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## So, Where Do We Go from Here?

Some thoughts about radio in 2021 and beyond

BY DONNA L. HALPER

Every semester, I ask my students here at Lesley University how many of them listen to radio. And every semester, fewer and fewer hands go up.

Among those who do listen, most

say it's mainly when they are in the car with their parents. The majority tell me they prefer listening to Spotify or Pandora, where they can get only the songs they want, with no commercials.

Radio is not relevant to their lives, and some tell me it probably won't be around much longer.

While I wish they felt differently, what they are saying is nothing new.

In fact, as far back as 1927, when "talking pictures" came along, and again in 1948 when a growing number of homes got television, some critics were predicting that soon, nobody would care about radio.

You can also fast forward to 2010.

*(continued on page 3)*

## Sinclair Demos ATSC 3.0 Radio Simulcast

TV platform is used to simulcast its four radio stations in Seattle

BY PHIL KURZ

It may be a little early for radio groups or SiriusXM to get worried, but they might want to take a close look at what Sinclair Broadcast Group is doing in Seattle.

This month the company is launching ATSC 3.0 over-the-air delivery of four Sinclair radio stations in the market as part of its STIRR XT digital audio service.

OTA simulcasts of KVI(AM), KOMO(AM), KOMO(FM) and KPLZ(FM) will complement 15 digital audio channels already being delivered "over the top" as part of STIRR XT.

When it announced the plan a couple of months ago, Sinclair VP of Technology Strategy Michael Bouchard was quoted

*(continued on page 4)*

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## OUTLOOK

(continued from page 1)

when broadcasters were feeling the rising effects of social media — that too was supposed to bring about the death of radio.

But while reports of radio's demise have thus far been exaggerated, some very real challenges and problems exist.

As 2020 turned to 2021, I spoke with consultants, owners, programmers and journalists, asking them what they thought the future for broadcasting might hold. Their assessments varied, from being worried to cautiously optimistic to bullish.

This story is paired with one on page 8 by Randy Stine that explores how U.S. radio companies view the current broad cultural interest in audio.

### LACK OF ATTENTION

Among the biggest worries is that radio is indeed losing its younger demographics. My students are part of a trend: Teens and young adults are no longer fans of radio as previous generations were.

Nielsen Audio ratings bear this out: For instance since about 2014, according to an analysis by Edison Research, there has been a steady decline in ratings for CHR stations, as well as a decline in time spent listening. Interestingly, the only formats that have maintained some young adult listeners are classic hits and classic rock.

Consultant Fred Jacobs says this should come as no surprise. "The radio industry hasn't cared about young people, especially teens, for years," he said. And because of that lack of attention, he fears that "radio is going the way of jazz: an artifact of an older generation."

He attributes this to the industry's longstanding focus on the 25–54 demographic, often to the exclusion of anyone younger.

Another veteran consultant, Holland Cooke, concurs, and said, "Today, the real money demo is baby boomers, who grew up with the AM/FM habit."

Engineering consultant Scott Fybush, who also publishes the NorthEast Radio Watch newsletter, says FMs are doing much better than AMs. Many boomers have fond memories of AM top 40, but these days, while a few heritage AM stations thrive, a growing number are dependent on syndicated programs or going silent.

Fybush expects the trend to continue. "AM is not going to vanish in [the next] 5 or 10 years,



Tami Graham

Photo: Mariona Photography  
Getty Images/NirajC

We serve five rural counties, and many [listeners] are in news deserts. ... People know they can rely on us for vital information.

— Tami Graham

but it will become even more of a niche medium, and the thinning of less viable signals has already begun."

Another area of concern is the lasting impact of media consolidation.

Ed Levine is president/CEO of Galaxy Media, which owns 13 stations in central New York. Like many observers, he cites the Telecommunications Act of 1996 as an important inflection point.

"The challenge that our industry faces," he says, "is that for the last 25 years, radio has become bent to the will of a very small group of people. They wanted it 'bigger and bigger,' ostensibly to do 'better' and increase radio's share of the ad spend. In reality, it was simply to get richer ... much richer."

While a handful of media companies were buying up more stations and financing them with private equity money, a small number of corporate CEOs became very wealthy.

But local stations began encountering problems. "Driven largely by private equity investment, radio was given revenue and cash flow goals that, in retrospect, were impossible to meet. So, when the revenue goals were not met, the only other way to increase cash flow was to cut people locally," he said.

(continued on page 5)



Fred Jacobs

## CORRECTION

In our Feb. 3 issue, the photo caption in the article "Listening Has Come Full Circle" was incorrect; the interviewee is Tom Lawler.



## AUDIO

(continued from page 1)

in the press release saying the technology “lays the groundwork for our future plans of enhancing the reception of terrestrial over-the-air radio services throughout the country, as NextGen TV is deployed by broadcasters everywhere.”

From a strategic point of view, the rollout — while initially modest — demonstrates Sinclair’s commitment to delivery of more than better-looking and sounding television via ATSC 3.0, says Mark Aitken, senior vice president, advanced technology, for Sinclair and the president of its ONE Media 3.0 business.

“One of the reasons we are doing this is because the automotive guys always ask: ‘Is there an alternative to digital radio [and] to SiriusXM that can be delivered via the ATSC 3.0 standard?’” he says.

While acknowledging it is “early in the game,” Sinclair is hoping these

that digital spectrum open up.”

Frequently cited use cases for ATSC 3.0 in vehicles include delivery of in-car entertainment, map and navigation data and fleet-wide software updates for computer-controlled automotive tech.

### NEXTGEN TV HYBRID SERVICE

Like ATSC 3.0 itself, the combined STIRR XT is a hybrid service — part OTA and part OTT, or “over the top.”

When the 3.0 radio simulcasts launch, only NextGen TV sets and gateway owners in Seattle will be able to receive them. However, in October 2020 Sinclair revealed early production samples of its Mark One smartphone with built-in 3.0 receiver. These phones and other expected 3.0 consumer devices will make mobile reception of OTA 3.0 digital audio a reality one day, says Aitken.

“We truly will be delivering radio broadcast content — just delivered over a different spectrum,” says Aitken. “It’s not FM; it’s television spectrum.”

Consumers access STIRR XT via the STIRR Radio broadcast app avail-



In the fall, Sinclair Broadcast Group took delivery of production samples of the ONE Media Mark One Android smartphone that has an ATSC 3.0 receiver chip. The company hopes consumer devices like this will make mobile reception of OTA 3.0 digital audio a reality one day.

**[T]he automotive guys always ask: ‘Is there an alternative to digital radio [and] to SiriusXM that can be delivered via the ATSC 3.0 standard?’”**

— Mark Aitken

“Seattle 3.0” radio simulcasts — the first of many to launch in the broadcaster’s ATSC 3.0 markets — will pique the interest of automakers as they plan for the future, he says.

Automakers need a minimum of three years to add anything to what’s on the drawing board. The launch of STIRR XT OTA today just might be enough to nudge them into including 3.0 receivers in future models, he says.

“We think there is a real compelling reason to consider the inclusion of ATSC 3 receivers in cars,” says Aitken. “Once you’ve done that, all of the other opportunities for what can be carried in

able universally on televisions labeled as NextGen TV sets. When consumers launch the app, they can navigate to STIRR Radio to begin enjoying OTT- and OTA-delivered digital audio channels, he says.

Sinclair has been in discussions with other broadcasters about simulcasting their radio stations over the air via ATSC 3.0 with STIRR XT in markets where the station group has no radio stations, says Aitken, who said the service at launch will be purely ad-supported.

### XHE-AAC CODEC AND ATSC 3.0

STIRR XT audio channels delivered

over the top are being encoded using the Dolby AC-4 audio codec, which is specified to be used in North America as part of the ATSC 3.0 standard.

However, Sinclair has other plans for STIRR XT channels delivered over the air. Rather than AC-4, the station group will encode OTA audio channels using the xHE-AAC (Extended High-Efficiency Advanced Audio Coding) codec.

“We are working on integrating a broadcast app-delivered highly efficient radio audio codec, which is not technically supported in the ATSC 3.0 standard,” says Aitken. “But because this is all IP — and this is the magic of IP — that broadcast app will deliver a player for an audio codec that does not exist in the ATSC 3.0 standard.”

Motivating Sinclair’s choice of xHE-AAC for OTA-delivered STIRR XT is bandwidth efficiency, says Aitken. With

xHE-AAC, Aitken predicts significant bandwidth savings.

For example, a stereo audio channel encoded with AC-4 requires 96 kilobits per second, while the same channel needs just 24 kbps when encoded using xHE-AAC, he says.

The extra efficient codec also puts Sinclair’s STIRR XT OTA delivery in line with what’s going on around the world in digital radio, he says.

“xHE-AAC is the audio codec that is part of the digital radio standard called Digital Radio Mondiale,” says Aitken. “It is deployed globally, and it is in fact the most efficient commercially available codec.”

Adopting the Digital Radio Mondiale framework in the STIRR Radio broadcast app ensures that all of the tools for radio functionality are already available, he adds.

The Seattle rollout of STIRR XT follows Sinclair’s initial deployment in Oklahoma City. Sinclair plans to make STIRR XT available in all of its ATSC 3.0 markets.

“The whole point here is that we are using STIRR as a backbone piece of our OTT-OTA convergence strategy,” says Aitken. “We are bringing to bear all of the tools and all of the assets that we can to step forward with a competitive foot with the services we can offer.”

See related commentary, page 30.

# STIRR

A logo for the STIRR OTT platform. Sinclair calls its NextGen radio services “STIRR XT.”

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**OUTLOOK**

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That reduction in local talent, to save money, was especially troubling, because broadcasters began sacrificing localism, the one thing that made radio unique.

Jerry Del Colliano, publisher of Inside Music Media, has been vocal about what he sees as the misplaced focus of corporate owners who were more interested in what was good for Wall Street, rather than what was good for Main Street.

Ongoing layoffs may have helped the corporate bottom line, but many talented local broadcasters lost their jobs, he said. Del Colliano is also critical of the FCC for allowing so much deregulation that companies are no longer required to maintain a local presence in their city of license. Radio itself isn't the problem, he says, "it's what these giant owners did to it."

**VITAL INFORMATION**

But even though young people don't listen as much as they used to, even though time spent listening is down across most demographics, even though there are lingering effects from media consolidation and even though the COVID-19 pandemic has led to economic downturns in many cities, numerous industry people remain hopeful about broadcasting's future. Among them are local owners and operators who have seen firsthand how radio can still make a major difference. One is Tami Graham, executive director of KSUT, Four Corners Public Radio, with

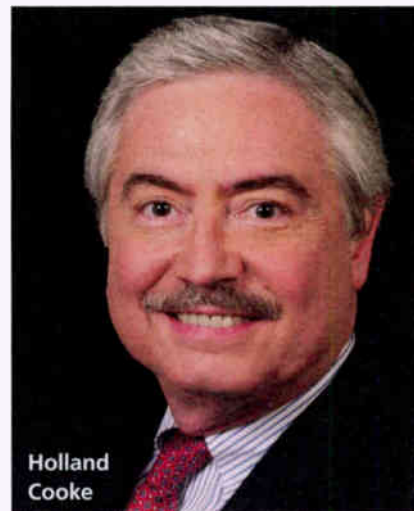
studios in Ignacio, Colo. KSUT serves four states and includes among its listeners a large tribal population.

