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## NCE Filing Window Likely in Early 2021

Opportunities in big markets will be scarce; meanwhile another LPFM window may follow

BY RANDY J. STINE

There may soon be more signals on the lower part of the FM band in the United States.

While 5G seems to be the recent focus of Federal Communications Commission spectrum allocation, a new filing window for the noncommercial educational service is expected as soon as early next year.

Over a decade has passed since the FCC accepted applications for new full-power NCE construction permits.

A window would allow non-profit organizations, schools and native tribes to apply for original CPs in the NCE reserved band, 88.1–91.9 MHz. Individuals cannot apply for NCEs.

A filing window would probably also allow existing NCE stations to seek major changes. A subsequent window for low-power FM applications across the FM band is expected to follow (see “What About LPFM,” page 4).

Chairman Ajit Pai, responding to a congressional inquiry about LPFM this

summer, signaled the commission’s intent to open a full-power NCE window in early 2021.

“Staff anticipates that the new NCE FM window will be opened after our new processing rules for this service are effective later this year,” Pai wrote in a letter to Rep. Xochitl Torres Small (D-N.M.)

Asked for comment about possible expansion in the number of stations at the left end of the band, National Public Radio said it is always “supportive of opportunities to expand station services when they

are presented.”

Observers say most opportunities for new NCE stations would be in less populous parts of the country, considering the number of signals already squeezed into the band where there are more potential listeners.

BY THE NUMBERS

The number of FM educational stations has almost doubled in two decades, from 2,140 in the year 2000 to just under 4,200 at the most recent FCC count.

(continued on page 3)



HI! WE ARE



The NCE reserved band is 88.1 to 91.9 MHz. These logos are for a few of stations that populate it.

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### Audi AG Launches Hybrid Radio in U.S. and Canada

Christian Winter explains how we got to this point.

(See Page 6)

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## NCE

(continued from page 1)

The number of commercial FMs increased at a much slower rate, from roughly 5,900 to about 6,700. The category of FM translators and boosters grew prodigiously, from about 3,250 to 8,300; and LPFMs, which didn't exist before the beginning of this century, now total 2,146 licenses.

The NCE service has not had a window for new applications since 2010, according to the FCC, and that one involved a limited number of existing vacant allotments.

A 2007 NCE window yielded approximately 3,600 applications, of which about 2,700 were mutually exclusive, meaning applications involved geographic or spectral overlap. The FCC in that round granted approximately 1,330 CPs for new NCE service, according to commission data.

There's no way to know yet how many new NCE licenses the commission might eventually award since it does not identify potential slots. Typically, an applicant identifies a spectrum opening on a certain frequency and names a transmitter site, power and antenna height to fit that spectrum availability.

### NEW PROCESSING RULES

The commission in late 2019 revised certain rules for processing NCE applications; the measures are intended to simplify and improve selection and licensing and clarify procedures for choosing among mutually exclusive applications. The changes dealt with specifics such as divesti-

rules are expected before opening a window next year," the FCC spokesperson said.

### NITTY GRITTY

Applicants in the filing window must propose a facility that meets at least the minimum for a Class A FM station, which is 100 watts (0.1 kW) at 30 meters height above average terrain. Facilities proposed may be up to 50 kW for a Class B or 100 kW for a Class C depending on the proposed station location.

Noncommercial educational FM stations protect all other reserved band full-service stations using contour overlap on co-, first-, second- and third-adjacent channels. However, reserved band stations are not required to protect existing LPFM and FM translator stations.

The FCC expects any new NCE window would be open for one week.

As for when that might be, the commission typically gives several months' notice of any filing window for new station applications.

One observer, communications law attorney Dan Alpert, said the timing of the filing window is discretionary on the part of the FCC but guided by the winds of political pressure. But he said the window is likely to come while there are still economic unknowns caused by the pandemic.

"There may be fewer parties out there who can afford the time and expense to develop engineering proposals that would be necessary for an NCE filing," Alpert said.

These filings would not involve a filing fee, he said.

**It is unlikely that applicants will find either full-power NCE or LPFM opportunities in most non-rural areas.**

— Attorney John Garziglia

ture pledges and amendments to the governing documents of applicants who claim certain MX point classifications. The FCC also will revise the application form to require each applicant to certify that it has reasonable assurance of availability of its proposed transmitter site.

"We are hopeful that Office of Management and Budget can finalize its approval of those rule changes in mid-October," a spokesperson told Radio World in September. "After that approval, the commission will be able to announce more details about a new NCE window in 2021."

The FCC included all of the changes to the NCE and LPFM processing rules, including rules governing major tie-breakers for mutually exclusive applications, in a Report and Order in MB Docket No. 19-3 issued last December.

The resolution of competing claims is an important part of the process whenever a new station window opens.

The commission places conflicting applications into MX groups before applying internal processing; it then selects one application for grant from each separate MX group. A point system is applied to each application based on public interest criteria (such as diversity of ownership, localism or technical superiority) and the application with the most points in an MX group is the tentative selectee.

The commission recently dismissed a challenge to the NCE MX process. Law firm Discount Legal had argued that the FCC should set up a secondary grant policy for MX groups, essentially naming "runner-up" applications, but it was unsuccessful.

"No new additional changes to the NCE processing

since these are for facilities in the non-commercial reserved band. "However, there will be substantial costs involved pertaining to engineering and legal analysis."

The 2007 NCE window limited each entity to a total of 10 applications nationwide; the FCC could again place a cap to avoid huge numbers of applications that would be difficult to process and could lead to daisy chains of competing proposals.

"To the extent the commission intends to explore imposing similar limitations this time around, it will first seek public comment and input on such an approach," the FCC spokesperson said.

The spokesperson added that many applicants are disqualified because they didn't pay sufficient attention to the filing requirements.

"Our rules spell out in detail our procedures for processing applications for new NCE stations. Those rules provide potential applicants with guidance about what factors will be taken into account to resolve any mutual exclusivity among applicants, and how to resolve mutual exclusivity."

### "INCREDIBLY CROWDED"

While the FM band has become quite busy in the 21st century, congestion and interference are generally viewed as greater issues higher up the dial. But that doesn't mean there are a lot of tasty NCE market opportunities waiting to be discovered, either.

John Garziglia, communications law attorney for Womble Bond Dickinson, expects most new full-service

(continued on page 4)

## NCE

(continued from page 3)

NCE licenses will be awarded outside major urban areas.

"The FM band in most areas of the country is already incredibly crowded. It is unlikely that applicants will find either full-power NCE or LPFM opportunities in most non-rural areas. In rural areas, there will be significant availabilities for both new NCE and LPFM stations," Garziglia said.

He expects the application processing would take at least a year, which could delay the opening of the LPFM filing window.

"If the FCC opens an LPFM window prior to the almost-complete processing of NCE applications, there is the risk that spectrum space specified by NCE applications that will later be dismissed or denied will foreclose availabilities of LPFM spectrum," Garziglia said.

"So, there may be a significant detriment to LPFM applicants if the FCC does not await a full processing of NCE applications prior to opening an LPFM window."

Matt McCormick, co-managing member of Fletcher, Heald & Hildreth,

said groups hoping to apply for an NCE license should use the next few months to select knowledgeable consulting engineers and a communications attorney familiar with the NCE selection process.

"There are too many traps for the unwary for an applicant to try to weave its way through the process without a lawyer," he said.

"The third step is to make sure the applicant's corporate paperwork is up to date with the appropriate state office, which is the secretary of state's office in most states."

McCormick said applicants need to submit the strongest proposal possible and assume that mutually exclusive applications will be filed; and they should propose technical facilities serving populations that currently have no or only one NCE radio service.

Should interested parties wait for the expected LPFM opportunity?

"Frankly, I think that any non-profit group that wants to get into radio should file in this window," he said. "If it wants to reach a relatively large geographic area, it can do so with a full-service NCE FM, whereas the coverage of an LPFM is limited to the area it can reach with 100 watts at 30 meters above average terrain."

In addition, even if a non-profit plans to operate with a low power level at first, a full-service NCE license may allow it to increase power later.

"Moreover, if the group is not successful in getting a full-service NCE FM through this window, it can always file for an LPFM during the window that will follow."

For those selected to receive new full-service NCE construction permits, the costs involved in building and operating a radio station can be substantial.

REC Networks, a consultancy that is active in the non-profit and LPFM sector, estimates \$3,000 to \$30,000 for a transmitter to get started, depending on the situation. Antenna size and cost also will vary based on power level, with a simple non-directional antenna at lower power (250 watts or less) around \$700 to start, but higher-power and directional antennas, especially those with a custom design, can be far more costly.

New NCE stations are also required to install an Emergency Alert System encoder/decoder, REC notes.

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

## WHAT ABOUT LPFM?

An entity eager for a low-power FM license may get an opportunity to apply for one once the FCC complete work on its full-power NCE filing window. LPFMs operate under noncommercial educational broadcasting rules as well.

An FCC spokesperson says the commission doesn't have a specific date "but we anticipate that will be a priority" once the next window for full-power NCEs is done.

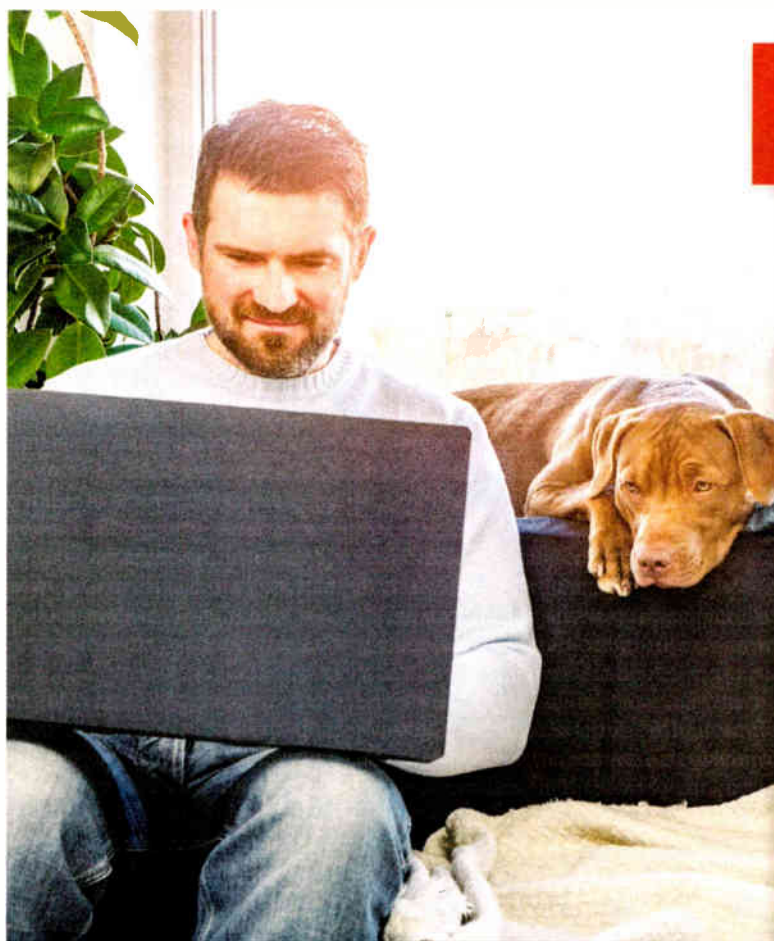
"We want to avoid the situation where we issue new LPFM permits that are subsequently knocked out by new primary NCE stations."

Some observers think an LPFM filing window could come in late 2021 or early 2022.

The LPFM service was launched in January 2000. LPFM stations are



Scott Flick



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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, P.O. Box 282, Lowell, MA 01853.

limited to 100 watts effective radiated power. There are 2,146 licenses as of the most recent FCC count. New LPFM applicants would be allowed to apply for one license, according to the FCC.

Scott Flick, a partner at Pillsbury Winthrop Shaw Pittman, answered questions from Radio World.

**Radio World: How should non-profit groups prepare for the next LPFM filing window?**

Scott Flick: In terms of preparation, there is no substitute for reviewing the application form used for this purpose by the FCC (Form 318) to see if the applicant can supply the requested information and make the required certifications, or needs to take further steps to be able to do so.

And of course, the applicant needs to make sure that it is the type of entity that can even qualify to apply for an LPFM authorization in the first place. The requirements are narrower than most people realize, and can be found in Section 73.853 of the FCC's rules. The applicant must also be local to the station service area and, with some exceptions, can't have an interest in other broadcast stations.

**RW: What kinds of things often trip up LPFM hopefuls?**

Flick: Common problems LPFM applicants have in the planning process include failing to secure the rights to

their proposed antenna site — lease negotiations fall through — or discovering that they need to deal with local zoning authorities to be able to use their proposed site.

There is also a pretty long list of FCC rules applicable to LPFM, which can be found in Section 73.801, and applicants should ensure they are familiar with all of them. They also need to be thinking about how they will supply a continuous stream of content to feed the station, as, for example, LPFM stations are prohibited from retransmitting the signal of a full-power station, along with other types of content.

