login/out audit logs, emailing of weekly alert conformance reports and several usability improvements.

Sage users had been given an extension by the FCC to comply with the requirement that participants in the Emergency Alert System, including broadcast stations, prioritize the Common Alerting Protocol-formatted version of an EAS message when they receive both a CAP and legacy version of the same alert.

The update, available from Sage dealers, costs \$159 and must be installed by March 11 for users to remain compliant with FCC rules.

"Any Model 3644 Sage Digital ENDEC originally purchased new from dealer stock after Dec. 12, 2021 is eligible for a free Rev96 update. This includes serial numbers B418750 to B429999. Once you have purchased an update, or if your serial number is in the free range of B418750 through B429999, you can go to the download page and follow the steps," it said.



"You must have Rev95 installed before you can install Rev96," the company wrote in an email to users.

The release also includes replacements for security certificates expiring in mid-April 2024, and support for new certs to be issued starting April 1. These are used by FEMA to allow EAS devices to validate alerts.

In addition to the required changes, Rev 96 includes several usability features, including automated emailing of conformance reports, required alert summaries and the full log each week.

"This will reduce the amount of time needed to acquire and review the log data, and reduce the number of people that need to access the ENDEC. This will help to further highlight compliance issues such as failure to receive RWTs and RMTs, and to send RWTs and relay RMTs," the company said.

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Full time ministry position at 5 station group of non-commercial, 31 year old Christian radio non-profit located in Northwest/Central Ohio. Reporting to the Director of Operations-Engineering, this person is responsible to assist with the technical operation of two separate radio formats on 3 full-power FM stations and 2 FM translators. The position includes oversight of BE's AudioVault automation software, Wheatstone studio equipment, the Wheatstone Blade System, BE and Nautel FM transmitters, in addition to other technical, IT, and programming needs.



The position also requires On-Air skills related to hosting live Christian music programs, voice tracking, and other produced audio products using Adobe Audition production software. The Candidate must have the ability to work in close proximity with other team members in a currently challenged office environment in this growing radio organization.

Send Resume confidentially to Joe Emert, VP/GM at jemert@newvision.fm

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Don't let AI rob us of what's important

We don't want a totally fake world where we can't trust one another

Are IP-based broadcast technologies "clouding" our judgement? The fad promises Arpège but gets us skunk. Radio management is often quick to toss out the old model of on-site hardware (along with its hosts, journalists, salespeople and support techs) as a cool money-saving tactic. But what happens if (and, increasingly, when) some online demon hijacks it, leaving a station crippled and embarrassed?

A good example was the Sinclair/WRGB data breach

Writer
Michael Shovan
 Retired broadcast engineer

mess-up in 2022, which lost ad placements and undoubtedly damaged the viewers' experience.

A relentless pursuit of media consolidation began in earnest some years ago when FCC ownership limits were abolished, allowing creation of fewer and fatter 2,000-pound gorillas, corporate behemoths that stripped countless markets of their diverse, unique and independent voices.

The AI craze seems to be only worsening this trend, with thousands more workers at risk of losing their jobs as fake "personalities" begin to deceive their "audiences" with cleverly designed tactics. Will the AI trend risk a complete takeover of the media by unfeeling software that may have an underlying evil agenda?

I propose a new product to combat this called "ListenIP." It creates "virtual audiences" with a feature nicknamed "AL" for "artificial listener." It is tailored to fool owners, complicit advertisers and ratings services into thinking these stations are really popular.

One tool in this package, "PHON-e," will be optimized for talk formats that depend on callers to support their boring, repetitive sports and political content.

Just imagine: YOUR station can be top-rated while having NO actual listeners!

Are we to live eventually in a totally fake world where we cannot trust each other? It's bad enough that most advertising offers are already misleading.

“ I propose a new product to combat this called ‘ListenIP.’ It creates ‘virtual audiences’ with a feature nicknamed ‘AL’ for ‘artificial listener.’ ”

A wise man once said, "Many a promise is screamed from the rooftops, but truth always lies in the whispers." How many times have you really read the "fine print" that reveals any "gotchas"? Honesty is based on truth; greed is rooted in deceit. Which do you prefer?

The old truism states that you can fool some of the people all of the time and all of the people some of the time, but you cannot fool all of the people all of the time.

As a child, I was fascinated by the diversity of voices and music I heard on my first love, a little Emerson table radio. I still recall visiting local stations and marveling at the personalities and the equipment that made it all possible; it cemented my desire to become part of a wonderful profession.

I learned so much as an AM station engineer and DJ and as a tech consultant for another small daytimer, and I missed those experiences after moving to the television side. But I'd found my life's purpose, and I'll be forever grateful that I pursued it. It led to my passion for church media ministry and other projects. Alas, those "radio days"

are gone, but one never really forgets their first love.

What matters is honesty and truth, and I think AI is leading us away from those.

I recall an obscure 1975 song called "Turn Your Radio On!" by singer Ray Stevens, which suggests WE are all "radios" that need to be tuned to only the ONE valid "station":

*Turn your radio on...and listen to the music in the air;
Turn your radio on...and glory share.
Turn your lights down low, and listen to the Master's Radio...
Get in touch with God...Turn your radio on!"*
(Lyrics by Albert E. Brumley, Sr.)

Where is your "radio" tuned?

The author is a retired broadcast engineer who started at 18 with an FCC First Class Radiotelephone License at a local daytimer, moved to a second AM and then migrated to TV, where he says he "spent nearly four decades losing sleep, weight and sanity at mountaintop transmitter sites." 📻



How to submit

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

High-school memories

I enjoyed the article "New Program Nourishes High-School Interest in Radio."

Monterey High School in Lubbock, Texas, had a terrestrial radio facility as part of its electronics program. Originally an unlicensed AM "power line injector" in the 1960s, KMHS eventually became a licensed educational 10-watter with call letters KLSD, for Lubbock School District.

KLLL in Lubbock donated an old Armstrong transmitter, and its IPA section was tapped to supply the necessary low power. The first song aired was Led Zeppelin's "Stairway to Heaven."

When the license was upgraded to 3,000 watts via a donation from McMartin, many more people were able to hear 91.1 FM — so many in fact that complaints about the call letters were received by Superintendent Ed Irons. He decided to ask the FCC for new calls and KOHM was selected.

Station promotions were led by the students. The electronics program had printed circuit screening capability, so they made a silkscreen with a unique logo. I have a jacket with the logo on it, entrusted to me by the late Donald Hackler, who engineered radio facilities in San Francisco. He was a great mentor and helped me get through Fortran programming class at Texas Tech.

I'm happy that youngsters want to learn the business but it bothers me that not many are jumping into chief operations and transmission maintenance. Believe it or not, the antenna at KOHM was built by the Monterey metal shop students working from blueprints designed

by Dr. Charles Burford at Texas Tech. (My air shift was called "The Cherry Pepper Program," named for Dr. Burford's affection for that barbecue relish!)

Our instructor Charles Wilson was a fervent ham operator and a good teacher — although transistor biasing calculations had many of us scratching our heads for a few days. I have many great memories of KOHM before it moved to Dunbar-Struggs High School in the early 1980s. It eventually faded into eternity.

Kerns Garza
KRFE(AM)
Lubbock, Texas



Correction

In the article about wall-wart power supplies in the Feb. 1 issue, the phrase "United Laboratories-listed" should have read "UL-listed," referring to UL LLC, the organization formerly known as Underwriters Laboratories.



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