For her audience, KSUT has become a trusted resource.

"We serve five rural counties, and many [listeners] are in news deserts," she says. With no local newspapers, KSUT has stepped in to fill the void for local news coverage.

"People know they can rely on us for vital information ... whether it's about COVID or about the wildfires. Good local content is more relevant than ever."

She recalls that when the pandemic broke out, "We hired two part-time reporters and began covering it. Our



Holland Cooke

**Give listeners actionable information, like where they can get a vaccine, get an expert with tips for keeping their pets safe and healthy.**

— Holland Cooke

plan was [to focus on it] for two weeks, but the response was so positive that we are still doing it."

In fact, she notes, 2020 turned out to be a record-breaking year for fundraising, as donors came through to support KSUT's programming.

"Our mission is "connecting people, creating communities," she says, "and that is what we have been doing."

Ed Levine too has found that being

live and local works, no matter what kind of format the station has. He stresses the importance of developing local personalities and encouraging them to be heavily involved with their community.

"All of our air talents are native to their market. They know the area, and they love it. They don't see [working for us] as a steppingstone to somewhere else. They don't want to go elsewhere."

(continued on page 6)

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# OUTLOOK

(continued from page 5)

Elroy Smith is a veteran urban contemporary programmer. He favors air staff with strong ties to the market. "That means they know the local landmarks, and they can pronounce the local street names." And because they have their finger on the local pulse, they can react to whatever is important to the community at the time.

For example, during his tenure as operations manager and program director of Bonneville's KBLX in San Francisco, air personalities volunteered at a food bank while the pandemic raged. When George Floyd was killed and protests erupted nationwide, KBLX temporarily stopped playing music, instead airing news and information, and the morning show turned to talk. "The phone lines lit up. People wanted to have that connection with us."

Smith believes building trust with the local community is essential. "People expect us to be involved."

But what about attracting younger demographics? Is it still possible in a world where young people have so many choices, and radio has so much competition for their attention?

Sean Ross, vice president of music and programming for Edison Research and editor of the "Ross on Radio" newsletter, says, "I think if there's any way forward, it involves making current music formats better for adults again, so that maybe they'll again be modeling radio usage for kids when the car-pool resumes." He notes that there are some interesting and creative stations in smaller, non-rated markets.

Fred Jacobs wonders if the average owner understands younger listeners. "Do [they] know what teens want today?"

Jerry Del Colliano believes one reason young people can't relate to radio is it sounds old to them. "Young people want [to listen to] someone who sounds like them ... who talks about the things

they care about. It's not just the music; it's the personalities. This generation craves authenticity."

And Ed Levine adds, "You don't want to just have older people working for you. Hiring younger people changes the culture of a company."

## ONLINE PRESENCE

Changing digital habits of course are an important part of the story.

With so many local events cancelled because of COVID, station managers have found that their website often serves as a gathering place, where listeners can find up-to-the-minute information about a news story, listen to



a podcast, replay a feature they had missed or interact with the on-air personalities.

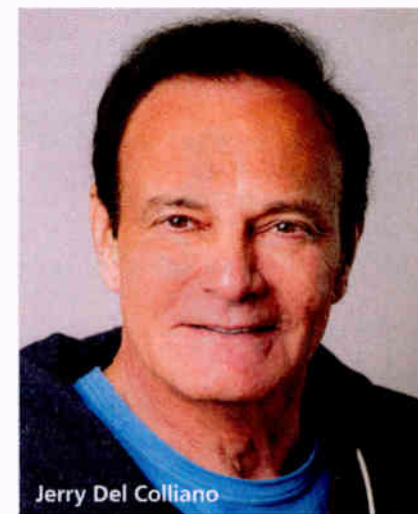
Tami Graham says that during the pandemic, KSUT "bumped up our web presence and expanded our digital content. In a way, we are remaking ourselves. There are no program directors now; we have content directors. We want our listeners to have the most interesting content, whether it's on the air, or on the web.

"We have also collaborated with local partners, like the Colorado Media Project, to create and share content. There is no competition — just collaboration for the good of the community."

Holland Cooke feels that many programmers are adapting to the fact that today's listeners tend to be busier and have shorter attention spans. "And peo-



Ed Levine



Jerry Del Colliano



Sean Ross

ple today want everything on demand," he says, noting they don't want their time wasted.

Scott Fybush agrees that some broadcasters are adapting to these new realities, but "not fast enough or with enough innovation." He said that with more people working from home, the old idea of programming mainly to people in the office needs to be revisited, as well as rethinking traditional dayparts: Are people who now work or study at home getting up early to listen to a morning show, for example? And what about other dayparts?

"Almost nobody is paying attention to weekends, even though there has been a spike in usage then."

## "EMBRACE ACTIONABLE"

Two comments I heard repeatedly: One, successful stations have relatable personalities who are plugged into the community. Two, successful stations are live and local as much as possible.

In a post-media consolidation era, as money-losing corporations divest from various properties, Del Colliano predicts there will be new opportunities for local ownership.

"Local operators may be the salvation of radio. After the [giant conglomerate owners] are gone, the small owners who remain will be able to reinvent the industry."

Cooke too sees enhanced opportunities for radio, even during the pandemic. He advises programmers to not only "embrace local," but to also "embrace actionable." In other words, "Give listeners actionable information, like

where they can get a vaccine, get an expert with tips for keeping their pets safe and healthy."

And while all acknowledged the challenges of doing radio today, the people with whom I spoke agreed that the radio industry doesn't do an effective job of selling its benefits.

"Radio suffers from a perception problem," said Ed Levine. "We've got an inferiority complex. People may not listen for as long as they used to, but the listeners are still there."

Perhaps there is no one format that will be radio's salvation, and perhaps the programming will vary in each market, depending on the audience's needs.

But radio still matters, says Elroy Smith.

"The story about the demise of radio is false," he said; when it's done well, "radio can still speak to today's audience." In fact, he says, "radio can be a breath of fresh air."

See related story, page 8.

The author is an associate professor of communication and media studies at Lesley University, Cambridge, Mass., a former broadcaster and radio consultant. She often writes about the history of broadcasting.

Comment on this or any article to [radioworld@futurenet.com](mailto:radioworld@futurenet.com) with "Letter to the Editor" in the subject field.



Elroy Smith



Scott Fybush

# PEOPLE NEWS



**Rob Babin** was named senior VP, radio, at Cox Media Group. He succeeds EVP of Radio **Bill Hendrich**, who retired. Babin will oversee the company's 65 radio stations in 11 markets. "He will focus heavily on achieving CMG's Radio strategic growth objectives while maintaining CMG's industry leading content, impactful community engagement, and growth-focused culture," according to a statement. ...



iHeartMedia created the position of senior vice president of diversity and inclusion and named **Yesenia Bello** to the post. Her job is to help the company

"to drive comprehensive long-term and measurable diversity and inclusion strategies" and develop and meet specific diversity and inclusion goals. ...



**Doug Harvill** will retire from Cumulus Media in May. Harvill is vice president and general manager of Cumulus San Francisco, including **KSAN(FM)**, **KGO(AM)**, **KNBR(FM/AM)** and **KSFO(AM)**. ...



**Nexstar Inc.** named **Jeff Moriarty** as its new executive vice president and chief product officer, Digital Division. The multimedia company is heavy in TV station ownership but also owns **WGN Radio** in Chicago. ...



The **WorldDAB Automotive Working Group** has a new chairman, **Martin Koch**, who succeeds **Laurence Harrison**. The AWG "brings together radio broadcasters and auto makers to collaborate on improving the DAB+ digital radio experience for drivers." Koch is head of development entertainment and car

functions at Volkswagen Car SW.Org Wolfsburg AG. The Automotive Working Group "brings together radio broadcasters and auto makers to collaborate on improving the DAB+ digital radio experience for drivers." ...



Acting Chairwoman **Jessica Rosenworcel** named **Michele Ellison** as acting general counsel at the Federal Communications Commission. **Tom**

**Johnson** stepped down as general counsel and but continues to serve in the Wireless Telecommunications Bureau.

**Rosenworcel** named **Joel Taubenblatt** as acting chief of the Wireless Telecommunications Bureau. He was deputy bureau chief. The bureau's chief **Don Stockdale** moves to the Office of Economics and Analytics.

**Rosenworcel** also announced several acting appointments within the

Office of the Chairwoman:



**Travis Litman** will handle acting chief of staff duties. **Kate Black** was named acting chief policy advisor. **Umair Jave** is acting chief counsel. Acting legal advisors include **Holly Saurer** for media matters.

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# For Radio, Audio Is the “New Now”

As options proliferate, broadcasters embrace the newfound popularity of content for the ear

## **AUDIO TRENDS**

BY RANDY J. STINE

Consumer demand for one-to-one digital audio is a powerful economic force in the 21st century. Depending on your perspective, radio companies are either embracing the trend or being forced to do so. Either way, companies continue to diversify in the burgeoning audio marketplace.

The ongoing digital transformation is redefining how audio gets consumed in the home, the car and elsewhere, as Americans turn more often to their smartphones, tablets and connected speakers for audio content.

Observers who spoke to Radio World say all signs point to continued growth of podcasts and on-demand content as personalized media plays a larger role in this overall audio ecosystem.

The dramatic pivot in audio delivery is of critical interest to radio entities that engage consumers in the increasingly cluttered media environment. It leaves C-suiters searching for the latest accoutrement to accent their digital audio catalogues.

The trend is reflected in how “radio” companies now describe themselves.

Cumulus promotes itself as an “audio-first media company” that has broadcast, digital, mobile and voice-activated options, including the Westwood One Podcast Network.

SiriusXM — which owns Pandora and Stitcher and has an investment in SoundCloud — calls itself “North America’s leading audio entertainment company.”

iHeartMedia would probably contest that, given that it lays claim to being “the number one audio company in the United States, reaching nine out of 10 Americans every month,” with a quarter of a billion monthly listeners, “a greater reach than any other media company in the U.S.”

CEO Bob Pittman has pushed the company toward new audio offerings.

“Podcasting is wide open and the sky is the limit. It’s sort of an on-demand



Getty Images/Wester061

version of radio. We see it as an extension of radio,” Pittman said during a quarterly earnings report in 2020.

The podcast business is thriving, with growth driven by consumers embracing on-demand audio; and radio firms have participated. Research from Borrell & Associates and the RAB shows that over 70% of radio stations produce locally-focused podcasts.

Entercom is another company emphasizing the power of audio. It released a study during the virtual CES 2021 show showing that the nature of audio content makes it more engaging for audiences than other media. The study tracked “immersion,” defined as “a scientific measure of emotional connection and attention,” and found that audio ranked highest in the test.