**RW: How about the finances?**

Flick: Of course the biggest issue is having a viable business plan in place. Since LPFM stations have to be operated non-commercially, it's particularly important to have worked through how the station will cover the costs of its operation and what those costs will be. Many people underestimate the costs involved and then struggle to stay on air. Operating an LPFM successfully means being able to deal with occasional unexpected expenses.

For example, since LPFM stations are subject to interference objections from full-power stations, an LPFM operator may suddenly find itself having to modify its engineering operations to eliminate interference, or even having to locate a new

channel to operate on in extreme cases. Having a budget in place that can withstand the costs of equipment modifications or replacement is a wise move.

**RW: Any final tips for potential LPFM licensees?**

Flick: It's worth noting that applying for an LPFM station and getting an authorization to operate one are not the same thing. If the application is incomplete or incorrect, the FCC may reject it out of hand. If the application is perfect in every way, the applicant may still not get a license because other applicants applied during the same filing window for facilities that are mutually exclusive with that application.

In that case, the FCC has processes in place to decide who gets the license, and in some cases, may encourage parties to share the license. As a result, parties should be careful about spending money or making commitments for leases or the like until they know they have a construction permit in hand.

Of course, they need to make sure all equipment meets FCC requirements, as there are plenty of FCC enforcement actions out there against stations that tried to use whatever equipment they could lay their hands on rather than what is required by their FCC authorization, particularly after an equipment failure.

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# Audi AG Launches Hybrid Radio in U.S. and Canada

Christian Winter explains how we got to this point

## COMMENTARY

BY CHRISTIAN WINTER

*The author of this commentary is with The Car.SW Org, a software subsidiary of the Volkswagen Group. He is a former radio and media development engineer at Audi AG and is a steering board member for hybrid radio standardization organization RadioDNS.*

Three years after the successful launch of hybrid radio in Europe, Audi is offering this new feature in most of its 2021 vehicles, including models available in North America.

Innovation — what Audi calls “Vorsprung durch Technik” — is an ongoing part of development in the automotive industry. The challenge is always to keep pace with trends and technological advances.

However, it's unusual that such innovations involve the car radio, which many drivers take for granted — a feature that is “just there,” like the steering wheel.

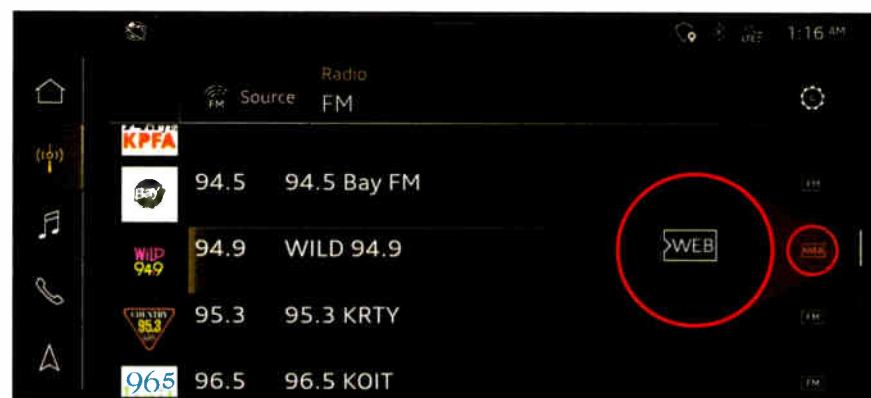
Hybrid radio is a new innovative feature that is helping radio to stay relevant in the highly competitive entertainment world in the connected car.

In 2012, I wrote my master thesis



that both reception methods need to work together somehow. With just two modules inside this is not the case; the kitchen radios in question did not even manage to provide a shared preset list.

Therefore, I argue that hybrid radio is about merging at least two worlds in order to create a better user experience. Back in 2012, the fundamental idea was to com-



On this display WILD is being received online, as indicated by a small box to the right labeled “Web.” It's a small visual that indicates, among other things, a dramatic expansion of a station's ability to reach listeners beyond its OTA footprint.

**2021 Audi models with hybrid radio will finally arrive in the U.S. and Canada, and iHeartMedia will provide RadioDNS support for hybrid radio in Audi cars.**

about hybrid radio for Audi Electronics Venture GmbH, the pre-development department for Audi AG. I spent a whole chapter defining what hybrid radio is.

The term is often used the wrong way — for example to sell kitchen radios that have more than one reception method. Is it a hybrid radio because it is equipped with an FM and DAB tuner and you have to press a source button to switch between modes? To me, hybrid means

combine a conventional broadcast radio with the upcoming internet connectivity in connected cars. This was the next logical step after my colleagues had developed a unified station list with the combination of FM radio and DAB radio together.

The use case of switching seamlessly from broadcast radio to the online stream when the car leaves the reception area evolved into the main feature of hybrid radio.

### METADATA IS KEY

In recent years, display resolutions of in-car infotainment systems and the screen itself increased in size. While an FM radio usually shows a frequency and an eight-character RDS name, the hybrid radio uses the whole screen area to display station metadata, e.g. station logos, that it receives via online connection.

In this way hybrid radio got a more

modern, contemporary and appealing look. RadioDNS standardizes how to receive station metadata, and this helps developers to get an easier access to longer station names and online logos (see <https://radiodns.org/technical/documentation/> for more about this).

The key to a good hybrid radio experience is metadata. Audi, as a longtime member of RadioDNS, regards the latter's open approach as the easiest way to support hybrid radio.

Together with RadioDNS, Radioplayer and a few German broadcasters, we wanted to solve the so-called chicken-and-egg problem. They made sure that we can receive the data via RadioDNS or the Worldwide Radioplayer API (WRAPI), while Audi, for its part, developed the first in-car hybrid radio for the European version of the Audi A8 in 2017.

The main feature of the Audi MMI infotainment system is “hybrid radio seamless linking,” which enables the

radio to switch from broadcast radio to the internet stream and vice versa whenever necessary, using Fraunhofer Sonamic time scaling technology (learn more at [www.iis.fraunhofer.de/en/ff/amm/automotive/sonamic.html](http://www.iis.fraunhofer.de/en/ff/amm/automotive/sonamic.html)). Seamless switching works best when the delay between the broadcast radio signal and the online stream is below 15 seconds. The majority of stations in Europe are even below 10 seconds. Support of up-to-date online station logos is an additional feature.

With the premiere of the Audi A7 in 2018, we introduced the feature “automatic radio song identification” to Audi customers, providing answers to the recurring question, “What's that song?”

Now, the artist and song title of the currently playing song appear on the display along with album art. Needless to say, that process happens in the background so that customers do not even have to press a button to identify a song.

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9 MISTAKES TO AVOID WHEN BUYING A TRANSMITTER

Our automotive partner Gracenote helped us to develop the technology behind it (see [www.gracenote.com/automotive-smart-radio-solutions](http://www.gracenote.com/automotive-smart-radio-solutions)).

After launching, we received very positive feedback from the industry as well as major European markets, extending their coverage of RadioDNS metadata from almost zero to 80% in only three years.

The biggest driving force that enables many stations for hybrid radio is Radioplayer Worldwide (<https://radioplayer.org/news/radioplayer-launches-spain>). Almost all car lines from the Audi A1 to A8 and the Audi Q3 to Q8 followed the pioneers A8 and A7 and eventually introduced hybrid radio.

Additional brands within the Volkswagen Group added hybrid radio to their models as well. For example, VW brought it onto the market with the Touareg in 2018 and Porsche with the Cayenne and Taycan.

#### COMING TO AMERICA

It has always been one of our priorities to launch hybrid radio in the U.S. and Canadian markets.

From a technical point of view, many of the challenges were solved with the European release; we only needed to adapt our seamless linking engine to cooperate with HD Radio.

However, we needed support from the U.S. and Canadian radio industry. Without them offering station data in the RadioDNS service information format, hybrid radio would not be possible.

We presented hybrid radio to the industry at the National Association of Broadcasters (NAB) Show in 2018 and 2019, as well as at the fall Radio Show in 2018. This year, I participated at the NAB Show 2020 Express and showed radio stations how important hybrid radio is for them.

The connected car offers many entertainment options beyond broadcast radio, such as streaming, Bluetooth, Apple CarPlay, Android Auto or SiriusXM with 360L. In the past, these entertainment options were difficult to use and not as convenient as radio; they were not even the standard equipment.

Today, the connected car makes it easier to use these entertainment options. It allows an app-like experience with additional features, such as voice input. Over the radio, customers can select from a variety of streaming audio services that provide unlimited content.

Hybrid radio is helping to create new business opportunities for broadcasters because it ensures that radio has its place in the connected car of the future.

Here is a list of reasons why broadcasters should use hybrid radio, excerpted from my presentation for the NAB Show Express 2020:

#### • Extending the coverage area for your station

- Listeners stay longer on the station, even if they leave the reception area
- Seamless linking experience helps when the FM signal is distorted

#### • Analytics from streaming radio sessions

- By tracking the user agent during hybrid radio streaming, the session lengths can be a good index of how good the broadcast coverage is
- For example, short sessions can

indicate that the core reception may have issues in some areas where the signal is not strong enough, the consequence being that a customer would most likely switch the station

#### • Shaping the radio brand in the dashboard of the car

- Radio can be visually on par with streaming services again
- Metadata is an enabler of possible future functionalities such as easy access to the podcasts of the playing station

I am delighted to note that upcoming 2021 Audi models with hybrid radio are on sale now in the U.S. and Canada. iHeartMedia will provide RadioDNS support for hybrid radio in Audi cars. In addition, Radioplayer Canada supports us with data from more than 350 Canadian radio stations.

I am looking forward to seeing more stations offer hybrid radio data in the RadioDNS service information format so that customers can enjoy a great radio experience in their new Audi vehicles.

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# COMREX

# What Happens When Lightning Hits?

KRJM in northwestern Minnesota knows the answer to that question

## TECHTIPS

BY MARK PERSONS

It started at 4:30 a.m. Tuesday, Aug. 19, 2019, with a thunderstorm. KA-BOOM!

People in the small northern Minnesota town of Mahanomen reported hearing the loudest thunder they could remember. Sean Bjerk, KRJM Radio's manager/morning man, lives three miles away. He was jolted out of bed and left wondering, "What happened?"

A quick check showed the station was silent. When he got to the studio building, Sean found thick smoke. He grabbed a fire extinguisher and investigated but found no fire.

The power was out. All circuit breakers had tripped. Resetting them brought on only some lights, but no audio.

The thunder concussion had been so great that two studio clocks were knocked off the wall and onto the floor.

The evidence was clear: Lightning had struck the station's STL utility pole next to the building.

Fig. 1 shows that lightning chewed through the top of the pole to get to the STL dish and transmission line. Fig. 2 shows the 1/2 inch Andrew Helix STL coaxial cable. It was burned as lightning jumped from the cable to the metal siding of the studio building at the point where the line entered.

### WHAT TO DO NOW?

Contract engineer Jim Offerdahl was 110 miles away. He set out immediately and on arrival found that virtually every piece of electronic equipment in the studio facility was damaged beyond repair.

The KRJM 101.5 FM 25 kW transmitter site, some 12 miles away, was fine. It just needed audio.

Jim used internet streaming audio from KRJB(FM), Ada, Minn., to restore temporary programming by early afternoon. Audio was from one of the dozen stations of R & J Broadcasting, Inc. in northern Minnesota. The format was country, instead of the oldies that Mahanomen area listeners were accustomed to hearing. KRJB added KRJM commercials and IDs to keep the station legal while continuing to make money.

### DAMAGE

Fig. 3 shows the wall outlet where the main equipment rack was plugged in. Totally blackened, it was useless. Fig. 4 shows where an electrician cut into a wall to check wiring to the outlet.



Studio of KRJM with STL mast adjacent.

After seeing the damage, Jim installed a new outlet elsewhere with new wiring. You'll see a green light on the telephone system. It was lit but the system and its phones were fried as seen in Fig. 5.

The main computer network switch was history (Fig. 6). With that kind of damage, Jim strung new network cables to ensure reliability.

The automation system at KRJM also was toast except for one of the three hard drives, the only component that survived the disaster. This allowed the automation to be rebuilt and the station to be back to normal programming in two days. Part of the delay was to install a new STL dish and feed line, along with an STL transmitter and audio processing.

All of the studios were down so a temporary one needed to be rigged.

The network connector on a studio computer and a black spot on the wall (Fig. 7) are evidence of fire and smoke created by the event. Fig. 8 is where an unterminated computer network cable blackened a wall where lightning was seeking ground.

An insurance claims adjuster shook his head saying, "This is the worst damage I have ever seen." The insurance claim was paid.

### FOLLOW THE LIGHTNING

The KRJM studio facility had been constructed in a typical manner and enjoyed 20 years of normal service.

Fig. 1: Lightning struck the pole, cutting a deep gouge.



Fig. 2: It ate into the STL cable.