The proliferation of audio seems to be pushing radio broadcasters to adopt mobile apps and tech innovation to further their reach. And those efforts

**Entercom said its research shows that the “immersive” nature of audio content makes it more engaging for audiences than other media.**



are expected to accelerate as hybrid radio in connected cars and voice activation tools like Amazon’s Alexa Auto proliferate. Understanding the “skills” required to integrate with new audio services will be critical for radio broadcasters, experts say.

### “EVERY CHANNEL MATTERS”

Jeremy Sinon, VP of digital strategy for Hubbard Radio, said the company

is quickly moving to digital, as in its partnership with PodcastOne in the on-demand space.

“We have a strong focus on our mobile apps, web listening and smart speaker listening. We also continue to focus on consumption via video on platforms like YouTube, Facebook and Instagram. Every channel matters and they all warrant attention,” Sinon said.

(continued on page 10)

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## AUDIO

(continued from page 8)

Hubbard Radio launched PodMN, a mobile app dedicated to local podcasting in Minnesota, recently. “The project has helped build a closer connection with podcast consumers in the state as well as local podcasters,” he said.

Beasley Media Group recently announced a partnership with Entercom to be included in the Radio.com platform.

“One of the most important benefits of these partnerships is incremental distribution. We engage our users where and when they are on our O&O assets — live over the air, live streaming, and time-shifted streaming,” said Todd Handy, chief digital officer for Beasley Media Group.

“By partnering with these platforms, we gain the opportunity to meet our current audience members where and when they are, when they’re not on our O&Os, and also to be exposed to and engage with potential new audience members.”

Beasley, which has long been partners with the iHeartRadio app and the Tunein app for streaming, has embraced podcasting; for instance it created the bPod Studios Networks where it’s innovating in other podcast-adjacent spaces, Handy said.

“The intent there is to not only meet current and potential audiences where they are, but also to bring them fresh, engaging content that in some cases is part of our general programming, and in other cases is more long-tail and niche-focused.”

**Hybrid radio will allow listeners to engage with content and marketing messages they hear in the car.**

— Todd Handy, Beasley Media Group

Finding ways to engage audiences through multiple distribution channels is what drives Beasley’s digital development, Handy said.

“Hybrid radio is the next evolution in that engagement. It combines the large reach of broadcast with online interaction, making radio even more powerful and dynamic. Hybrid radio will allow listeners to engage with content and marketing messages they hear in the car. This will increase radio attribution and overall advertising effectiveness,” Handy said.

Beasley Media Group also has invested in SpokenLayer, a provider of short-form voice and audio content for virtual assistant and connected devices, including Amazon Alexa and Google Assistant.

### SHORT BITES, DAILY HABITS

National Public Radio continues to invest development resources in its digital platforms, including station streaming, the NPR One app, NPR podcasts and the Alexa skill, according to Michael Smith, chief marketing officer for NPR.

Smith says the nimbleness of audio and the ability to present it through new technology is critical to NPR’s growth.

“The new platforms have allowed us to create different kinds of content because the format has changed. People today are listening to what I call short bite or daily habit podcasts. Just 10- and 15-minute shows. It presents new opportunities to present NPR audio,” Smith said. “Therefore you have these new podcasts that deal specifically with finance or politics.”

NPR’s short daily podcasts include “Up First,” which is produced by the “Morning Edition” team, and “Short Wave,” which comes from the NPR Science Desk.

Smith, who leads NPR’s business development team, says the lines between what is a podcast and what is an Instagram post are blurring. “People are even consuming podcasts on YouTube,” he said.

In addition, there is growth in interest among younger audiences finding NPR programming on the new distribution channels.

“Younger listeners are eager to engage in news and information presentations but on the platforms they are already comfortable with. On social media and smartphones. That opens up a whole new audience for us,” Smith said.

He said research shows that the median age of NPR’s podcast listening audience is at least 15 years younger than the traditional terrestrial radio audience.

NPR is firmly entrenched in the podcasting ecosystem. Podtrac says it had 20 million unique listeners in the U.S.

in December, with nearly 193 million streams and downloads.

Findings from a study by NPR and Edison Research in 2020 showed spoken word audio in the United States had increased by 30% in the past six years. Some of the biggest growth is among 13- to 34-year-olds.

Meanwhile, digital advertising continues to accelerate for commercial broadcasters, according to Adswizz, as the number of mobile devices accessing digital audio grows.

The digital audio advertising platform said in its annual Podcast Trends

“We can now look at cross-platform audiences and attribution as one and enable brands to connect with consumers across multiple content touch points,” Brokaw said.

Triton Digital is among the digital technology companies that provide audio publishers with streaming services and automated buying services. A company official reported during a presentation on Jacobs Media’s Virtual Tour of CES in January that programmatic digital ad sales have grown significantly in recent years.

The company reported that total

**People today are listening to what I call short bite or daily habit podcasts. Just 10- and 15-minute shows.**

— Michael Smith, NPR

report there was an 81% increase in advertising impressions between January and September 2020 among the publishers it works with.

iHeartMedia’s digital revenue was up 16.5% in the third quarter of 2020 compared to a year earlier, with most of the growth coming from podcasting. The latter’s revenue grew almost 74%. The iHeartPodcast Network remained the biggest podcast publisher in December among entities measured by Podtrac.

The country’s largest radio group also acquired Voxnest at the end of 2020. Carter Brokaw, president of digital revenue strategy for iHeart, said the company can now provide podcast advertisers with additional “targetable” inventory, allowing efficient monetization across a range of podcasts on its programmatic platform.

“This additional inventory and the application of Voxnest’s programmatic capabilities will increase the monetization of iHeartMedia’s full range of podcasts and advance the podcast marketplace for both buyers and sellers,” Brokaw said.

iHeartMedia’s SmartAudio project, Brokaw says, is a data-driven platform for the total audio marketplace, which includes broadcast, streaming and podcasting.

“We look to establish benchmarks of success by measuring results of radio campaigns with total iHeart universe delivery, insights and attribution data. This allows for a much more holistic view of campaign performance from demand generation to preference building to demand fulfillment.

global spending on programmatic digital audio between 2018 and 2020 surged 213%. Triton’s exchange totals 13,000 live streams and podcasts.

### ATTRIBUTION IS CRITICAL

Radio broadcast companies continue to search for ways to monetize their digital initiatives.

Bonneville International’s Audience in Motion (AIM) program gives advertising clients access to audiences across multiple digital properties. Those include display, video, audio streaming, social, native or sponsorship and programmatic opportunities.

The broadcaster is streaming audio over multiple outlets, said Jennifer Williams, director of digital media for Bonneville, including Spotify, Pandora, Google Play and SoundCloud, in addition to the company’s owned and operated network.

And ad attribution is imperative, Williams says, now that clients expect it.

“In the past, we used to compete with budgets that had attribution, now we complement and extend the ad recall. We have been able to help prove ROI by including audio tactics in a traditionally digital campaign.”

Bonneville International is focused on an initiative to increase its video pre-roll and smart speaker options on its streaming services, Williams said.

“To be able to add a visual element to those initially logging on via web, and a catchy intro to those using at-home devices in their new office setup, will be a fun new way to show the evolution of audio,” Williams said.

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# IR Camera Spots a Dead Cooling Fan

For one engineer, this handy tool has more than paid for itself

## WORKBENCH

by John Bisset

Email Workbench tips to johnbisset@gmail.com

Dan Gunter is principal of Alabama Broadcast Services LLC, a contract engineering firm headquartered in LaFayette, Ala. He saw a presentation that I did for the Alabama Broadcasters Association's Engineering Academy in which I discussed infrared cameras made by FLIR ([www.flir.com](http://www.flir.com)).

Last year, Dan bought a model that plugs into his smartphone. He says it has more than paid for itself. (The FLIR One Pro costs about \$400.)

Here's what Dan wanted to share with Workbench readers. He was at a client site to check a Harris SX-5A AM transmitter that had repeatedly blown the silver-mica capacitor in the output third harmonic filter section. Those cost about \$800 apiece.

Dan got the FLIR camera ready so he could quickly shut down the SX-5A, open the rear door and grab an IR temperature reading to see how hot the capacitor was getting. He attached the infrared camera to his phone and activated the app so he was seeing real-time IR imaging.

But in getting ready to inspect that transmitter, Dan happened to sweep the camera over the rear door of another rig, a BE AM5E, and discovered a potentially

serious problem there. He saw a "hot spot" in the image indicating much higher temperatures at one of the twin cooling fans at the bottom of the BE transmitter's rear door.

Measured with the FLIR One Pro, with a measurement "box" as defined in the FLIR PC software (Fig. 2), he saw that the cabinet over the blown fan was as hot as 96.8 degrees Fahrenheit, while the temperature was only 76.6 degrees in the area of the working fan.

Because these fans are behind a metallic filter in a recessed area of the door, they're normally out of sight. And you would not see them in operation if you opened the rear door of the transmitter's cabinet because, for obvious reasons, the transmitter must be powered down first (or the interlocks will shut it down for you).

Dan notes that this AM5E had a history of repeatedly blowing PA modules. The latest suffered a major burnout that charred the components beyond recognition on about a third of the circuit board, even melting the casing off a relay. That repair cost around \$1,500.

So Dan began to investigate. He discovered that the "hot" fan was not running. In fact, he had to

take a hammer and reshape the perforated metal portion of the door where the fan mounts, because it was pressing against the center of the rotating fan blade/spindle. This had apparently caused the fan to burn out. In looking at Fig. 3, the suspect fan is to the left, just above the

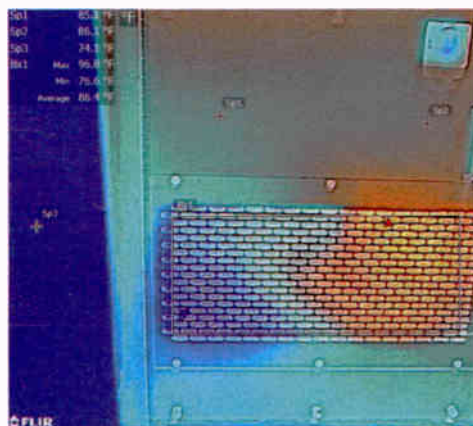


Fig. 2: The back of the BE5E transmitter. Note the uneven color between the left and right fan grills.



Fig. 1: The FLIR One Pro, bottom, is a thermal camera for smartphones.

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Fig. 3: The left-hand fan was not working; Dan replaced it.

copper strap.

Before and after replacing the burned-out fan. Dan used the FLIR camera to measure the temperature of the transmitter's cabinet. By replacing the fan, he decreased the temperature of the cabinet by around 15 degrees Fahrenheit in the areas adjacent to and above the PA modules. Dan suspects that the actual temperature of the PA modules and of the area inside the transmitter dropped by that much and more.