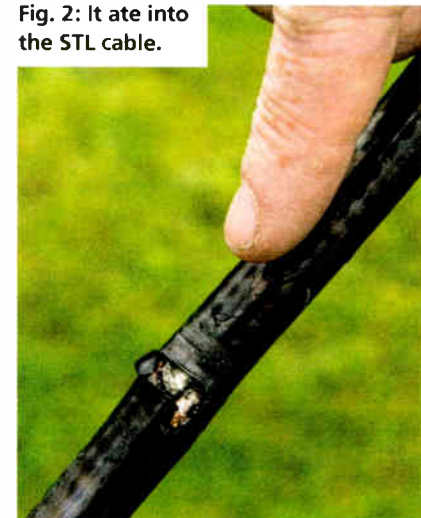


Fig. 3: A blackened wall outlet.

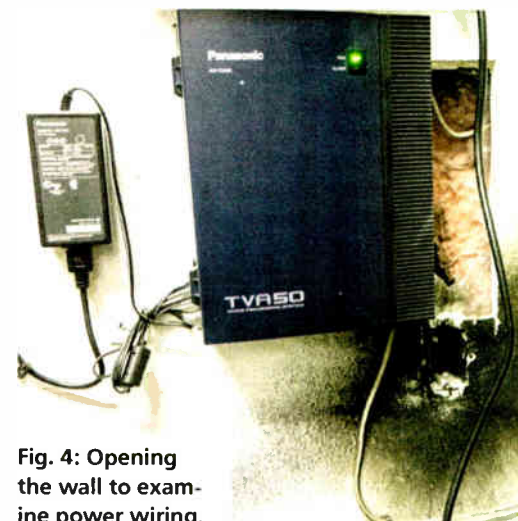


Fig. 4: Opening the wall to examine power wiring.



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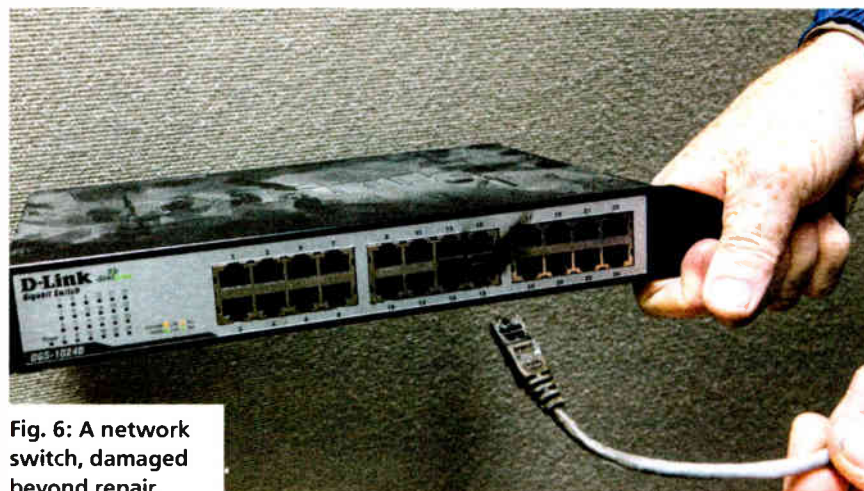
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**Fig. 5:** Even the telephone wiring was damaged.



**Fig. 6:** A network switch, damaged beyond repair.

## LIGHTNING

(continued from page 8)

There was a ground rod at the base of the STL pole for protection.

You'll remember I wrote a Radio World article about grounding in the fall of 2017 (Google "Field Service Tips: Grounding"). It discussed how lightning will usually take the easiest path to ground. What we often forget is that ground rods, a standard approach to grounding, are imperfect.

### FORENSIC ANALYSIS

In this case, lightning traveled down the STL pole and ignored the ground rod. Instead, it followed the STL transmission line to an equipment rack in the building.

From there, the lightning found ground through the rack's 120 VAC power circuit, supplied by the building's electrical load distribution center (circuit breaker panel). A lot of sensitive equipment was damaged along this path. Think of your broadcast equipment as a "fuse" in a series circuit between the lightning and ground. Poof!

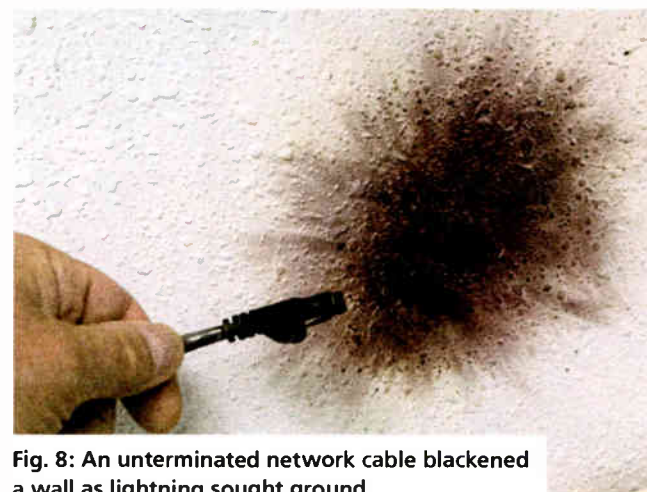
In the final analysis, what was missing was a heavy wire link between the STL pole ground rod and the studio ground. To say it another way, the pole and the studio had two different grounds. They were likely thousands of volts apart during the lightning strike. Almost everything in the middle was damaged.

### LIGHTNING PROTECTION

The ideal setup is one in which the STL and all other cables enter the build-



**Fig. 7:** This studio computer is one of the victims.



**Fig. 8:** An unterminated network cable blackened a wall as lightning sought ground.

ing near the electrical power panel. All cable grounds tie to the electrical panel ground and ground rods. It is a "common point" for all facility grounds. This "star ground" has a heavy wire from that point to each studio and equipment rack.

The idea is that studios and racks are "stubs" from the common ground point. Lightning has no reason to travel to a studio if there is no ground at that end to go to. That same thinking applies to transmitter sites, which are even more vulnerable to lightning damage.

Also, I recommend a flexible #12 wire from each piece of equipment to the rack it is mounted in. Don't be fooled into believing there is a good electrical connection from rack to equipment because they are screwed together. Paint gets in the way of a good electrical connection.

### STATIC DISSIPATORS

It is a well-known fact that sharp points, directed at the sky, are a good way to dissipate/bleed off static charges, i.e. reduce voltage between the ground and the sky. It happens continuously as storms pass by.

The result is either no lightning strike or less energy in a strike because the voltage is less than it would have been without dissipators.

Static dissipators are typically



**Fig. 9:** Station manager Sean Bjeck shows off damaged equipment.



**Fig. 10:** A Nott GS-2 Static Dissipater

is an electrical conductor. Learn more at [www.nottltd.com/lightning.html](http://www.nottltd.com/lightning.html).

### SUMMARY

It is experiences like this that get the adrenaline flowing in an engineer's blood. Jim Offedahl will be telling his grandchildren this story someday from the comfort of his rocking chair.

*Comment on this or any article. Write to [radioworld@futurenet.com](mailto:radioworld@futurenet.com).*

*In September, Mark Persons, WQMH, received the Society of Broadcast Engineering's John H. Battison Award for Lifetime Achievement. His website is [www.mwpersons.com](http://www.mwpersons.com).*



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# Water Water Everywhere

Also, troubleshooting a Harris Digit CD Exciter

## WORKBENCH

by John Bisset

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

This is a good time of year to service air conditioning systems at your studios and transmitter sites.

Of particular interest is the condensate drain. Algae can form a tight plug, preventing proper drainage and causing the condensate pan to overflow and drain into your studio or transmitter.

Take five minutes to remove the cleanout cap, shown in Fig. 1, and using a bottle brush, make sure the drain tubing is clear in both directions.

A little Clorox brand or other disinfecting bleach in the trap will guard

completely, even the old tube console. The TV worked for another two years. The washer and dryer were good for at least another five years. Furniture that came unglued continued to serve once he reglued it.

Edd marveled at what he was able to save with a good washing, lubrication if needed and a full drying.

Scott Todd, engineer at K-Love/AIR1, remembers seeing Mike Dorrough of DAP Processor fame cleaning an old transmitter with a garden hose and sprayer at his cabin in northern Wisconsin some 30 years ago. Scott says all the heavy iron was out of it at the time to be replaced when everything was dry.

With nothing to lose, Edd decided to take a garden hose; open every item, from kitchen appliances to a television; and wash the mud out.

against algae formation.

Anti-algae tablets for the drain pan are available at big box stores or online. Search for SimpleAir Clean Flow HVAC Drain Line Treatment Tabs (less than \$10).

Speaking of water, readers were 50/50 divided on whether our anecdote about running a transmitter through a car wash was a joke. (Editor in Chief Paul McLane emailed me asking if it was for real. My reply: "Absolutely. The best way to get years of grime out of a transmitter.")

Edd Monskie, senior VP of engineering with Hall Communications, had a chuckle when he read the tip.

He recalls that when he moved to Lancaster, Pa., in 1977, he lived in a rented ranch house along a beautiful creek. After a deep snowfall followed by a day of heavy rain, that cute creek became a flooding torrent. The entire ranch house was flooded with mud and dirty flood waters, up to 48 inches deep.

Edd figured that everything he owned was ruined but he had no flood insurance, so with nothing to lose, he decided to take a garden hose and open every item one by one to wash the mud out. Kitchen appliances, radios, tube television and even a washer and dryer.

He says almost all of these continued to work once they were allowed to dry

Bill Bowin is the chief engineer for North American Broadcasting Co. He too enjoyed the note about washing old transmitters at the car wash.

Many years ago, an engineering mentor told Bill about the time he had purchased a load of studio equipment that had been exposed to a station fire. While the equipment hadn't been damaged by heat, it was covered in soot and a creosote-like substance that had dripped from the ceiling.

Bill's colleague said he carefully removed transformers and meters from the gear, took the remains to a car wash lot and coated them liberally with Easy-Off brand oven cleaner. After waiting 15 minutes or so, he hosed off the grime. The equipment looked like new, and after it had dried and been reassembled, it actually worked.

Bill adds that Dave Mathews is one of his assistants and is perhaps the best bench tech that he has worked with. You will remember Dave's YouTube video about retuning a Moseley 6010/6020 STL. Bill says that STL is in use on WMNI(AM), where it replaced a Marti STL-8 dating to 1973.

Dave himself writes in to say that he has posted a new video about fixing a common problem with a Harris Digit CD FM Exciter. The fix involves a resistor in the PLL (Phase Locked loop) sec-



Fig. 1: Clear your condensate drain trap periodically. Algae can cause major flooding if the drain clogs.

tion that has changed value. The video also shows how Dave figured out the problem with common sense and basic equipment.

He has nearly a hundred videos posted over three years on [www.youtube.com/AERVBlog](http://www.youtube.com/AERVBlog). As you peruse them, be sure to watch his video describing a repair of a broken thumb drive. It's fascinating.

Dave provides a unique service to broadcast engineers, and we appreciate his sharing the link.

It probably goes without saying that most engineers abhor messy wiring.

Loxdo is marketing an inexpensive wire management system that uses 3M brand adhesive on small plastic forms for wires to snap into. In addition to keeping single runs of wire straight and neat, there's a bracket that snaps onto the edge of a counter or table to secure a charging cord so it's not always falling on the floor. This also eliminates the need to drill holes in furniture or countertops.

Their site has videos with ideas about how these can be used; visit [www.loxdo.com](http://www.loxdo.com) and search for "finisher wire clamp."

The 20-piece kit comes in white,

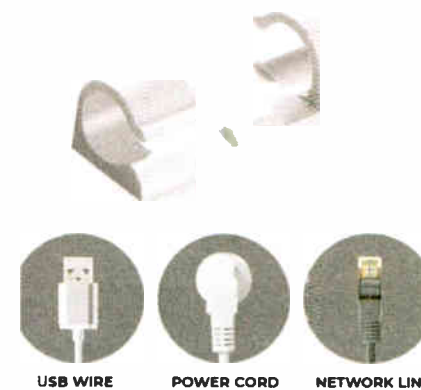


Fig. 2: This wire management system keeps your charging cables orderly.

clear and black plastic; at this writing it is on sale for \$12.99, and less in quantity.

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

Workbench submissions are encouraged, qualify for SBE Recertification, and can be emailed to [johnpbisset@gmail.com](mailto:johnpbisset@gmail.com).

# ASR Is a Key Entry Point for AI

ENCO: AI helps teams make sense of their growing content and gain greater value from it

BY BILL BENNETT

*The author is media solutions account manager of ENCO Systems Inc.*

Artificial intelligence and radio have a long and fruitful road ahead.

We all know AI is used to detect faces in photos and videos — and it's really excellent at understanding natural language too. Not just the words being said — but who's saying them, and so much more.

An area we've seen dramatic improvements in from AI is Automatic Speech Recognition (ASR), with real-time accuracies now higher than ever attainable before. With products like ENCO's enCaption (tailored for the radio industry), true speaker independence is achieved, with an on-premises solution that's fast and reliable.

ENCO's been crafting ASR products since 2006, and radio automation software for even longer — the marriage of the two is a powerful tool radio stations can use to mine their voice content (live and recorded), to better monetize, repurpose and create.

We even offer solutions whereby you can navigate audio recordings by viewing their captioned words on a screen, enabling you to click on them to navigate through the recording. Say goodbye to laborious and inefficient audio scrubbing!

Indeed, ASR is the key entry point to so many additional methods of analyzing, reporting and even understanding the spoken word.

## INTERESTING THINGS HAPPEN

ENCO's enCaption-based ASR and radio tools allow you to deliver the spoken word to your listeners as live text to websites, searchable logs and transcripts, video captions (open and closed), and even captions delivered to car radio head units and streaming endpoints.

The same ASR text can help your producers and writers gain a treasure trove of additional data to work with, to help find nuggets of information hidden deep within their interviews. Smart AI can help indicate who's talking and for how long, or even the meaning of what's being discussed, and where the topic is going.

Interesting things start to happen when you have such voluminous amounts of data. For your ad sales or underwriting teams, an AI can automat-

ically determine where the Live Reads took place, and dump that to an audio clip (and text copy) for later review and sharing. How about a computer-generated summary of an entire interview, in a single paragraph? AI can help with that, too.

The intimacy of radio suggests

AI can never replace humans on the air, since the power of radio and voice needs far more than simple intelligence to be compelling. But AI's not just for autonomous vehicles and facial recognition — because when combined with well-designed software focused on the specific workflows of news and talk radio, it becomes an essential tool to aid your creative teams in making sense of your growing content, and gain greater value from it. This is just the beginning.



Getty Images/metamorphworks

This commentary is from the Radio World ebook "AI Comes to Radio." Read it at [radioworld.com/ebooks](http://radioworld.com/ebooks).

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# Legislation Can Help an Understaffed Industry

Why telecom workforce development matters to the broadcast industry

BY **TODD SCHLEKEWAY AND  
JIM GOLDWATER**

*Todd Schlekeway is president and CEO of NATE: The Communications Infrastructure Contractors Association. Jim Goldwater is its director of legislative and regulatory affairs.*

**NATE:** The Communications Infrastructure Contractors Association has collaborated with key industry association colleagues for many years on a wide range of issues that have significantly advanced the nation's critical communications capabilities.

Recently these telecom organizations partnered again to advocate congressional action to help address the substantial workforce shortage in the industry that jeopardizes the national communications goals of expanding broadband and closing the digital divide while enhancing public safety, advancing next generation technologies and maintaining the hundreds of thousands of communications towers already in place.

## CRITICAL SHORTAGE

NATE is a nonprofit trade organization whose membership encompasses all layers of the communications infrastructure ecosystem, and now includes over 1,000 member companies that construct, service and maintain hundreds of thousands of communications towers (broadcast and wireless), distributed antenna systems, small cell networks and broadband throughout all 50 states and 13 other countries.

NATE, joined by the National Association of Broadcasters, the Competitive Carriers Association, CTIA, the Government Wireless Technology and Communications Association, the National Wireless Safety Alliance, the Rural Wireless Association and the Wireless Infrastructure Association, wrote to key congressional committee leaders in support of legislation that would help the industry attract, recruit and train tower workers.

Our coalition cautioned that efforts to advance major telecommunications legislation during the 116th Congress,



Getty Images/morfous

**NATE estimates that there are only approximately 40 crews in the country that are truly trained to perform work on broadcast towers.**

which expires at the end of this calendar year, had not yet addressed the workforce shortage.

Without a commitment to ensure that there will be an adequate supply of workers, the nation's technology development and deployment challenges will not be addressed.

Moreover, we wrote that "The ongoing pandemic illustrates so clearly how essential our industry and our workforce are, with so many Americans forced to work, study and play remotely."

Communications infrastructure is of course critical to our capacity to con-

duct business, engage in telehealth and ensure that radio and television stations can continue to inform our communities, while we work toward closing the digital divide and deploying 5G wireless technology and broadcast Next-Gen television in the future.

These are priorities that our letter conveyed, and we are both pleased and proud to have collaborated with our very good friends at the National Association of Broadcasters on it.

## SIGNIFICANT CHALLENGE

We specifically identified a few



**Todd Schlekeway**

pending bills that would help address workforce development in our industry.

NATE actually assisted in the development of one of them, the "Communications Jobs Training Act,"

which would provide funds for job training to enhance communications tower service. It would authorize grants to community colleges, vocational institutions and military organizations to establish or expand job training programs for communications tower service, construction and maintenance.

Our letter also cited legislation designed to develop recommendations on how to address communications workforce needs. It also highlighted the utilization and coordination of apprenticeship programs.

In January, NATE Chairman Jimmy Miller testified before the Senate Committee on Commerce, Science and Transportation at a hearing titled "The 5G Workforce and Obstacles to Broadband Deployment."

He stressed that "the most significant challenge with which our industry and contractor firms like mine are dealing ... is the shortage of a properly trained and qualified workforce that is expected to possess the diverse skill set necessary to produce the expansion of universal 5G coverage across North America, while completing the broadcast repack."

"If we are to win the hypercompetitive global race to build and deploy 5G, which will enable our national, state and local economies to leverage technologies based on the Internet of Things, smart cities, artificial intelligence and virtual reality, we must ensure that we have enough trained workers. We simply cannot meet these national goals without doing so."

**40 CREWS**

Radio World readers may be interested in hearing more about the workforce issues as it relates to the broadcast industry, and specifically the repack transition. Although the repack was scheduled to wrap up in early July, there are still a number of stations that have not completed the transition as we write this.

The broadcast repack transition helped shine a spotlight on the fact that there are a finite number of crews in the United States capable of working on tall towers. Broadcast tower work is a different animal altogether given the complex techniques, skill-sets and equipment associated with the work, not to mention working on towers ranging 1,000–2,000 feet tall.

NATE estimates that there are only approximately 40 crews (typically consisting of 5–6 tower technicians per crew) in the country that are truly trained to perform work on broadcast towers.

Of these 40 crews, only about 30 are capable of performing the most complex large broadcast and arbor stick tall tower work. The other broadcast

crews are equipped to perform activities such as non-arbor stick work up to 1,000 feet, small stack and crane work or helicopter work. Many of these companies have been in the industry a long time and have an experienced, but aging workforce.

These factors served to exacerbate these issues in the broadcast industry and led to some companies having to supplement their tower technician workforce by bringing in crews from select countries in Europe for this specialized, tall-tower repack work.

NATE is committed to investing

heavily in workforce development initiatives that we believe, over time, can help alleviate some of the technician labor challenges both the wireless and broadcast sectors continue to face, but there is no magic wand. It is abundantly clear, however, that addressing our communications infrastructure needs is good for our nation's economy and competitiveness, today and tomorrow.

Congress could play a role in shaping the industry's future by passing the communications workforce development legislation that has been introduced in bipartisan fashion.



Jim Goldwater



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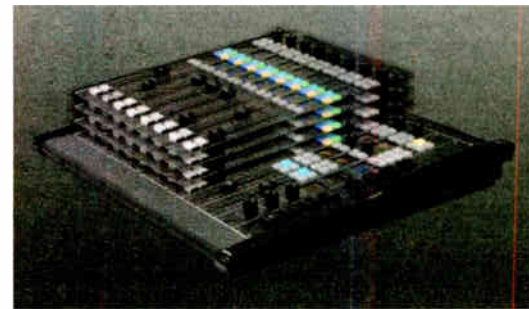
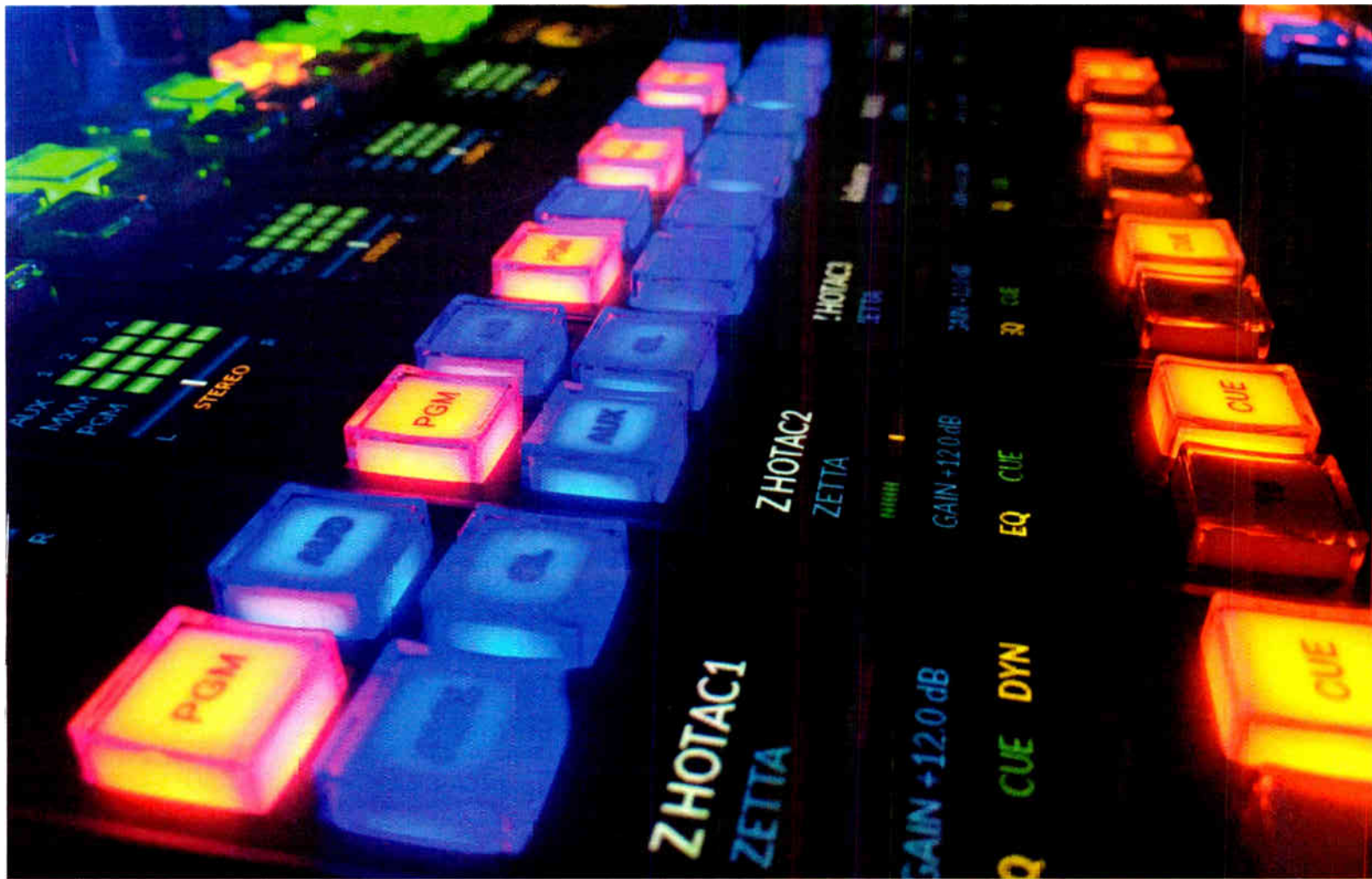
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# Constructing the First “Real” Radio Station

A look at the technical side of 1920 KDKA

BY JAMES O'NEAL

Much has been written about the program, performers and setting of KDKA's “big broadcast” of Nov. 2, 1920, but precious little is documented about the technical aspects of the equipment package that made it possible.

With the aid of detailed photographs; magazine articles about the station and its progenitor Frank Conrad; and a published account by an eye/ear-witness to what transpired, it's possible to piece together many of the missing details.

Perhaps most useful is a 1955 American Heritage article by Donald Little, a Westinghouse engineer who helped to construct that first KDKA transmitter.

*“During the fall of 1920, Dr. Conrad had me design and help the model shop at the works build the transmitter. The transmitter had a power of about 100 watts. They built a room on the roof of one of the taller buildings at the East Pittsburgh works and put up an antenna and counterpoise from a steel pole on that building over to one of the powerhouse smokestacks. The antenna and transmitter were completed only a few days before the presidential election of November 2, 1920.”*

The association between Little and Conrad extended back some three years when Little, who had been working for what was then called the National Bureau of Standards (now the Institute of Standards and Technology), was dispatched from Washington to East Pittsburgh to oversee the development and production of transmitters and receivers by Westinghouse for the U.S. Signal Corps. (While Little consistently refers back to “Dr. Conrad,” it was not until 1928 that the University of Pittsburgh bestowed an honorary doctor of science degree upon Conrad.)

## THE TRANSMITTER

No schematic diagram or construction details of the Westinghouse “broadcast” transmitter exist. Based on the “state of the art” at the time, coupled with knowledge of the radiotelephone rig constructed by Conrad for his ham station, it doubtless employed the “constant current” system of modulation developed earlier by Western Electric's Raymond Heising.