When he places his hand on the transmitter cabinet, it now feels to be at or very close to room temperature instead of noticeably warmer than ambient room air. The temperatures were notably different after replace-

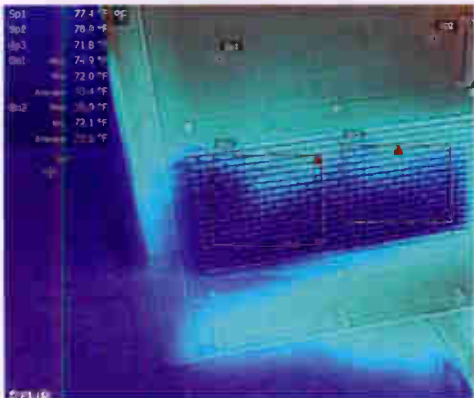


Fig. 4: FLIR imaging shows both fans are cooling properly.

ment of the fan and resolving the fan motor binding issue, as seen in Fig. 4. All this to say that Dan now makes it a habit to "scan" his transmitters, especially in the areas of air exhaust, intake and fans in order to spot problems such as blown fans or blocked air flow.

In the case of transmitters and transmitter rooms with lots of noise (I bet you've never encountered such a problem!). IR imaging can catch a lot of things that would otherwise be almost undetectable until the transmitter goes down.

We'll tell you next time how his repair to the first transmitter turned out. Dan also said he is looking forward to producing more "how to" and technical videos on YouTube after a brief hiatus. We look forward to them.

Last weekend I came across a YouTube video of The Seekers, in the Abbey Road studio, apparently recording their song "I'll Never Find Another You" in 1964 ("There's a new world somewhere, they call the Promised Land ...")

Posted by Rich963, it's a pretty neat video featuring 1960s recording technology, though I noticed that the console VU meters weren't moving for part of the video even as the group sang! A nice job of lip syncing. Nonetheless it's a fun peek inside a music recording studio of nearly 60 years ago.

As you watch, there's one other

apparent "flaw." Find the video at YouTube by searching "Seekers Abbey Road."

*John Bisset has spent over 50 years in the broadcasting industry and is in his 31st year writing Workbench. He handles western U.S. radio sales for the Telos Alliance. John 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.*

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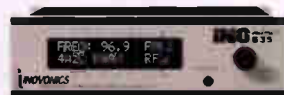
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# Processors Tasked With Repairing Damage

A view from the field with veteran engineer Matt Levin

## **AUDIO PROCESSING**

Matt Levin is chief engineer for River Radio in Columbus, Ohio, and does contract engineering for several stations. This interview is excerpted from the Radio World ebook "Trends in Audio Processing for Radio." Read it at [radioworld.com/ebooks](http://radioworld.com/ebooks).

**Radio World:** We're asking users and manufacturers for their take on key trends in processing.

**Matt Levin:** I think the biggest development in processing is the shift from conventional dedicated hardware boxes to software that can run on a server with an alternative method for the MPX audio to get to the transmitter.

By shifting to software, it allows you to do your processing on your own server hardware, either on a physical box or in a virtual machine, or in the cloud via hosted services. Virtualization is the direction pure IT infrastructure went years ago and now the radio industry is finally embracing this concept from automation vendors to now processing vendors.

One of the keys to allowing this to work fully was the invention of the MicroMPX codec by Hans van Zutphen and his employee Mathijs Vos, and now through their collaboration with the Telos Alliance, we're seeing products employing this technology. We are seeing further innovation by Telos and Nautel to synchronize the HD Radio



**Matt Levin**

most IT savvy engineers can maintain on their own, so really it's a win-win for everyone!

**RW:** What should we know about differences in processing for various types of platform?

**Levin:** The needs are very different.

The worst thing an engineer could do would be to take the OTA FM signal and feed it into a web encoder. Low-bitrate webstream encoders do not deal well with a lot of density, or clipping,

although you obviously don't want all the clipping designed for the FM analog system.

Streaming in my opinion always needs its own separate processing which uses gentle, low-ratio compression, mainly for consistency between each piece of audio, and with some light lookahead limiting for peak protection on the encoder.

The other thing I've discovered through my own experience with low-bitrate webstream encoders, both MP3 and HE-AAC, is that they don't deal well with excessive stereo enhancing or excessive warm bass/low mid-range material. This seems to muddy everything in the codec, and too much stereo energy also causes havoc in the encoder, so careful shaping of the audio to pull some of the muddy area out, and use of very light spatial enhancing should be employed here.

Since podcasts deal primarily with speech, but are still typically low-bitrate-encoded audio files, the same rules apply from my previous streaming comments with the added aspect to keep the voice region clean, intelligible, and consistent.

**RW:** With "hybrid" platforms, a listener might tune to an FM but then drive out of market and the receiver switches to the online stream. What "matching"

challenges does this present?

**Levin:** As this technology becomes more prevalent, paying attention to your web stream processing becomes more and more important, as it won't just be in homes and offices anymore, but now in cars as well and for the masses.

This is where creating your "sonic signature" on both your OTA and your stream is so important. While the needs of processing for streaming differ greatly, you can still create a certain "sound" for your station that stays consistent on all platforms.

Take the time to listen to your FM, HD and web stream and come up with something that sounds comparable on all platforms.

**RW:** Where might further dramatic improvements in processing power come from?

**Levin:** Unfortunately, I think the needs today are more about trying to repair the damage done to the music by poor mastering techniques used by the record labels, and/or the damage done by using lossy codecs in the distribution process. Processing has become more than just compression, limiting and clipping.

Modern processors of today also have to repair the audio before it ever hits the compression stages. Different manufacturers are finding different ways to do this; these tools aim either

**I'm finding as I travel that most modern DSP-based HD capable receivers start to induce distortion on anything over 110%.**

and FM audio across the internet, which was the last major problem to solve before this becomes the norm for processing moving forward.

The other major benefit to this model is that it brings the cost of good processing capability down, as there is no expensive hardware box to design, build, maintain and support by the manufacturers. It's just a server that

both of which are employed for FM OTA.

For FM OTA processing we are trying to overcome both the inherent noise in the FM analog broadcast system, and the road noise in automobiles, as studies have proven that most FM OTA listening is done while driving. Even with FM HD OTA we want some density there to overcome the road noise I spoke of,

to declip and add dynamics to audio that the mastering process has over-processed and over-clipped, or restore missing spectrum and remove artifacts from lossy compression.

Those that implement these repair tools in their processors have a cleaner product going into the compression stages, and will end up with a much-better-sounding product on the output, and I think we will continue to see more of these kinds of tools.

Additionally, there has been effort put into preparing the output audio or processors feeding low-bitrate codecs (i.e. streaming or HD) to prevent artifacts from being generated in the codec itself; all in an effort to get the best sounding audio to the user.

**RW:** We've also been asking folks if radio processing has attained such a condition of "hypercompression" that there has been little further change in how loud one can make over-the-air audio.

**Levin:** I have actually seen a significant amount of development from several of the leading processor manufacturers to create cleaner and cleaner clipping structures. Each employs different techniques to do this, so each has different side effects, but as a whole, the loudness levels we are able to achieve today while still keeping the audio clean and free of clipping grunge, distortion, and artifacts out of the top boxes on the market is actually a huge improvement over the boxes of 10+ years ago.

Now, how the engineers are turning the knobs on these boxes at their individual stations is another story. I think in some cases engineers are still abusing even these modern clippers and driving them past the point of sounding good, and further damaging the end user experience by over modulating significantly, causing massive amounts of distortion in modern DSP receivers.

I'm finding as I travel that most modern DSP-based HD capable receivers start to induce distortion on anything over 110%, and while many markets and engineers stay below this and can maintain clean audio, there are others that choose to carelessly overmodulate by as much as 140%, and you can imagine how bad that can sound on a modern receivers.

As much effort as the manufacturers have put into cleaning up the audio and providing a better product for the end user, it's still up to the engineer installing and setting up their air chain and processing to make sure that they are using the tools at their disposal to provide the best possible product to their listeners.

I remember a day when radio sounded better than the music you would buy and listen to on your own, when

processing actually improved the sound. With the power of modern processors, this is still possible today, but so many markets I've driven through recently this is sadly not the case. I long for the day when we as an industry strive for that goal once again, to sound better than the other streaming services and listening options out there.

**RW:** Could radio see loss of potential audience due to listening fatigue?

**Levin:** We as an industry are driving listeners away by bad practices, not only by overcompression, overclipping

and overmodulating, but let's add overusing Voltair to that list as well. I've traveled to some markets where all I hear is PPM tones adding flange effect and reverb effect to everything going over the air.

We have to do a better job of caring what our product sounds like if we hope to stay relevant in the future. Now sure, there may be some listeners out there who don't care; but there are a lot that do.

While they may not be able to tell you why they can't stand to listen to a particular radio station for more than a few songs or a few minutes before it

drives them crazy or makes them want to turn the volume down, I wager that if you had the same content on a much cleaner-sounding delivery system, they would suddenly find it much less annoying and actually find themselves turning the volume up, instead of down or off.

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# LPFM Powers Up With the Arkansas Sun

KUHS, helped by solar power, bring an eclectic mix to Hot Springs

## GREEN RADIO

BY TOM VERNON

It's not easy running a low-power FM operation. Raising funds to build the station, construction of studio and transmitter facilities, growing and training a volunteer staff, creating a format that serves your niche and of course, the endless need for fundraising all have to be mastered.

One misstep in any of these areas can cause the organization to flounder. In spite of all these challenges, KUHS(LP) in Hot Springs, Ark., appears to have hit one out of the park. Its combination of out-of-the-box engineering solutions, enlightened management and innovative fundraising has created a cultural resource for central Arkansas that has been operating successfully since 2015.

KUHS also holds the distinction of being the only solar-powered station in the state.

### POWERED BY THE SUN ...

The station story began when Zac Smith, a tuba player and amateur radio operator then living in Winston-Salem, N.C., read about the FCC's plans to



Station DJs do a dry run with remote gear prior to a live broadcast.

allocate part of the spectrum to LPFM.

"I thought, 'How cool would it be if there were a deejay booth in a coffee shop and you could drop a tune, or talk about your latest philosophical revelations?'"

That thought led to Smith partnering with broadcast engineer Bob Nagy and Bill Solleder, founder of Hot Springs non-profit Low Key Arts. Their 2013 application was approved by the commission, and they spent the next 18 months raising \$35,000 and preparing for sign-on.

The first step was finding a transmitter site. Smith and Nagy scouted the peak of nearby West Mountain, which was covered with cellular, radio and emergency service towers. They found a long-vacant AT&T microwave relay building that was available.

The power had been disconnected, and the two quickly did the math to calculate their LPFM's power needs. They determined that a solar installation would be more cost-effective than restoring commercial power, and estimated a two-year payback period. The system cost \$2.75/watt including batteries. Since the installation work was all volunteer, there were no labor costs.

Nagy designed a 2.4 kW

solar system for the site, and took steps to keep as much of the equipment running directly off DC as possible, avoiding power-hungry DC-to-AC inverters.

The station purchased a Bext exciter that ran on 24 VDC. Nagy designed a system to convert the solar system's native 12.8 VDC to +5VDC and other voltages for ancillary equipment.

Initially, the KUHS solar system

equipment from the corrosive gasses they released."