The radiotelephone transmitter Conrad constructed for his amateur radio station is documented in a Sept. 1920 article in amateur radio publication, QST. It's believed that the one

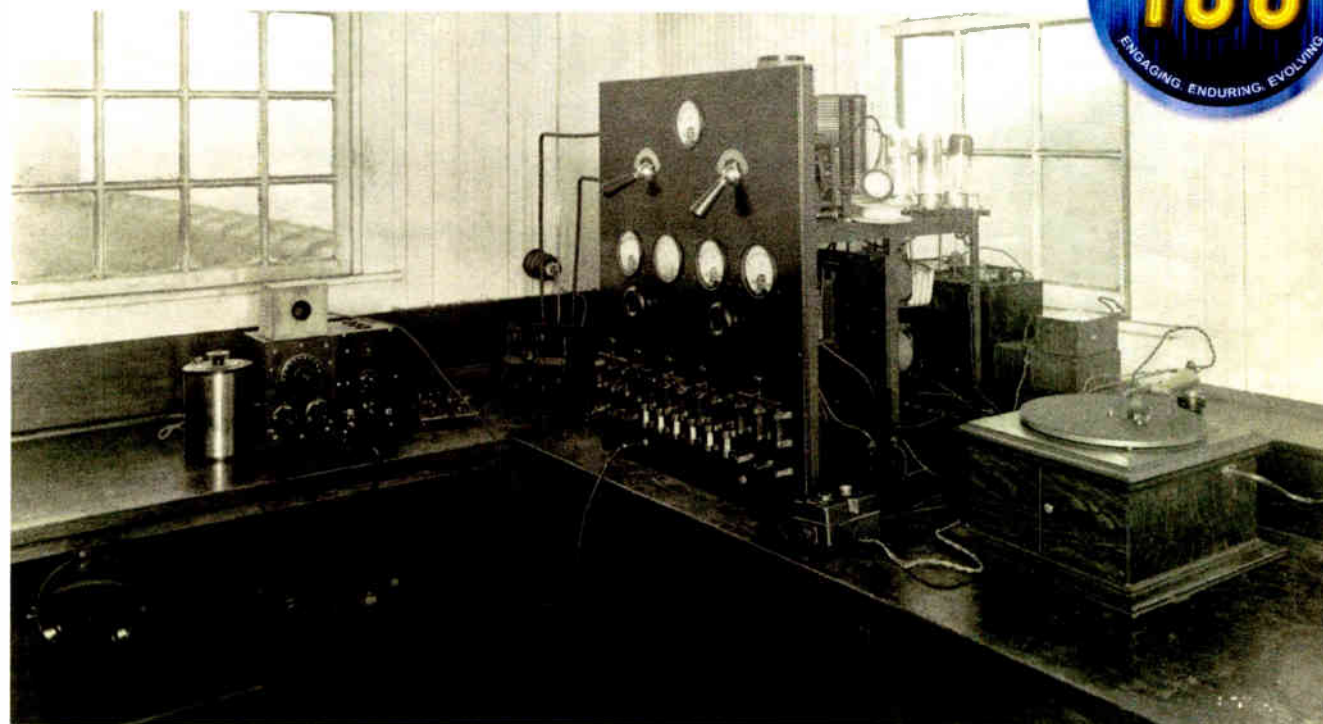


Fig. 1: This photo of KDKA's first “broadcast center” offers some detail about the in-house manufactured 100-Watt transmitter used for the Nov. 2, 1920 broadcast. A six-volt lead-acid car battery behind the rig likely provided tube filament voltage.

## Conrad's 1920 Radiotelephone Transmitter

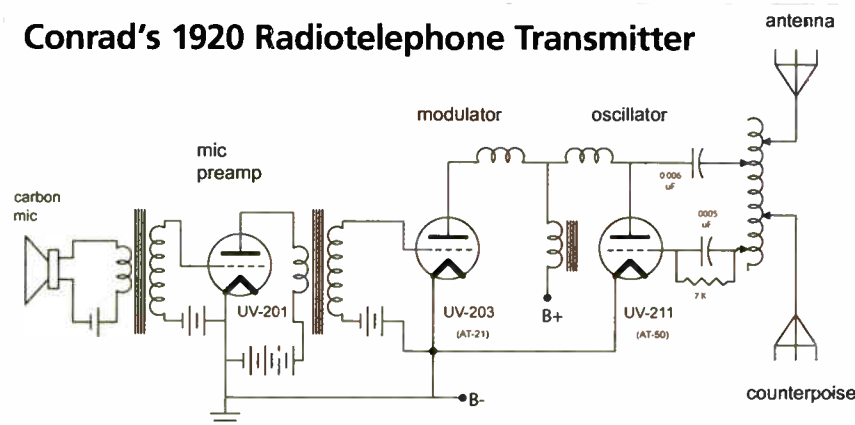


Fig. 2: Although no circuit diagram can be located for the 100-Watt transmitter, this drawing, based on a published partial schematic of Conrad's ham station “radiophone” transmitter, is probably representative of its inner workings. (The resistor and capacitor values shown were shown in the ham rig circuit.) It's likely the modulator and power oscillator tubes were doubled (parallel-connected pairs) to deliver the 100 Watts claimed for the KDKA transmitter.



Fig. 3: A pair of Westinghouse's version (AT-21) of this very early power triode likely Heising-modulated the carrier of the “election night” transmitter.

constructed at Westinghouse was more or less a scaled-up version (100 Watts output versus the 50 stated for the ham station rig).

Conrad (and Little) would have employed state-of-the-art power triodes developed by General Electric and manufactured by Westinghouse's “lamp works” during the First World War, when patent and licensing issues had been temporarily tossed aside to ensure a plentiful supply of “strategic materials.”

Lud Sibley, a vacuum tube expert and editor of the publication Tube Collector,

opines that the power oscillator was likely “the humble AT-50, Westinghouse's production of GE's UV-211.”

Sibley also believes that Westinghouse's AT-21 (equivalent to a GE UV-203A) could have served admirably as the modulator.

If these tubes were used in parallel configurations, the transmitter could have easily delivered 100 Watts of modulated RF.

It appears from one of the surviving pictures of the rig that filaments may have been heated with pure DC from an automobile storage battery. (It's

likely that the battery was continuously “float charged” to ensure that the heavy filament current drain didn't deplete it before the broadcast ended.) Three “brick” type dry cell batteries are visible behind the transmitter and just to the right of the six-volt storage battery. These could have served as a source of bias voltage for the triodes, and due to the size and number, also as a plate voltage for the transmitter's “speech amplifier” (audio input stage).

The picture of the radio room, sans people, also sheds some light on the high voltage supply for the power



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Looking for a remote backup solution? Zetta offers a wide array of Disaster Recovery configurations, ranging from transmitter site backup systems to cloud based storage and playout. With these integrated Zetta DR features, a station's content is automatically backed up and ready at a moment's notice for playback.

- ✓ Multiple users can simultaneously access their data and make real time changes
- ✓ Schedule logs control the station and add new audio and voice tracking

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World Radio History

# KDKA

(continued from page 18)

tube anodes.

Immediately to the right of the transmitter panel board, a heavy-duty push-button switch is visible. It's safe to assume that this controlled a motor-generator set located remotely so that its very audible operating noise didn't get transmitted along with the election commentary. (Later, Westinghouse manufactured a line of motor-generators for broadcast transmitter applications, as I described in my 2011 Radio World article "How Transmitter Power Supplies Evolved.")

A more comprehensive description of the KDKA transmitting antenna — at least as it existed less than two years after the 1920 broadcast — was offered by Little in a 1922 article in Radio News about the station's technical facilities:

*"[It consists of six wires] 90 feet in length on 20 foot spreaders. This antenna is supported 210 feet above the ground by a brick smoke stack at one end and by a 100-foot pipe mast on a nine-story building at the other end. A counterpoise [elevated radial] which is a duplicate of the antenna in construction is placed 110 feet beneath the antenna. The down lead from the antenna and the counterpoise lead are made up of eight strands of No. 14 copper wire equally placed around 1.5 in. diameter wooden spacers. The natural period of this aerial system is approximately 412 meters. A condenser ... in series with the antenna and sufficient loading inductance [was] added to obtain the desired wave length of 360 meters."*

Conrad used a similar antenna/counterpoise system at his ham station.

The microphone was essentially a telephone "transmitter" (carbon mic) backed up by the necessary battery and a one-stage triode pre-amplifier, most likely the newly developed UX-201, which later, along with a lower filament current version, the UX-201A, became the tube of choice for many 1920s commercial and homebrew receivers.

## PROTOTYPE BROADCAST "TURNTABLE"?



Fig. 4: A detail from the promotional photo of the historic broadcast that we showed you in an earlier article. Visible below John Frazier's chin is the crank of a windup phonograph used to play fill music. Announcer Leo Rosenberg is at left.

## A careful examination of a blowup of the phono portion of the photo indicates that Little may have manufactured a true "electrical" pickup.

The transmitter room picture does present something of a mystery.

A windup phonograph was used as a source of "fill" music so there would be no dead air when announcer Rosenberg was waiting for election results to be updated; in the photo from that night it can be seen to the right of the transmitter panel, its crank visible behind John Frazier as shown in Fig. 4.

What makes this otherwise nondescript record player interesting is a length of "twisted-pair" lamp cord that connected the transmitter to an object (electrical phonograph pickup?) attached to the "arm" on the phono. The cord is visible in Fig. 5.

History tells us that the first electrically recorded records (and electrical pickups for reproducing them) didn't appear until 1925, stemming from research at Western Electric and Bell Labs.

Did Conrad and Little somehow jump the gun and invent an electrical pickup half a decade before Bell?

In his 1955 writing about the 1920 inaugural broadcast, Little seems to clear up this mystery:

*"It was thought that election news would not occupy the whole time so a hand-wound, spring-driven phonograph and a selection of records were provided for fill-in purposes. I arrived at the station about 6 P.M. the night of November 2, 1920, in plenty of time to be sure all would be in readiness to start the program at, as I remember it, 8 P.M. To my dismay, I found that the gooseneck of the phonograph tone arm had disappeared. It was never found and to this day I do not know whether it was maliciously stolen or simply mistaid accidentally. It was obviously up to me to provide some sort of*

*substitute which I did by rushing down to our laboratory and putting together a clamp and hinge gadget that hinged the microphone to the tone arm. It was quite satisfactory and was used for the opening program and several later ones."*

What Little cobbled up that evening may have been much more complex, however.

A careful examination of a blowup of the phono portion of the photo indicates that Little may have manufactured a true "electrical" pickup.

Clearly visible is an "outrigger" bar with a clamp for the microphone that has been attached to the phono horn's acoustic coupling "stub," with the "stub" only serving to support Little's contrivance above the record grooves and allow it to track across the record.

Seen at the bottom of the device are a chuck and a thumbscrew for holding the "needle" (stylus). Quite prominent in the photo is a "U"-shaped rod that appears to be used for coupling needle movement to the microphone element.

I don't claim expertise on early mechanical (acoustic) phonographs, but the conventional "diaphragm" that was coupled to the needle and translated needle movement to sound pressure waves

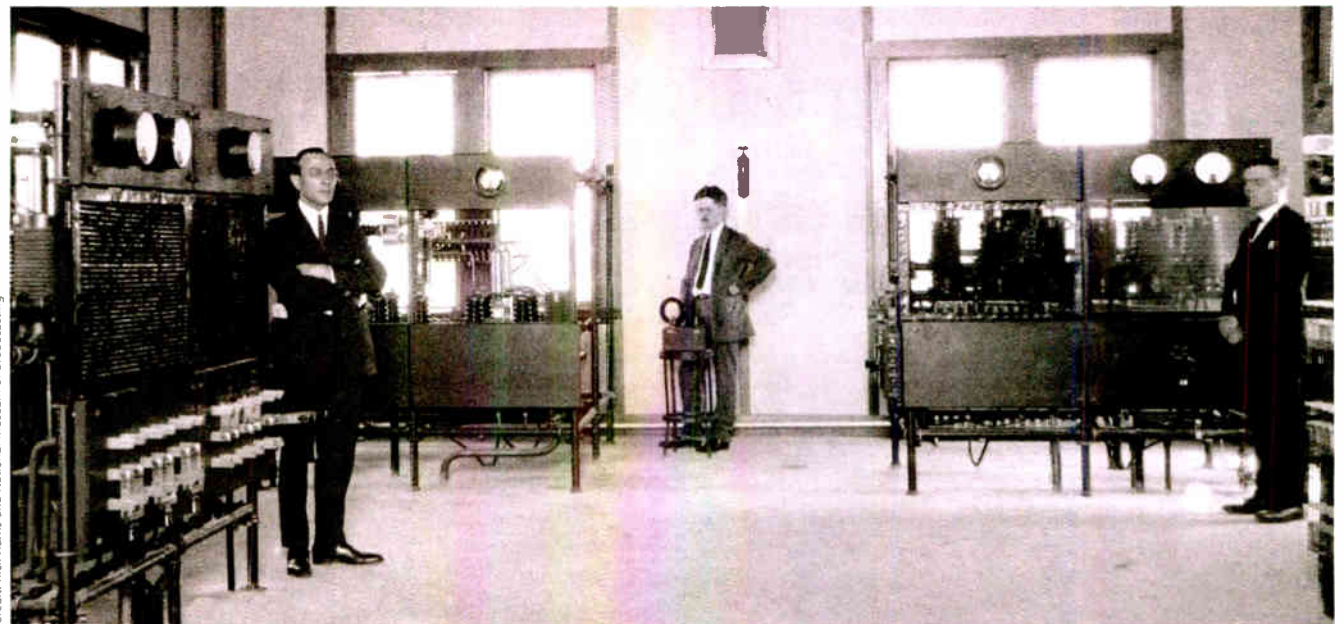


Getty Images

**Fig. 5:** A close-up look at the phonograph arm and "pickup" appearing in the shot of the KDKA radio room in Fig. 1. Did engineer Donald Little invent and fabricate the world's first transducer for turning record groove modulations into a varying voltage? Others had simply placed a mic in front of a phonograph's horn or graphed a microphone element onto a portion of the phonograph's acoustical linkage (tube) between the diaphragm and horn.