When it came time to replace these, the station used 200 Ah sealed lead acid batteries — more expensive but virtually maintenance-free. The battery system has enough juice to power the transmitter site through a cloudy winter week.

In 2016, KUHS also installed a 6 kW solar array on the roof of the Hot Springs studio. It powers the lights, studio equipment and a portion of the HVAC. The system has a grid tie, so excess power is sold back to the power company. For that installation, they paid \$2.15/watt. There was a lot of volunteer labor in the project, but the switchgear was installed by a licensed electrician.

To get programming from the downtown Hot Springs studios to West Mountain a mile and a half away, they selected a Cambium Networks 5 GHz WiFi system with PoE (Power over Ethernet). A pair of Barix boxes provided the A-D and D-A conversions.

### ... AND BY VOLUNTEERS

KUHS took steps to upgrade in 2018. The frequency was changed from 97.9 to 102.5 MHz to reduce interference from other stations. A Pira P132 RDS encoder was purchased to add text to the signal, and a BW V2 30W TX exciter was purchased for better sound and remote management. The frequency swap was celebrated with a gala event at the



The KUHS transmitter is located in this former AT&T microwave relay building on top of West Mountain.



Volunteers prepare to install solar panels on the roof of the KUHS studio building.

used lead-acid batteries for power storage, which Smith admits was probably not the best choice.

"They were the least expensive option, but they turned out to be very high maintenance. Corrosion of the battery terminals was an ongoing issue, and the cells had to be kept topped off with deionized water. Even worse was the damage to our other

local theatre.

The station runs with a staff of 60 to 65 DJs. One of the key factors for its success is that everyone at the station, including Smith and Nagy, is a volunteer. Smith said the idea came from Nagy.

"He was really adamant about that. He said that at every volunteer station

(continued on page 20)



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World Radio History

## LPFM

(continued from page 18)

he had been at, the moment you raise enough money to get one person on part time, everybody quits putting in the effort. They're like, "Well, let the paid person do it." He adds that part of the KUHS culture involves urging volunteers to ask for help when they need it, but also emphasizing that no one is going to do your work for you.

Smith's real job is brewmaster for the SQZBX Brewery and Pizza Joint, which is in the same building as KUHS. The two businesses sometimes fertilize each other, with visitors to the station patronizing the brewery, and brewery customers discovering KUHS.

The programming philosophy for KUHS is providing community access and airing eclectic genres of music that are neglected by mainstream media. Smith uses a community garden analogy to describe the programming.

"We're not maximizing our slice of the radio spectrum for money, rather we're maximizing it for access." Volunteer DJs have a love for a particular type of music that they think is underrepresented on the airwaves of Hot Springs. Each one stakes out a 1-2-hour shift to bring their musical passion to the community.

Planet Sounds, hosted by DJ Modest, features all genres of world music. Sonny Kay, Danny P and Operator OT host "Finally Friday," where they play "motivational, agitational and otherwise propellant punk and pop" guaranteed to get a Friday night moving. And "Half Machine Lip Moves" is where



Above: Bird's-eye view of the solar panels atop the KUHS transmitter building. Right: A bank of eight Sigmas Tek 200 Ah sealed lead acid batteries provide enough reserve power to run the transmitter site for about a week.



you'll hear "alien soundtracks from the industrial underground," bringing you EBM, industrial, power electronics and noise, dark ambient, no wave, synthpunk, cold wave/minimal wave, noise rock, the experimental sounds of inner and outer space, and more.

Unusual for 21st century century radio, the KUHS studios have turntables, and several of the volunteers build their shows around various genres of esoteric vinyl.

Most vinyl DJs bring their own material. The station has a small library of around 200 LPs, 50 singles and approximately 200 CDs. Most were donated when the station started.

"With the internet what it is in terms of a musical resource," Smith said, "I decided early on that being an archivist was not going to be our strong point. With 60 or 70 DJs, what would you collect with limited space?"

Holding down a full-time job while managing KUHS requires some thoughtful time management. One trick Smith utilizes is automation.

"One of our board members is a programmer, and he has been able to automate a lot of

small tasks I need to do and glue them together with Python."

KUHS is a member of the Grassroots Radio Coalition, an offshoot of public radio that focuses on community access and volunteer involvement in station operations. In 2016, the station hosted the annual Grassroots Radio Conference.

The annual budget for KUHS is about \$12,000. That relatively small

number is possible due to the combination of an all-volunteer staff and regular contributions from a stable financial base that includes several large benefactors, major contributors and numerous Hot Springs merchants. Additional revenue comes from music festivals. All of this makes Smith very grateful, "No one really wants the job of going door to door asking for money."

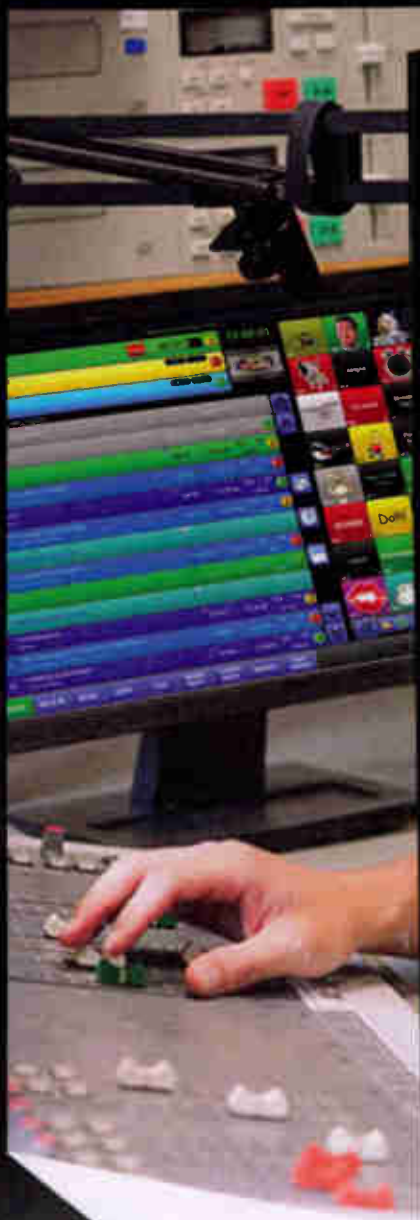
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A KUHS promotion asked listeners to post pictures of their pets on Instagram. Favorites were posted by the station, and the first-prize winner was awarded a radio.

KUHS celebrated its frequency change with a gala event featuring live music and free food at the local theatre.

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## OPX ONE

# Remembering the Early Days of KWTX-FM

Once home of Beautiful Music, the station in Waco recently turned 50

BY MICHAEL BRAUN

*The author worked at KWTX(AM/FM) in 1975–79 as an announcer, DJ and board operator. He is a personal collector and preservationist of Central Texas broadcasting memorabilia.*

Once the home of the “Golden Sound of Beautiful Music,” KWTX-FM has now been entertaining Central Texas listeners in one form or another for 50 years.

Its inaugural broadcast was Dec. 7, 1970. The new Waco FM station at 97.5 MHz was owned and operated by KWTX Broadcasting Co., the licensee of KWTX-TV (Channel 10) and KWTX(AM) (1230 kHz). All local radio and TV programming originated from the company’s Broadcast Center at 4520 Bosque Blvd. in Waco.

The KWTX transmitter and tower were located along I-35 near Lorena, Texas, a few miles south of Waco. The station transmitted at an effective radiated power of 71 kW. Programming was sent from the Waco studio to the transmitter site by a microwave link licensed by the Federal Communications Commission as Auxiliary WAL 23.

Throughout the 1970s, the station aired easy-listening music in stereo with limited interruptions from 6 a.m. to midnight. Instrumental selections from albums by Percy Faith, Montovani, Ray Conniff, Ferrante and Teicher, Andre Kostelanetz, 101 Strings, plus many other similar musical artists were broadcast to listeners throughout Central Texas.

The station also carried national news on the hour from the Mutual Broadcasting System. The local FM announcers gave the time and temperature on the quarter-hour and a short headline news report and weather forecast every half-hour.

Dave South, former KWTX radio



Closeup on the operator position.

program director and Texas A&M play-by-play sportscaster, recently recalled a few of the obstacles faced before and after the first broadcast.

“We put the station on the air with a very limited music library,” South said. “I had gone to Dallas a number of times begging the record distributors for any help they could provide, which wasn’t much.”

However, the station received programming help from an unexpected source. South received a letter from a man in Europe asking if the radio station played easy-listening music. The man’s father was an orchestra leader who had recorded 10 or 12 albums.

“He sent those albums to me,” South said. “We played just about every cut on each LP, and that increased our music library by 30 to 40 percent.”

South said station management would come into the control room occasionally and draw a line with a red grease pencil through album cuts they didn’t want to hear again.

“Lots of red circles became a part of our lives in FM,” South said.

On-air announcers also had to cope with working inside a small confined

space, sometimes for up to six hours. The FM control room wasn’t much larger than a closet and crowded with equipment and storage shelves.

South said that it was often difficult to find someone willing to work long part-time hours for not much money —

and who liked to listen to slow instrumental music.

“Our only full-time announcer was Clarence Garnes,” South said. “Clarence was a former radio guy and had a great voice. He was in his late 70s and smoked like a chimney. He



Announcer Bill Castello in the FM control room circa 1979.

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Carla Smith at the board circa 1980.

**Station management** would come into the control room occasionally and draw a line with a red grease pencil through album cuts they didn't want to hear again.

didn't make much money, but that was OK with him, because he was retired, and his wife had a good job at Baylor University."

Many FM radio hosts brought "Beautiful Stereo Music" to Central Texas listeners for over a decade until the format changed in the early '80s to personality DJs playing contemporary hits 24 hours a day.

A few noteworthy changes to KWTX-FM have occurred since. A new broadcast tower and transmitter facility was built near Moody, south of Waco, in 1979. FM power increased to 100 kW in 1986.

KWTX AM/FM/TV moved to a new facility at 6700 American Plaza in 1987. Both radio stations were sold to Gulfstar Communications in 1996, and are now owned by iHeartMedia.

Today, KWTX(AM) "NewsTalk 1230," KWTX-FM "97.5 FM #1 Hit Music," and other Waco iHeartMedia stations are located at 314 W. Highway 6.

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# Chiefs Streamline With Merlin and ViA

Tieline equipment fills out kit needed in pandemic environment

## USERREPORT

BY DAN ISRAEL  
Executive Producer and Co-Host  
Chiefs Radio Network

**KANSAS CITY, Mo.** — As the executive producer and co-host of the Chiefs Radio Network, I travel extensively to cover games for Entercom's WDAF(FM) 106.5 The Wolf in Kansas City, the flagship station of the Kansas City Chiefs.

Throughout my three decades of broadcasting Chiefs games, we've been tasked with backhauling games from all over the world. The NFL schedule can send us to any of 31 other markets in the United States, plus the United Kingdom and Mexico. To accomplish this, we need solutions that are compact and portable but have a tremendous amount of connection flexibility.