"amplified" by the phono's horn (actually an acoustic transformer) is not visible in this photo.

I shared the photo with a restorer and conservator of early recording and reproduction apparatus. He said, "I've never



Credit: Rick Harris and National Museum of Broadcasting

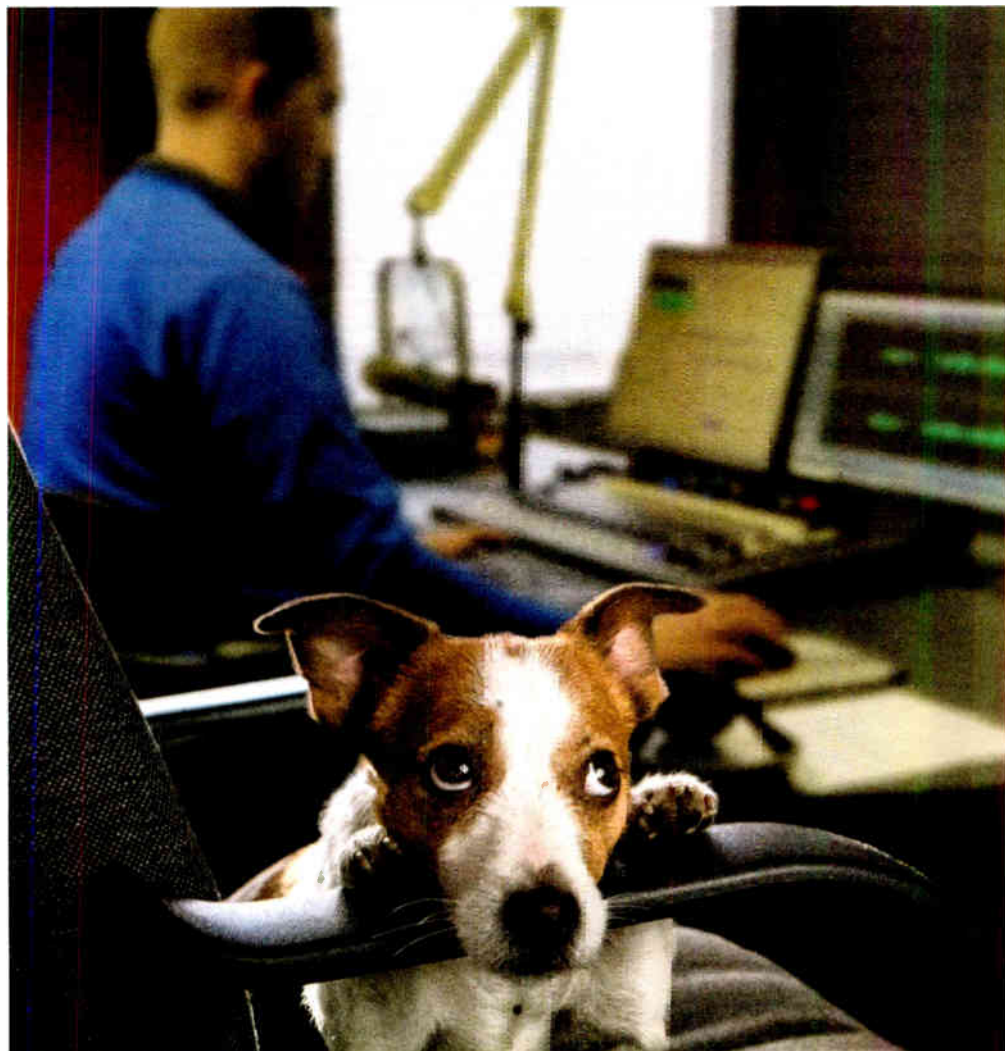
**Fig. 6:** Donald Little is at far right in this mid-1920s photo of KDKA's second transmitter plant in the Forest Hills Borough west of Westinghouse's East Pittsburgh operation. The individual in the middle is unidentified; the man at left may be C.W. Horn, who supervised Westinghouse's radio operations. The facility was referred to as the "Hill Station" and also served as a transmitter location for the company's early shortwave and television experimentation.

seen anything like this."

If the device that Little fabricated was really a carbon mic driven directly by the needle, the audio reproduction of the recordings would have been considerably better than that achieved

previously by just placing the mic in front of the phono horn. (It would have also prevented pickup of conversations and other background noise in the radio room while the records were played.)

I leave it to others to decide exactly what did or didn't happen in this respect. *The author thanks Rick Harris, chairman of the National Museum of Broadcasting's Conrad Project, for his help with this article.*



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# Radio Promotes Development in Africa

This inexpensive medium can reach all citizens wherever they are

BY RAPHAEL OBONYO

*The author is a public policy analyst whose commentaries appear regularly in Radio World.*

As the United Nations celebrates its 75th anniversary, it is important to hail the critical role that radio continues to play towards the achievement of sustainable development, especially in Africa.

Indeed, radio in Africa is doing an outstanding job of keeping people informed and engaged in different aspects of life including governance, development, social integration and peace.

Radio has been important in the implementation of a new set of global goals — Sustainable Development Goals that world leaders adopted in September 2015 at the United Nations General Assembly. These SDGs establish the framework for joint global action on poverty, inequality and climate change until 2030.

Use of radio in the implementation of SDGs has improved engagement of people and different actors, and hastened the attainment of the goals.

## “KEY ROLE TO PLAY”

In his message to mark World Radio Day this year, the United Nations Secretary General Antonio Guterres recognized radio as a powerful communication tool and low-cost medium that has played an important role in efforts to promote development and peace.

“Even in today’s world of digital communications, radio reaches more people than any other media platform, conveys vital information and raises awareness on important issues,” the U.N. chief said, adding, “As we strive to achieve the Sustainable Development Goals, radio has a key role to play as a source of information and inspiration alike.”

Different studies show that radio is still the dominant mass medium in Africa with the widest geographical coverage and highest audience. At present,

African’s news and information-seeking behavior seem to depend mainly



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Radio Okapi has millions of listeners and is widely credited for having helped unify the Democratic Republic of the Congo.



A BBC news program in 2019 focused on the Nkhotakota radio program in Malawi. Watch it at [bbc.com](http://bbc.com), keyword Nkhotakota.

on radio.

Indisputably, radio remains a major source of news and entertainment in Africa. Over the years, radio has proven itself as a developmental tool, particularly with the rise of community and local radio outlets that broadcast content that is popular and relevant to the listeners.

Radio is important for people in Africa. In some cases, radio broadcast-

ions of listeners and is widely credited for having helped unify the country, smoothing the political transition, and contributing substantially to citizens’ participation in elections and peace processes.

In this time of coronavirus crisis, Okapi has been providing education via radio — on-air classes aimed for the 22 million children stranded at home

## Radio is still the dominant mass medium in Africa with the widest geographical coverage and highest audience.

ing provides a vital lifeline — broadcasting news and new ideas and transmits essential information into people’s homes, villages, schools, hospitals and workplaces among others.

### RADIO OKAPI

One of the best examples of how radio has been used, particularly for peace building, is the Democratic Republic of Congo.

The second-largest country in Africa had been mired in conflict for decades and is still recovering; but thanks to efforts from various actors, including a United Nations peace-keeping mission radio station that has been offering vital information about peace and development, the future is brighter.

Radio Okapi has mil-

because of COVID-19.

Edouard Beigbeder, UNICIF representative in the DRC, has said that education is a right and that a child’s place is in school. Distance learning, such as that provided by Radio Okapi, offers students the opportunity to enjoy this right.

In other parts of Africa, radio programs have become an effective tool to help fight extreme poverty. Radio is used creatively for anything from education to campaigning to community building. It is a low-cost way to relay information to remote communities and vulnerable people.

### BROAD IMPACT

In Mali community stations have been useful in efforts to enhance life in poor regions. Radio Daande Douentza, serving a semi-arid region where most of the population consists of poor farmers or herders, broadcasts and transmits announcements of development issues, education and community news along

with entertainment.

Save the Children Fund reported in 2011 that before Radio Douentza’s launch a mere 6% of the local farmers were marking trees and managing naturally occurring harvest varieties. Since the establishment of agricultural programming, that figure climbed to 44% among the same group of farmers. Furthermore, radio announcements helped to bring about an increase in enrollment in literacy courses by 120%.

Tanzania has one of the most vibrant media landscapes. Radios has proved to be effective in providing access to developmental information, especially to the majority of the population who are not connected to the electric grid, those who do not own televisions, or those who lack access to mobile phones.

Community radio broadcasters like Lake FM, Hits FM, Ice FM and Mkoani FM provide opportunities for more inclusive sustainable development. They inform people about what is going on in their community and in the world.

Similarly, radio is still the most popular source of news and information in Zimbabwe, especially in rural areas. According to Media Institute of Southern Africa in Zimbabwe, radio serves as a convenient information-sharing platform that is more popular and easily accessible than other media.

Public, commercial and community broadcasting are all important because they can serve different audiences and needs. However, community radio stations are still to be licensed and legally recognized in Zimbabwe — there is a strong case being made for the licensing of community radio stations — to ensure that marginalized communities are effectively included in national conversations that take place on national publicly owned radio stations such as Radio Zimbabwe, Classic FM, Power FM, and National FM.

### ACCOUNTABILITY

In Togo, where the media industry has been experiencing a boom since the 1990s, local radio stations have continued to be a powerful means of communication, particularly to smallholder farmers located in remote rural places.

In Benin, radio access has improved educational performance and literacy. Radio access, studies found, has a substantial effect on children’s educational performance. The literacy scores of school going children are significantly higher in villages with greater access to community radio.

Radio can enhance accountability and public provision. Citizens who are more informed about the benefits of public policies could use this knowledge to demand greater benefits from government. Greater radio access increases household exposure to information and about government provisions — the exposure potentially increases citizens demand for government services.

A key feature of media markets in northern Benin is the proliferation of community radio stations. These stations were established with the support of private and government donors to promote democracy and local collective action.

In Malawi, most people rely on radio as their primary source of news because they do not have access to television or newspapers. As such, radio has played a critical role in educating and informing rural communities across the country.

Also, radio stations like Nkhotakota and Mzimba have improved governance and development in Malawi. Radio programs have been instrumental in raising ordinary people's awareness to existing problems and influencing them to do something about their situation.

As Canadian Journalists for Free Expression has remarked, radio continues to be a widely used medium for reporting both local and international news. Advances in technology may have led to the emergence of a broad range of media outlets and platforms, but it has also made the radio more accessible for populations that lack access to other means of information technology, which is why it is still very much relevant today.

Radio broadcasts can provide real-time information, 24 hours a day to provide the most recent updates to listeners. Stations have the ability to reach across borders and become a source of information where reliable news is scarce. When access to the internet is blocked and phone lines are cut, people can still search the airwaves for trustworthy sources. Even electricity is not a necessity with battery operated and hand-cranked radios available.

Radio is a vital lifeline for many people and it is integral to development. It is one of the most important channels through which people in Africa find information, knowledge and new ideas — imagine and solve problems.

*Raphael Obonyo is a public policy analyst. He has served as a consultant with the United Nations and the World Bank. Also, he's a writer and widely published in Africa and beyond. An alumnus of Duke University, he has authored and coauthored numerous books, including "Conversations about the Youth in Kenya." Obonyo is a TEDx fellow and has won various awards.*

# BEST OF SHOW | 2020

## VIRTUAL EDITION

Congratulations to the winners of the Best of Show Award, given at this time each year in connection with the annual IBC event. IBC was held virtually this year, so the award program was as well.

The products on this page are the Radio World recipients: the program also includes

our sister brands TVBEurope, Pro Sound News and TV Technology. Companies pay a fee to enter; not all entries win.

To see all 84 of the nominees and winners, check out the award Program Guide at <https://tinyurl.com/rw-BOS-2020>



### RCS REVMA

Streaming can be intimidating; RCS makes it easier with Revma, an affordable online streaming solution that includes professional audio processing, integrated listener reports and rich analytics.

Users with small or large infrastructures can stream and duplicate their feeds to multiple destinations and configurations.

RCS highlights that this CDN can scale "from hundreds to hundreds of thousands" of streams. It's compatible with popular encoders and players and can also be customized to your workflow.

Revma's compliance ad-insertion technology called VAST helps monetize your stream and can be controlled with various rules like geo-targeting.

The Revma Conference App, included, creates a cloud studio in which hosts can invite multiple participants to be mixed as part of a single output stream.



Sample results show ad statistics and total requests and impressions.