We own three rack-mounted Tieline Merlin Plus codecs: one at WDAF, one at Arrowhead Stadium (our home stadium) and one installed in our road kit. We also have a Tieline ViA — which I have found to be a perfect combination of power and portability.

An entire game day broadcast is nearly eight hours including pregame and post-game. Some of this content can occur simultaneously and requires multiple discrete audio routes. And because the content is live, its coordination demands real-time two-way com-

munication.

We solved these needs by utilizing all six channels of the Merlin Plus. Two channels send stereo program to the studio, and on the return path we receive a mix-minus and a communication feed from the network TV truck that is used to coordinate commercial breaks. Channel 3 is for IFB to and from our studio master control. Channel 4 is for incoming Report-IT app calls for game updates from around the league. Channel 5 connects the ViA from its remote stadium location — or, because of COVID, an offsite location. Channel 6 connects the ViA in IFB mode for comms with the remote talent. As a setup it's nuts. But it all works beautifully and reliably!

### SMARTSTREAM

For us, one of the most important aspects of the ViA is the ability to provision it to any type of network.

The setup allows us to configure a primary, secondary and tertiary network easily. And the SmartStream technology provides connection stability and redundancy by allowing us to utilize multiple networks at the same time seamlessly.

Using the dual SIM internal LTE module here in the U.S., we can choose between Verizon and AT&T LTE networks, or use both simultaneously. Internationally we use LAN and Wi-Fi networks in the same fashion. We have also streamed with USB air cards and



The author at work, wearing his Super Bowl ring on his right hand.

USB tethering.

Having six bidirectional streams in a single rack space has made Merlin Plus an ideal choice as our primary codec for the studio, home and away stadiums. Over the years, the Report-IT app has become our primary method of feeding locker room interviews. Report-IT pro-

vides the convenience and mobility of a cellphone, with the quality and stability of a professional codec.

For the gameday backhaul we use a dedicated MPLS [Multiprotocol Label Switching] network installed and maintained at each NFL stadium by Brian Kassa at Sports Backhaul Network. It's incredibly stable and has the bandwidth to support the full use of the Merlins. For locker room and various feeds, we also use the ViA connected to the internet. We encode using Tieline's Music Plus

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Radio World publishes User Reports on products in various equipment classes throughout the year to help potential buyers understand why colleagues chose the equipment they did. A User Report is an unpaid testimonial by a user who has already purchased the gear. A Radio World Product Evaluation, by contrast, is a freelance article by a paid reviewer who typically receives a demo loaner. Do you have a story to tell? Write to [brett.moss@futurenet.com](mailto:brett.moss@futurenet.com).



algorithm at 48 kHz/256 kbps or Opus voice at 64 kbps and always configure SmartStream Plus redundant streaming (even for our Report-IT users).

During the pandemic we've had limited access to stadiums due to the NFL's COVID isolation and lockdown. For the 2020 regular season, we elected to broadcast from home and not travel. This required coordinating several fiber real-time video and audio feeds from each venue. The ViA became invaluable for allowing us to remote talent off-site while retaining the level of communication needed to coordinate segments in an extremely fast-moving live broadcast.

The need to socially distance or remote someone in quarantine was made possible by the variety of options that the Merlin, ViA and Report-IT apps provide. We had talent broadcasting from home and remote hotels. We even used the ViA to extend one individual across the room so we could meet the NFL's social distance requirements while maintaining an IFB path for communication.

The codecs generally don't require any user interaction — we simply load the setup and connect. And having remote access to the equipment has been a game-changer this year, whether using the built-in WebGUI or Cloud Codec Controller. My stadium engineer Nate Wetmore and studio engineer Ken Wolf are responsible for supporting everything from legacy Tieline G3 Commanders to Bridge-ITs to Merlin and ViAs. So the consistency of the user interface and configuration is a huge time-saver.

Post-pandemic, remote control will continue to be important as it can be especially difficult to access equipment physically in large stadiums. Remote engineering removes that obstacle.

The codecs perform incredibly. Setup is simple and the user interface is intuitive given the complexity of both the Merlin and ViA. The sonic quality and network stability make them well suited for critical broadcasts.

The ultimate compliment for a codec is when we hear people say they are surprised that a Report-IT or ViA user is not in the room with us. Combine that quality with the easy administration provided by having everything under one roof of the Tieline Cloud Codec Controller, including Report-IT users, is why the Chiefs Radio Network relies on this equipment to provide Chiefs games to more than 100 affiliates.

For information, contact Dawn Shewmaker at Tieline U5 in Indiana at 1-888-211-6989 or for international queries contact Charlie Gawley at Tieline in Western Australia at +61-8-9413-2000 or visit [www.tieline.com](http://www.tieline.com).

## TECHUPDATES

### HENRY ENGINEERING SAYS THE SPORTSCASTER IS BACK

Due to the COVID pandemic the Henry Engineering SportsCaster audio control system had been "on hiatus," unavailable for several months. Now the company says SportsCaster is back in production, with units in stock for immediate delivery.

SportsCaster is an audio management system intended for radio, webcast and TV coverage of semi-pro and scholastic sporting events. Henry says that when paired with its SportsPods announcer stations, it forms an integrated system that includes mic mixing, multizone headphone audio management and selective intercom.

The company highlights its

easy setup, avoiding complicated wiring and a carload of gear.

For information, contact Henry Engineering in California at 1-562-493-3589 or visit <https://henryeng.com>.



### TASCAM DR-10X TURNS MICS INTO RECORDERS

Designed to fit into the palm of a hand, the TASCAM DR-10X is a PCM recorder with an easy-to-read OLED display, suitable for capturing interviews.

The plug-on unit attaches to a handheld dynamic microphone to create a compact interview recording system.

High-quality microphones attach securely via the captive XLR connection. The system records at 48 kHz/24-bit BWAV resolution. Recordings can be offloaded via the microUSB connection or by removing the microSD card (32 GB maximum).

The DR-10X has manual and automatic gain settings, with a low-cut filter and limiter to prevent overloads. The unit's mic preamp settings include low, mid and high for optimum levels.

Dual Recording mode captures a copy of the audio at a lower resolution, so

if there is distortion, a backup safety copy is available. Recording can begin instantly by holding the record side switch while turning the unit on.

With the DR-10X's Version 2 firmware update, support for MP3 recording at both 128 kbps and 192 kbps was added, which frees up considerable storage space. By engaging the unit's POLY file dual recording mode, a mono sound source input can be captured as a stereo file, with support for dual recording mode.

Additional features include automatic file closing to prevent the loss of recorded data in the event of battery expiration (more than 8 hours on a single AAA battery), a built-in clock with support for BWF audio files that can have time information stored in metadata, and IR transmit/receive capability to copy settings between units.

The DR-10X also has a playback function that allows recordings to be checked via a headphone output.

For information, contact TASCAM at [www.tascam.com](http://www.tascam.com).



### GATESAIR SHRINKS IP LINK FOR REMOTE USE

GatesAir recently expanded its Intraplex intelligent networking product family with the Intraplex IP Link 100c, a compact and cost-efficient hardware codec for remote contribution and standard STL IP connections.

The company says that the IP Link 100c adopts a cost-

reducing strategy within a standard hardware codec. GatesAir has halved the form factor to better serve portable applications, providing a half-rack-unit footprint for easy transport in remote broadcast and studio-to-studio applications.

The codec design includes a DC power supply, allowing broadcasters to plug in and stream program audio for sports contribution, live remotes and news coverage.

The IP Link 100c is suitable for STL service, particularly as an affordable backup for primary connections, or for delivery to Icecast streaming servers. The IP Link 100c codec also integrates Dynamic Stream Splicing software, SRT protocol support and three separate network ports.

For information, please contact GatesAir at 1-513-459-3447 or visit [www.gatesair.com](http://www.gatesair.com).



Sports Reporting/ENG and Remote Gear

# Access NX Serves Airwaves Audio

Remote services provider leans heavily on Comrex codes

## USERREPORT

BY THOMAS SHOMPER

Owner  
Airwaves Audio

**CLERMONT, FLA.** — I own a small production company called Airwaves Audio that does live TV and radio remote production. I've worked for several years with ESPN on shows like "Mike & Mike" and "Rusillo & Kanell" to cover events like the Super Bowl and Major League Baseball All-Star games. I also engineer large broadcasts with multiple stations for organizations like Disney.

It's a lot of coordination. In addition to handling the technical side, I manage the moving pieces to ensure everyone can be on the air when they need to be.

We started using Comrex equipment in the early 2000s. We tried it for the first time for a mass live broadcast from a Disney cruise ship. We had made several attempts to connect an ISDN line to the ship, and it just wasn't happening. So we set up 24 Comrex Access codecs, and ran them simultaneously over the ship's internet back to the studio. It really saved



The Comrex Access NX Portable at courtside, supporting live coverage of a Stetson University basketball game.

our bacon on that job, and we never looked back. Comrex has been our number one IP audio codec choice since then.

As an engineer, my favorite part of Access NX Portable is the screen. While I sometimes have a headset and listen to every second of the broadcast, in most cases I set up the equipment, explain how

to use it, and then step back. If I have to make sure everything is working during the show, it's much easier to see the large Access NX screen than the smaller interface on the original Access. And the LEDs in the knobs make it easy for me to keep an eye on levels from a distance — it's reassuring to know that no one is

clipping and the audio sounds good.

When I first took the Access NX Portable out of the box, I was struck by how it was organized. It's done the way that I would do it. The channels are clearly delineated, and are color-coded and labeled. When there's a problem, time speeds up and you've got to jump in and fix it ASAP. And I can do that with this because Access NX is so user-friendly.

When I'm out in the field, about 80% of the people I run into these days are using Access NX. ISDN was once the default, but that's now all but gone.

When I'm on a job, and I'm told that we're going to be using a Comrex, I feel a sense of relief because I'm familiar with the software and the interface and I know what we're getting into.

I recently did the Citrus Bowl in Orlando. My client requested a somewhat elaborate set-up, so I had to get there 5–6 hours ahead of time to get it done. As I finished and sat down, I looked through the glass wall of the booth next to mine, and saw a couple guys with an Access NX. They got in the door and were set up in 10 minutes, and I was instantly jealous of how simple their day was going to be. If I had the choice, I'd always pick Access NX.

For information, contact **Chris Crump with Comrex in Massachusetts at 1-978-784-1776 or visit [www.comrex.com](http://www.comrex.com).**

## TECHUPDATES

### DIGIGRAM IQOYA TALK DESIGNED FOR THE ROAD

Digigram's new Iqoya Talk is a portable IP audio codec dedicated to live remote broadcasting for both radio and TV. The company highlights its intuitive user interface, saying Iqoya Talk allows remote reporters to perform all key actions in two clicks.

It supports live reporting or commentary as well as studio-quality interviews for up to four journalists and guests, with an interface designed for nontechnical users. Audio content is streamed through a large number of wired or wireless "last-mile" connections.

Ready for 5G, the Iqoya Talk offers smartphone charging capabilities, fast access to each headphone mixer, three mic/line inputs and four headphone outputs, and a 5-inch LCD touchscreen. It comes in a 3 mm protective housing.

The portable audio codec boasts built-in dual-band Wi-Fi and Bluetooth module, dual 4G/LTE module and dual-Gigabit Ethernet ports.

For information, contact Digigram in France at +33-4-76-52-4747 or Synthax in the United States at 1-754-206-4220 or visit [digigram.com](http://digigram.com).



### FERNCAST ADDS WIDGET FEATURE

Ferncast says its audio transmission solutions were influenced by its work with the German 1. FSV Mainz 05 club, which plays either football or soccer depending on where you're reading this.

In 2019 the team started using the fernReport portable audio codec for live play-by-play coverage of their matches for online radio. The fernReport has responsive touch controls and widgets intended to facilitate effortless operation by stadium commentators. The company says the club's staff were pleased that the software supported online streaming and SIP phone calls simultaneously.

In 2020, the club asked Ferncast for the development of a specific aixstream widget on the software's dashboard to allow them to control the active input and output directly from the dashboard, for example switching between pre-recorded intro jingles and microphone input with one click.

This widget also allows interaction with fans during the live stream, and commentators can discuss the game in real time. This intuitive widget, the company says, makes it possible to handle streaming as well as calls with players, coaches and fans, and recording the audio.

For information, contact Ferncast in Germany at +49-241-99034567 or visit [www.ferncast.com](http://www.ferncast.com).



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## TECHUPDATES

### TELOS ALLIANCE AXIA IQS MIXING SOFTWARE OFFERS MOBILITY

Telos Alliance says its recently released Axia iQs mixing console software gives users full console capability without a physical surface, making it suitable for applications like a distributed/remote workforce, studios lacking physical space, or multiple users who need to collaborate on a single mix.

The company says iQs delivers on virtualization's promise of added scalability, adaptability, cost efficiency, simple deployment, and reliability. Users can control iQs on any device — Mac, Windows, tablet, laptop, phone — via an HTML5 interface.

There are two ways to deploy iQs. It can be purchased preinstalled on a 1RU Telos Alliance server to help users ease into the virtual studio. This allows them to centralize the server at the studio yet give board

operators the flexibility to control the iQs from anywhere with an internet connection. Users can also buy the iQs as a container, which allows broadcasters to deploy it in



a server farm or the cloud, suitable for large installations of iQs console software instances. An iQs subscription allows users to grow or shrink the size of a system dynamically as needs change for facility flexibility.

For information, contact Telos Alliance in Ohio at 1-216-241-7225 or visit [www.telosalliance.com](http://www.telosalliance.com).

### MAXXCONNECT OPTIMIZED FOR BROADCASTERS

MaxxConnect Wireless is a prioritized LTE internet solution that the company says was designed from the ground up to accommodate the unique needs of broadcasters.

Each SIM from MaxxConnect Wireless includes a true public static IP address. This, for instance, allows the studio router for a codec system to whitelist the MaxxConnect IP addresses, restricting other traffic from accessing those codec ports, keeping out hackers and bots.

MaxxConnect also does not block ports on its SIMs and will not throttle or hard cap users data connections.

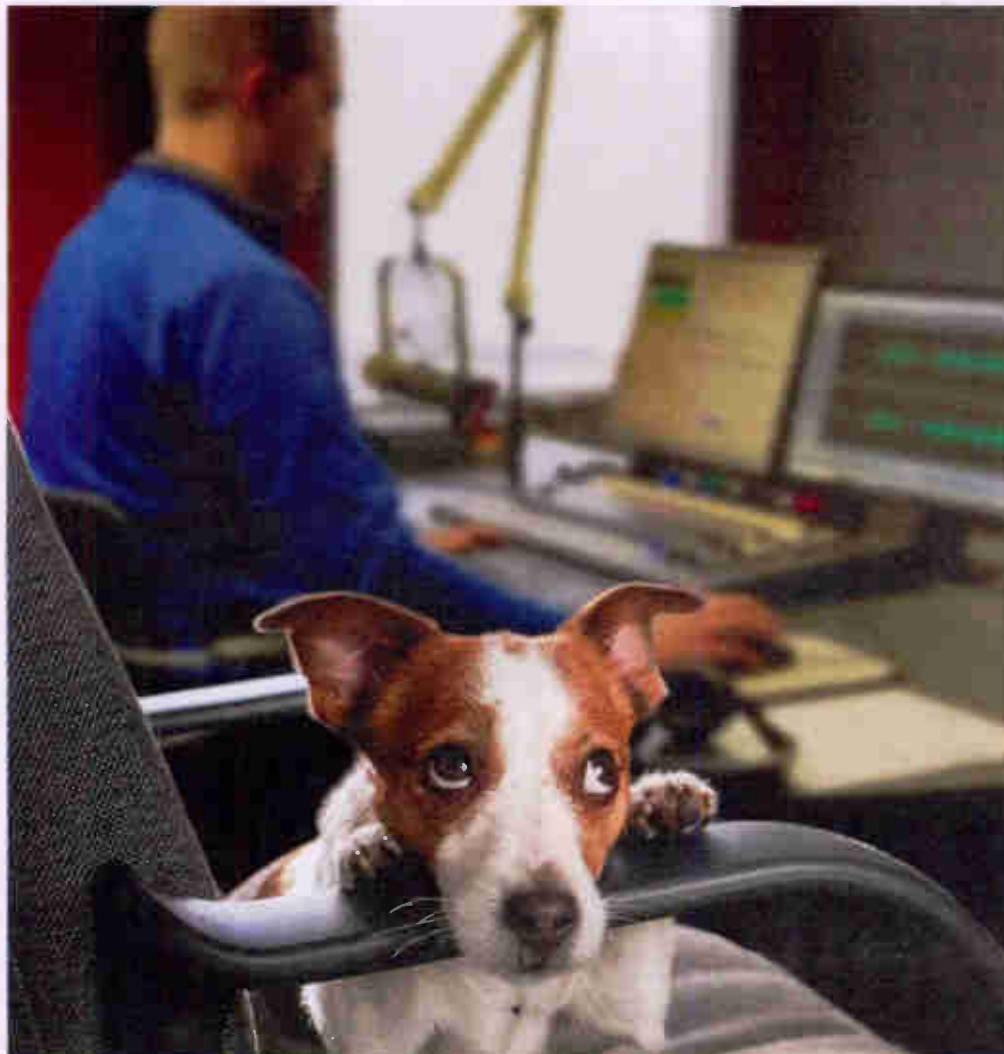
Data plans are available on the three U.S. major carriers and start as low as \$44 a month.

Effective in January, MaxxConnect Wireless service is now available in Canada and Mexico.

It is compatible with off-the-shelf LTE hardware devices, including modems from major codec manufacturers. The company can also provide preprogrammed hardware devices for customers, which makes setup a nonissue.

Based on customer feedback, a full-service portal is being added so that MaxxConnect users will be able to monitor their data consumption and receive data cap alerts. The company also plans additional products and services in its line later this year.

For information, contact MaxxConnect Wireless at 1-205-637-9600 or visit [www.maxxconnect.com](http://www.maxxconnect.com).



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# Radio by the (FCC) Numbers

Five charts from the commission's marketplace report on competition

BY PAUL McLANE

Every two years, the Federal Communications Commission now is required to publish a Communications Marketplace Report that assesses the state of competition across the broader communications marketplace. The FCC recently released the second such report.

Broadcasting is one of the many market segments included. The report makes for interesting reading and I recommend you check it out (just Google "FCC-20-188A1"). The discussion of the audio market, including radio, appears on pages 142-156.

Here I thought I'd share five charts from the report that capture various aspects of the FCC's discussion about trends in radio.

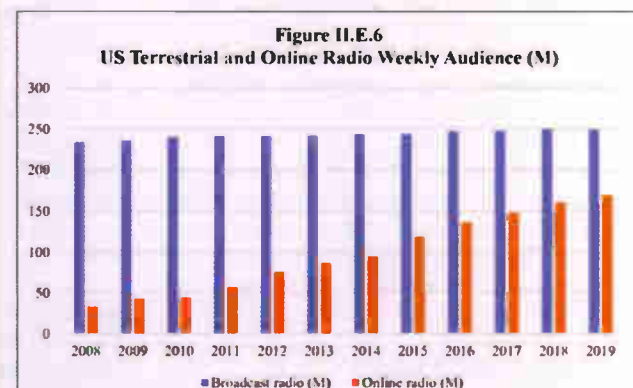
To secure the highest ad rates and to compete for advertising market share, the FCC reminds us that stations strive to gain the largest audience of listeners possible to maximize the price for ad time sold. Here it ranks the top 10 largest radio station owners, by revenue. "These owners control stations that are not confined to particular geographic regions; they are spread out across various geographical markets."

| Ultimate Parent                | Stations | Markets | Station Net Ad Revenue (\$M) |
|--------------------------------|----------|---------|------------------------------|
| iHeartMedia, Inc.              | 746      | 150     | 2,328                        |
| Entercom Communications Corp.  | 219      | 48      | 1,294                        |
| Cumulus Media Inc.             | 366      | 87      | 602                          |
| Beasley Broadcast, Inc.        | 58       | 14      | 263                          |
| Apollo Global Management, Inc. | 45       | 10      | 238                          |
| Hubbard Broadcasting, Inc.     | 33       | 8       | 222                          |
| Townsquare Media, Inc.         | 223      | 52      | 211                          |
| Univision Communications Inc.  | 48       | 15      | 206                          |
| Urban One, Inc.                | 47       | 14      | 197                          |
| Salem Media Group, Inc.        | 63       | 32      | 138                          |

Source: S&P Global, *Top Radio Station Owners* (last accessed Oct. 27, 2020).

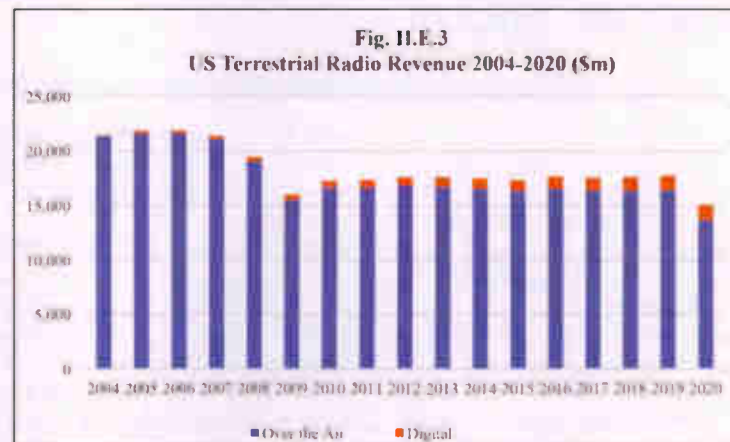
## Top 10 Radio Station Owners by Revenue

"While broadcast terrestrial radio remains dominant in some respects ... the gap in usage between broadcast terrestrial and online audio has declined over time." Over the past decade, the number of listeners to terrestrial radio grew annually around 0.55% on average, while annual growth in online radio was 29%. (Though part of online growth was due to listeners accessing AM/FM broadcasts online, the FCC said this figure "illustrates the dynamic nature of audio as listeners continue to access online radio across a diverse range of devices.")