There's also a version for commercial in-store radio applications.

Info: [www.rcsworks.com/revma/](http://www.rcsworks.com/revma/)

### TELOS ALLIANCE OMNIA ENTERPRISE 9S

This is high-density audio processing software for broadcasters who are transitioning to server-based virtual systems and have many signals to process.

Its modular approach allows systems to be customized and later adapted. For instance it can be programmed for FM and streaming, with the ability to add specialty channels later.

"Centralize your processing by using 9s at the head end and transmit either L/R audio to each transmitter location or the full composite signal to the transmitter using the new Omnia MPX node," the company says.

Each stereo program is processed by its own engine, so each program can be tailored to suit material, audience and delivery method. A variety of presets



are included.

Info: [telosalliance.com](http://telosalliance.com)



### WHEATSTONE BLADE-4

This is the newest I/O access unit for the WheatNet-IP network. It integrates audio codecs, software apps and interoperability protocols with audio transport and control.

"Blade-4 puts more into the I/O point — more sources, more signals, more audio tools such as codecs like Opus and AAC, which can be streamed from the Blade-4 and are now native to the AoIP environment," the company states.

A powerful CPU runs metering and other apps from the unit without the need of a separate computer. Smart asso-

ciation between audio sources and control settings means a talent's presets (like mix-minus, mic settings and EQ) follow them as they move from studio to studio or home.

For interoperability, it has NMOS for device discovery and AES67 multichannel support and packet timing adaptability to interoperate with a range of environments and gear.

The unit is available with dual Ethernet ports and power supplies for added redundancy or hitless switching.

Info: [wheatstone.com](http://wheatstone.com)

# Zoom as a Research and Promo Tool

Video conferencing can be used by a station to boost relationships, engagement and ratings

## PROMO POWER

Mark Lapidus



Life goes by in a *f-l-a-s-h*. One minute, I'm changing diapers ... the next, my daughter is getting married! The June wedding, planned pre-pandemic, was moved to September with some hope for safer conditions. Of course, now we truly understand that we can't predict when the virus will be vanquished.

We have our own new life partner and it is spelled *Z-o-o-m*.

Okay, maybe you prefer Go To Meeting, Google Meetings, or Skype; but whichever brand platform you prefer, video conferencing/webcasting has had a massive impact on our lives and is here to stay as part of our daily landscape.

As if sitting at my dining room table for hours every day for Zoom calls weren't enough to convince me, I am now completely certain of Zoom's ubiquity: many more people watched my daughter's wedding online than were able to attend in person. And they loved it, really feeling the spirit and joy of it all.

Suddenly it occurred to me that even if there weren't a pandemic going on, it still makes sense to have a Zoom feed available for those who can't attend personal events. Then I started thinking about other Zoom uses for a station to boost relationships, engagement and ratings.

### FOCUS ZOOM

How do listeners feel about your station? Traditional focus groups are expensive, time-consuming and not always conclusive because it's impossible to do enough sessions to detect trends.

What if you started doing them in a format people are now accustomed to using, like Zoom? You could solicit volunteers with a simple message: "We'd like to hear your thoughts about our 'Joe in the Morning Show.' The first 20 people who Zoom with us tonight



Getty Images/LeoPatrizi

## Want to build relationships face-to-face with your listeners? How about a Zoom happy hour once a week?

at 7 p.m. get free pizza from Jerry's. To sign up, just text your email address to 004445."

While it may be a challenge to host focus groups on your own, it can be done well. Like anything else, it takes practice.

Come up with 10 questions you want answered. Ask the same questions of each group. Encourage everyone to participate.

Record five sessions. Compare the answers. If each unconnected group says the same thing, you're onto something to explore further.

### HAPPY HOUR ZOOM

Want to build relationships face-to-face with your listeners? How about a

Zoom happy hour once a week?

Be prepared to join with topics, music videos to share on screen, maybe movie clips — fun things to kick around. Most importantly, let your listeners talk and get to know you as a real person; they'll feel like they're getting to know others on the call as well.

Remember that you can mute your group and set it up so that you call on people when they want to speak. Word will spread fast, and I wouldn't be surprised if you had to start limiting attendance.

### ZOOM ZOOM ZOOM

Got a special live or pre-recorded performance to share? A special one-time-only

premiere on Zoom will be remembered.

Run a contest for a "backstage pass" to hang on Zoom with a band in your format, or to meet a newsmaker or celebrity.

A word to the wise: Be sure to invest in a Zoom paid account. It's not that pricy to increase time and attendance limits.

Haters will say that driving people to Zoom instead of listening to radio won't do a thing to increase ratings. I am not at all suggesting you'll be driving tens of thousands to Zoom. You won't be that lucky.

The purpose is to create memories and loyalty that will spread gradually and consistently over time. Creating personal connections both during and after COVID is something stations of all sizes can accomplish.

Virtual relationships aren't exactly like those that happen in person, but "being there" from a distance will still create many smiles — just like a wedding!

Reach Mark Lapidus at marklapidus1@gmail.com.

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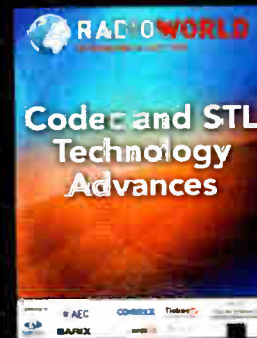
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FUTURE

# TZ Audio Stellar X2 Microphone Shines

Petite cardioid condenser pushes performance/price envelope

## PRODUCT EVALUATION

BY FRANK VERDEROSA

This is the first time I've reviewed a piece of equipment that I knew I loved — and had heard countless times before it showed up on my doorstep to review.

It's likely you have heard it as well. When New York City went into lockdown and voice actors couldn't go to studios to do their job, the scramble was on for them to get set up at home. A decent number of them already had home studios, but the vast majority had only ever needed a cheap USB mic to record auditions in a pinch.

The game changed overnight though, as post facilities and their clients suddenly needed actors to provide "broadcast quality from home."

For many facing an uncertain financial future, the idea of dropping thousands on gear was scary. My message via webinars and consults with voice actors has been that you can pull off a truly impressive sound without breaking the bank.

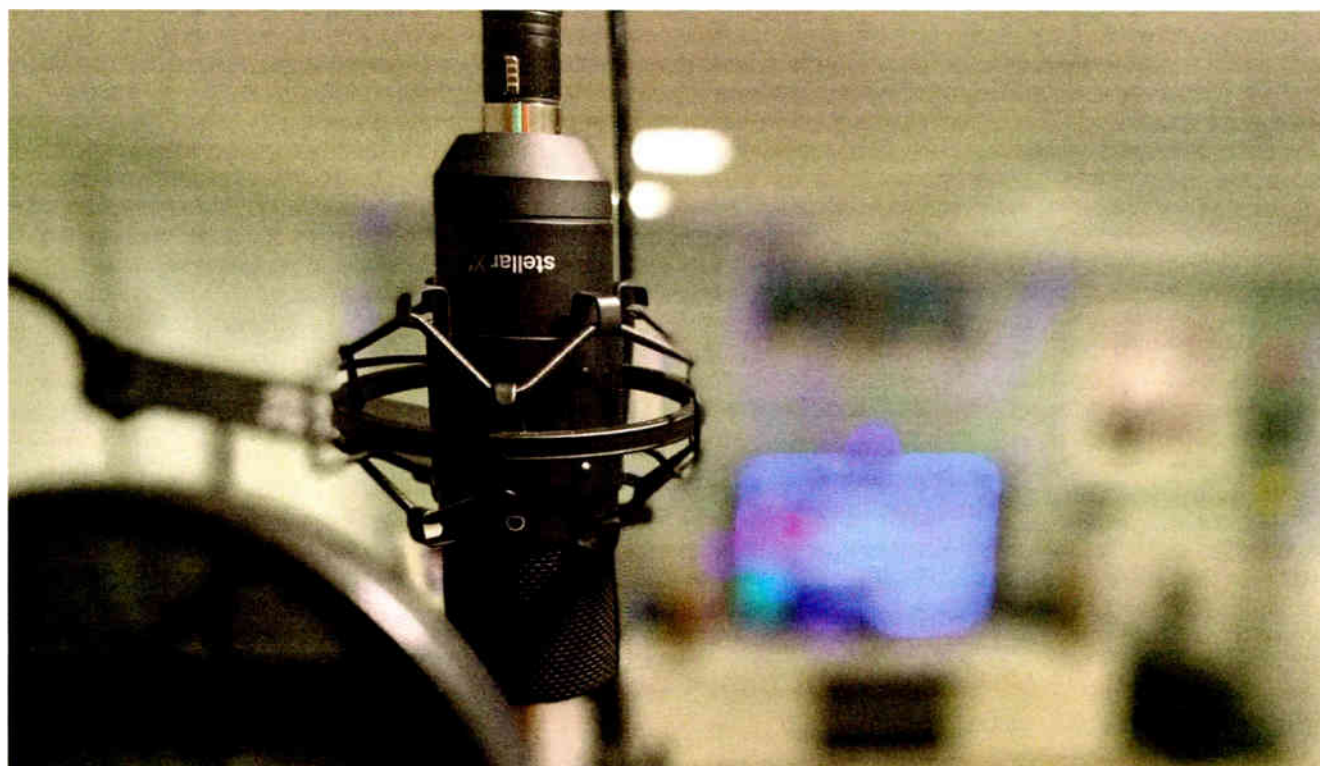
There was such a run on affordable large diaphragm condenser mics across the industry that each time I prepared a presentation, I needed to vet sources to make sure actors could actually buy the mics I was suggesting.

### "DELICIOUS"

It was in one of these moments that I stumbled upon a YouTube video comparing the TZ Audio Stellar X2 to a Neumann U87AI.

I found that hard to believe until I listened. It seemed a hidden gem that cost a mere \$199.99. I reached out to TZ Audio via their website to make sure they had inventory and were still open for business.

In the weeks that followed, I would spend time working with dozens of actors to get them connected so that we could all continue to work together.



Once their mic was connected, we'd either go live over the Source-Connect platform or they'd send me files to make sure they were sounding solid.

Time after time I was floored by how good the Stellar X2 sounded.

Affordable cardioid condenser mics are not a new thing. I recall an actor boasting about a \$300 mic in the mid-1990s, calling it an "overseas knock-off." I was pretty dismissive at the time, but there have been some remarkable improvements over the years.

What I hadn't seen or heard, however, is a mic that holds its own against the big boys while breaking the \$200 price barrier.

The mic comes neatly boxed with all of the testing documentation. Inside the box is a solid carrying case that holds the mic, its shockmount, wind screen (not a pop filter) and pouch.

When I got my hands on the Stellar X2, it was smaller than I imagined it would be, given its big sound. It was like someone had used a shrink ray on a classic large mic and case.

But when you lift the mic, you know you're holding quality. It is solid. TZ Audio's documentation describes the care taken to build the mic, and you can feel it.

The shock mount squeezes open, and in the mic goes, safe and secure.

I connected it to my home rig as I



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**PRODUCT SUMMARY**

**TZ AUDIO PRODUCTS**  
Stellar X2 Microphone

**Plusses**

- + Large condenser capsule
- + Price
- + Performance
- + Deceptively small
- + Ships with case, shockmount, windscreen

**Minus**

- Only cardioid pattern

**Contact:** TZ Audio Products in California at 1-424-337-0534 or visit <https://techzoneaudioproducts.com>.

was preparing for a session with a well-known actor coming to my home studio for a national TV spot. I'd been using a shotgun mic on him and decided to compare it to the Stellar X2 while I was getting things set up. It sounded really close to a ubiquitous studio mic that costs five times as much.

Later that night, I ran a webinar to a group of about 90 voice actors, and they all wanted to know what mic I was using. One actor said it "sounds delicious."

A criticism from voice actors and engineers about mics in the \$200-\$300 price range is that they often have a notorious "harsh" bump in the upper mid range. Personally, I think that depends largely on the actor's voice. Truth be told, when I mix voice actors into spots, I'm always bumping up the upper mids and highs to cut through anyway, so I don't see it as an issue.

However, the Stellar X2 doesn't add any exaggerated brightness.

Sure, you can see what they're claiming in the graph they send, but I've never been one to trust that stuff. I rely on my ears, and my ears are happy with this mic.

It also doesn't have an over-the-top proximity effect, which can be a blessing or a curse, depending on the actor. Some actors working at home with some of the similarly priced competitors are struggling with extra mouth noise, no doubt related to that upper-mid boost. During my webinars, I had been using a different mic that had me cringing at my own mouth noise. Once I switched over to the X2, I noticed quickly that it was gone.

There was such a run on affordable large diaphragm condenser mics that I had to vet sources to make sure actors could actually buy the mics I was suggesting.

**CARDIOID ONLY**

Next, I wanted to do some musical testing with what I had on hand at my home studio.

First up was putting it in front of my Hirade Model 5 classical guitar. I recorded it flat into my Pro Tools rig — and it was, in fact, delicious. It didn't improve my playing, but it made the guitar come alive. It picked

up everything from my fingers to the strings, as well as all of the resonance of the instrument. I couldn't resist putting some concert hall reverb on it, and with no processing at all, I was getting a clean, crisp sound.

The next test was to see how it handled a guitar amp. I fired up my Gibson SG with an old distortion pedal and turned it up to a responsible level because my rock

and roll days are long behind me, and I live with my family who doesn't need to hear that kind of noise.

It's worth noting that the Stellar X2 doesn't have a pad or a roll-off built in, but it took a solid blast effortlessly, capturing what I was hearing in the room perfectly. I should also note that it is a cardioid pattern so there is no polar pattern switching on this mic. Keep that in mind if it is something you need.

For a mic priced under \$200 (by a penny!), the Stellar X2 is a must-have. It competes effortlessly with mics costing five or even 10 times the price. It continues to be my strong recommendation for voice actors, and is a worthwhile addition to any mic locker. Whether you're a voice actor, podcaster or a musician, this mic is well worth a listen.

*Frank Verderosa is a 30-year veteran of the New York audio industry, fighting the good fight for film studios, ad agencies and production companies, but secretly loves mixing music most of all. These days, he plies his trade at Digital Arts and also is a pod-cast engineer.*

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AMB-22-4E	AMB16-4E MINI	HMB-14-4E	HMB8-4E
			


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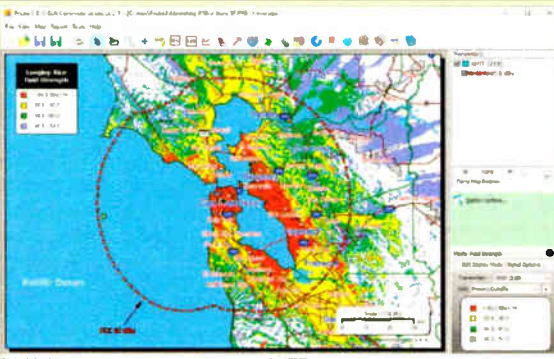
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# Metadata: Keeping Radio Strong in the Car

Why WorldDAB launched a campaign around great-looking images and text in the dash

## COMMENTARY

BY LAURENCE HARRISON

*The author is chair of the WorldDAB UX Group and director, Radioplayer Automotive Partnerships.*

At WorldDAB we recently launched a targeted communications campaign, urging radio broadcasters to prioritize the provision of great-looking images and informative text (metadata) for car dashboards.

The campaign includes a video explainer for senior execs, plus FAQs and a factsheet for those wanting to find out more. There's also a dedicated email address through which broadcasters can ask WorldDAB to point them in the direction of organizations who can help. More information is available at <https://www.worlddab.org/automotive/metadata>.

For many reading this, the campaign and messaging to broadcasters might seem blindingly obvious. Why wouldn't you do everything to ensure your station and branding looks great in cars?

Depending on which country you're in, consumption in cars could account for anything from 25% to 50% of all listening.

But not everyone will have the same understanding of what needs to be done, or the time and resource to prioritize it. This is where WorldDAB and its member network can help.

We need to set this campaign against the backdrop of the pandemic, with the accompanying economic downturn, which has hit everyone hard.

We understand why metadata might not make it to the top of everyone's to-do list right now, so how do we make progress in this critical area?

The answer to that conundrum comes in the answers to two questions: *Why act now?* And *what do you actually need to do?*

### WHY ACT NOW?

We need to act because dashboard technology is changing faster than ever before. We need to react to the new dashboard environment and work hard to create a great radio experience as the competition for ears and eyes in the car increases.

Technologies that allow pairing of smartphones to the dashboard (like Apple CarPlay and Android Auto) have already opened up a wider choice of media sources, but now we have an

Cover image from a WorldDAB presentation about metadata.

app ecosystem available directly in the dashboard for the first time, thanks to the new Android Automotive operating system, launched in the Polestar 2 earlier this year. Media and audio apps can now be downloaded directly to car dashboards via embedded SIM cards in the car. The increased number of services is forcing a rethink from car manufacturers about the user journey and interface, including the radio button.

It is vital that we continue to push for radio's prominence on the dashboard given its popularity in-car and clear value to consumers. Many car manufacturers still provide a radio button, but a study from the National Association of Broadcasters of 50 cars at U.S. automotive exhibitions showed that the number of cars with a specific button on the dash for radio had decreased from 39% in 2017 to 26% in 2019.

This is not due to car manufacturers downgrading radio, but rather with more media services available on their interface they need to create a "user journey" that makes sense. At the same time, color touchscreens are replacing physical buttons, and these screens are getting bigger, brighter and sharper, making the visual experience of radio more important than ever.

While this presents a challenge, there is also a big opportunity here for the radio industry, and we need to deliver if we're to keep our car manufacturer partners supporting radio.

The good news is that they are more



Metadata powers the future radio experience in-car



engaged than ever before. They want radio to look great in their cars, but this means they are disappointed and frustrated when it does not. The same will be true of consumers who will compare radio to other app experiences, rightly expecting radio to look as good, if not better. So we must act now.

Within the WorldDAB Automotive Group (a collaboration of broadcasters, vehicle manufacturers, Tier 1s and companies offering solutions for radio to the vehicle industry), we believe that we must focus on the "user experience."

If the radio UX is fantastic, and the content is great, our listeners will stay engaged. Of course within WorldDAB we see the heart of that UX being DAB+ (HD Radio in the U.S.), alongside FM and streaming in a hybrid radio. We believe that digital broadcast radio is vital for robust, quality, free-to-air access. The question then is, when the station is playing, what appears on the large color screen that brings it to life?

The answer is metadata.

As a minimum, broadcasters should be providing a high-resolution station logo, the station name and description.

It's likely that listeners will also want to know what show they're listening to, the song that's playing and who it's by, they may also want an image of the artist. This is metadata, and without it radio risks appearing as a blank screen, disappointing listeners and car manufacturers and missing the chance to promote one's station and brand.

The work we do now to prioritize

metadata for the car will also establish a baseline experience on which we can build with our car manufacturer partners.

Screens will get bigger and entertainment even more important, as drivers become passengers in autonomous cars.

For example, could there be an option in the future to show live video from the studio when hands are off the wheel? This isn't going to happen any time soon but collaborating now with car manufacturers on a roadmap for metadata will allow us to plan to introduce more exciting features in the future and keep the radio UX strong.

### SO, WHAT DO WE ACTUALLY NEED TO DO?

If you're a radio exec, there are some simple steps you can take.

First, make someone responsible for getting your metadata to the car. It's likely that your station will have already created all the metadata you need for use on your station apps or web players, so no problems there.

You will then need to see if you can make this metadata available over the air on DAB+, and you can also work with an organization who can help get your metadata to car manufacturers over the internet.

WorldDAB can put you in touch with member organizations who can help. Just email [metadata@worlddab.org](mailto:metadata@worlddab.org)

For more resources including an information sheet for senior managers, visit [www.worlddab.org/automotive/metadata](https://www.worlddab.org/automotive/metadata).

# The Advantages of Software-Defined Infrastructure

How to design better broadcast workflows in the aftermath of COVID-19

## COMMENTARY

BY BENJAMIN LARDINOIT

*The author is CEO and co-founder of On-Hertz.*

As Radio World has reported, the pandemic has caused many radio organizations to pause cap-ex spending and to rethink their facility planning and workflows.

On-Hertz thinks that the industry, in general, is going to need to move more actively towards more agile workflows and operations to survive in the new media landscape. Concretely, that means accelerating the transition to a fully digital, software-based, live production ecosystem.

We must stay humble: No one could have anticipated a global crisis like the one we are facing. The impact on our industry is severe and, unfortunately, there is no magic bullet.

At the same time, COVID-19 has put in full light some of the challenges that broadcasters have already been facing for some time:

- How to compete with the new on-demand and over-the-internet players?
- How to do it while maintaining the levels of quality and reliability that the audience has come to trust?
- How to stay relevant to our audience and embrace the new ways people consume content?
- How to address the changes in our organizations and production teams when budgets are going down but the demand for content explodes?
- How to shape our operations to stay (become?) profitable while we know that the speed of change is only going to increase from here?

Once again, COVID-19 has highlighted a key element: legacy dedicated hardware infrastructures are just not flexible enough. Worse: They play(ed) against us when trying to ensure business continuity!

### THE ADAPTABLE SURVIVE

It is not surprising that codec suppliers have seen a large increase in demand for their equipment: Suddenly, distributed operations are the norm rather than the exception.

It is not surprising either that we have all seen and heard many shows trying to carry on using publicly available applications like Skype, Zoom and the likes — often at the expense of quality,



Benjamin Lardinoit

**The industry, in general, is going to need to move more actively towards more agile workflows and operations to survive in the new media landscape.**

unfortunately.

On the other hand, shipping codecs to everyone at the start of the pandemic and trying to replicate the hardware-based infrastructure of the studio have proved to be logistically impossible, not to mention eye-wateringly expensive.

So, are there alternatives?

Evolution is not “survival of the fittest,” it’s “survival of the most adaptable.” At On-Hertz, we believe that involves a shift from legacy hardware-based infrastructures to modern virtualized ones.

We don’t want to “simply” swap out hardware for software, though; we believe the shift towards software-defined infrastructures will bring us three significant advantages: modularity, interoperability and better user inter-

faces. Combined, these characteristics open the way to better workflows.

This evolution needs to come with a few mandatory pre-requisites like maintaining or even improving the level of reliability, quality and functionality that our industry demands.

We must also capitalize on the tremendous amount of expertise and knowledge that we have collectively built over the last decades. Virtualization isn’t about turning everyone into IT geniuses but offering more opportunities to capture our audience’s imagination.

Modularity will then help us deal with the changing world: It doesn’t matter anymore if you have an X-channel mixers or Z number of codecs. With software, you can simply select the number of channels you need at any

moment. If you need more or fewer channels the week after, you can scale accordingly. Likewise, find out what works and what doesn’t much faster than ever before.

Hitting two birds with one stone, modularity also comes with a cost advantage. You don’t need to scale your infrastructure for peak demand anymore. You can scale for the content you want to produce and make sure your cost structure follows your revenue.

### UX IS PARAMOUNT

Interoperability remains one of the major pain points of technical teams today. Who hasn’t heard a story or two full of dongles and converters?

There is no good reason for it. Outdated, insecure, proprietary algorithms and protocols should be things of the past. Instead, offering open (web) APIs allows for easier interconnection between solutions, less customer lock-down for a manufacturer and a lot less unnecessary support for your teams.

In other words, we can rely on technology that is already used at a massive scale by many other resilient industries to provide much greater convenience.

Finally, users, and therefore user interfaces, are of paramount importance. If teams are being reduced, if the speed of change increases, if the complexity of operations increases, shouldn’t we make sure that we focus on getting the best out of the tools we use to produce the best content?

Can we hide complexity in some cases? Can we automate operations that only have low added-value, that are tedious and potentially error-prone? Are we bound to physical interfaces for every input on the system or only by some of them? How do we embrace distributed operations?

Our philosophy is that engineers engineer, developers develop and producers produce, and that’s how it should be. So let’s make sure our user interfaces reflect that reality.

The pandemic has caused many radio organizations to pause cap-ex spending and to rethink their facility planning and workflows. These emergency measures might well be their safety board for the future too, thanks to the opportunities opened by software-defined infrastructures!

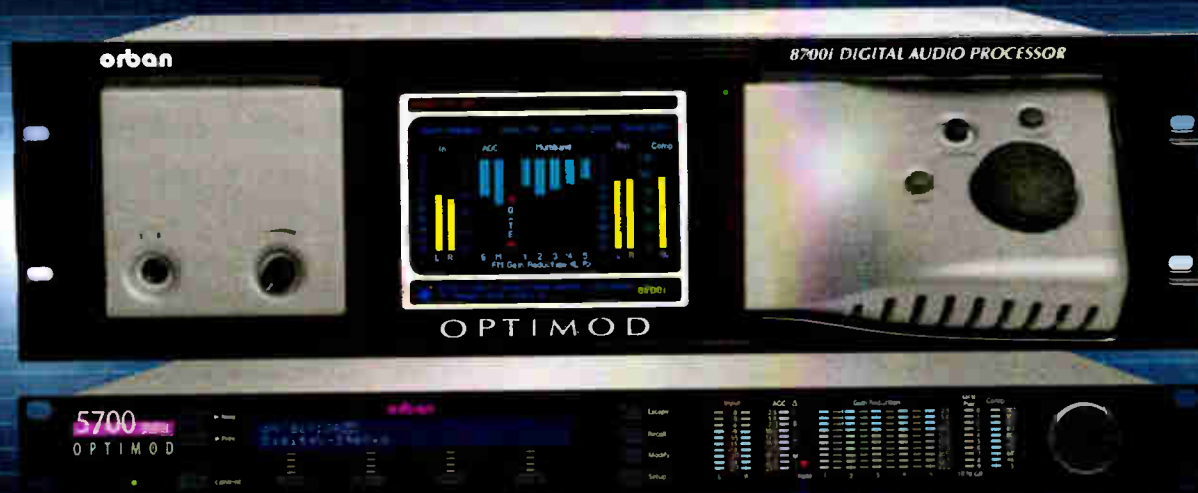
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