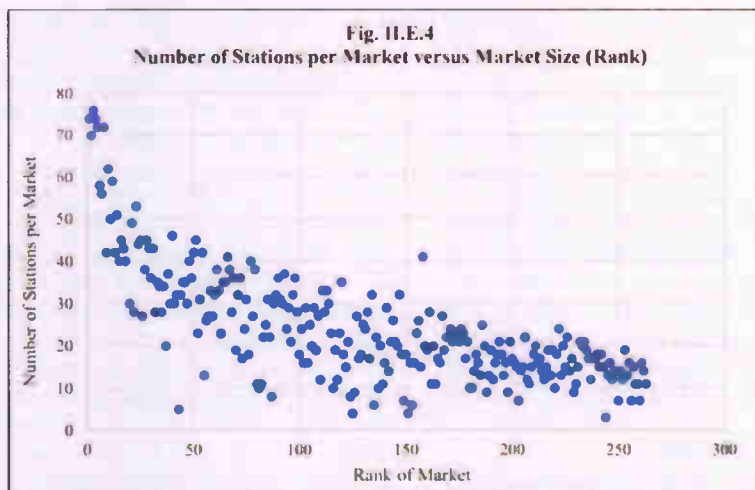
Source: Peter Leitzinger, *Economics of Internet Music and Radio 2019*, S&P Global at 5 (Sept. 5, 2019). Audience includes listeners 12 years and older.

The FCC observed that radio ad revenue had been virtually flat between 2010 and 2019 but that 2020 was expected to see a drop of around 15% due to the pandemic. "While these numbers are preliminary, the predicted decline in advertising revenue is substantial." The chart also indicates that revenue never fully recovered from the recession following the 2008 financial crisis. "In a recent report, S&P Global predicts that advertising revenue for terrestrial radio stations will face a tougher road to recovery from the pandemic-induced recession compared to broadcast television stations." The chart also captures the growth in revenue from online radio compared to OTA.



Source: S&P Global, *US Radio Station Ad Revenues, 1970-2030* (last accessed Oct. 27, 2020).

This image below is a scatterplot of the number of stations within a market against the market size, measured by rank. "The number of radio stations available decreases as the market size decreases, suggesting more choice in markets with higher populations," the FCC said. "Not shown in the table, however, are additional choices that listeners have that include satellite and online radio ..."



Source: Generated by Commission staff using BIA Media Access Pro (BIA) data on radio stations using BIA's measure of geographic market rank. Geographic markets with larger populations are ranked lower, with New York City holding market rank 1.

The commission said interference issues may have contributed to AM stations favoring talk formats relative to music; 63% of FMs identify with a music format, while only 34% of AM stations do. AMs favor Spanish and ethnic, news, sports, and talk. The percentages of stations that air religion are similar for AM and FM stations. Public and education format stations predominantly use FM. Nearly half of LPFMs are music; about 36% provide religious community programming.

| Format               | AM    | FM    | LPFM  |
|----------------------|-------|-------|-------|
| Music                | 33.9% | 63.0% | 46.6% |
| Spanish and Ethnic   | 13.6% | 5.5%  | 11.2% |
| Religion             | 16.6% | 21.6% | 36.2% |
| Public and Education | 0.1%  | 1.5%  | 4.8%  |
| News                 | 17.6% | 6.1%  | 0.7%  |
| Sports               | 12.5% | 1.4%  | 0.1%  |
| Talk                 | 5.6%  | 0.8%  | 0.4%  |

Source: Generated by Commission staff using BIA data from June 22, 2020.

## Programming Formats for Terrestrial Radio

# Why We Should Care About ATSC 3.0

Its potential intersection with radio should prompt us to consider different scenarios

## COMMENTARY

BY MARTY SACKS

*The author is EVP of sales, support and marketing, Telos Alliance.*

Most Radio World readers might wonder why the next television standard — ATSC 3.0, also known as NextGen TV — would have any relevance to a radio engineer or manager. There is more to consider than you might have guessed.

First, an update on the rollout: A number of U.S. television stations have now adopted the ATSC 3.0 standard. The Advanced Television Systems Committee expects 60 markets serving about 70% of all U.S. television viewers to launch by mid-2021. The standard includes provision for 4K video, immersive audio, control over the viewer experience and quite a bit more. The standard has been tested extensively over the air in Phoenix, and viewers are excited about the enhanced viewing experience. If you want to learn more, TV Technology, Radio World's sister magazine, has a great stack of articles at [www.tvtechnology.com/tag/nextgen-tv](http://www.tvtechnology.com/tag/nextgen-tv).

### WHERE ATSC 3.0 AND RADIO INTERSECT

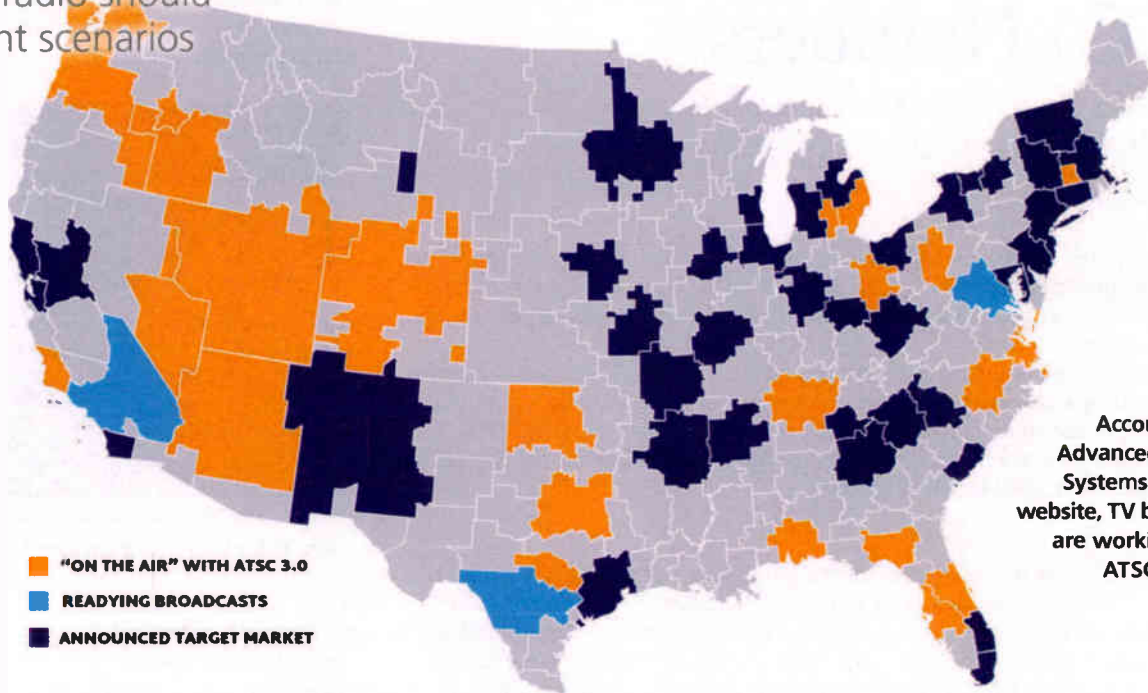
Here's why I think ATSC 3.0 matters to those of us primarily focused on radio broadcasting:

ATSC 3.0 is an IP-based standard and can provide more than just a better TV picture and sound. IP has revolutionized how we distribute and mix

with a picture.

The potential intersection of radio with ATSC 3.0 should prompt us to consider different scenarios. However, we are in the early days and very much on the front end of what is possible.

This is the time when decisions can have a wide-ranging impact. It's a time to explore and ask "what if" with open minds. Some of what we consider may never come to pass or could look very different than originally described. The point is, as an industry, we need to consider our future carefully because what we've always done might not be what we need to do in the future to be successful. We only need to look at the interruption of radio OTA listening, compared to radio con-



According to the Advanced Television Systems Committee website, TV broadcasters are working to bring ATSC 3.0 first to 62 markets.

program guide running on NextGen TVs. A sort of radio repeater, if you will. [See story, page 1.]

Think about it: Many homes do not have conventional radios anymore. In this case, ATSC 3.0 is providing an alternative path for radio stations to enter the home-listening environment. And when the re-broadcasted radio signal starts out at the playout/mixing stage of the radio station as IP, rich metadata can also play a part to enhance any such listening experience much like is possible with HD Radio.

### RADIO IN THE CAR

And it's not just radio-listening in your house via ATSC 3.0. The new TV standard is intended to operate in a very robust way in cars, long the domain of AM/FM.

Fadio's dominance of the mobile listening environment (the dashboard) has begun to share the mobile listener with services delivered by LTE either through a dedicated hotspot or docked mobile phone. ATSC 3.0 signals carrying radio, in the above example, could also provide an alternative to AM/FM in the car. This gives OTA radio more ways to compete in the dashboard of the future. We can think of radio delivered via ATSC 3.0 in the home and car as "extensions of service."

### CHIPS IN THE PHONE

Over the years, there have been efforts to activate radio receiver chips that already exist in many mobile phones.

Of course, the goal is to have access to OTA radio wherever people are, which

is wherever they have their phones! We applaud the hard work of our colleagues who have helped the industry achieve some success in this regard, but it has unfortunately been limited.

Now chips are being designed to receive ATSC 3.0 TV signals in phones. Mobile television reception powered by chips that receive a wide range of world TV standards might move the needle with the mobile phone companies. Hence, OTA broadcasters get a shot at this audience in their daily comings and goings. If successful, having an over-the-air television chip in mobile phones puts radio broadcasters one step closer to having access to listeners through carriage on ATSC 3.0 stations or possibly via ATSC 3.0 chips that also support OTA radio.

Think of this as the rising tide that lifts all over the air (OTA) broadcasters. It's a stretch, but "what if?"

### WHO CAN PREDICT?

Radio has a 100-year history of informing, entertaining and providing critical information to its millions of listeners. While the industry has had highs and lows over its existence, nothing beats its resilience.

While there is no guarantee of another 100 years, all of us can think and put forth our best ideas not just to be relevant from a content perspective but also to innovate technologically to be where people need us. This might mean building bridges and relationships in ways we have not in the past — in order to change.

Maybe ATSC 3.0 will play a part.

*Comment on this or any story. Email [radioworld@futurenet.com](mailto:radioworld@futurenet.com).*

**An over-the-air "fully IP" system aligns broadcasters with how the audience consumes nearly all their other media, whether audio-only or audio with a picture.**

audio in our facilities and distribute our content to transmitters and streaming CDNs. Likewise, having the TV over-the-air (OTA) transmission path capable of supporting an IP stream means more flexibility for what is carried by RF signals to all those homes.

An over-the-air "fully IP" system aligns broadcasters with how the audience consumes nearly all their other media, whether audio-only or audio

sumed via streaming devices like Alexa and Google Home during the pandemic, to help us consider the possibilities.

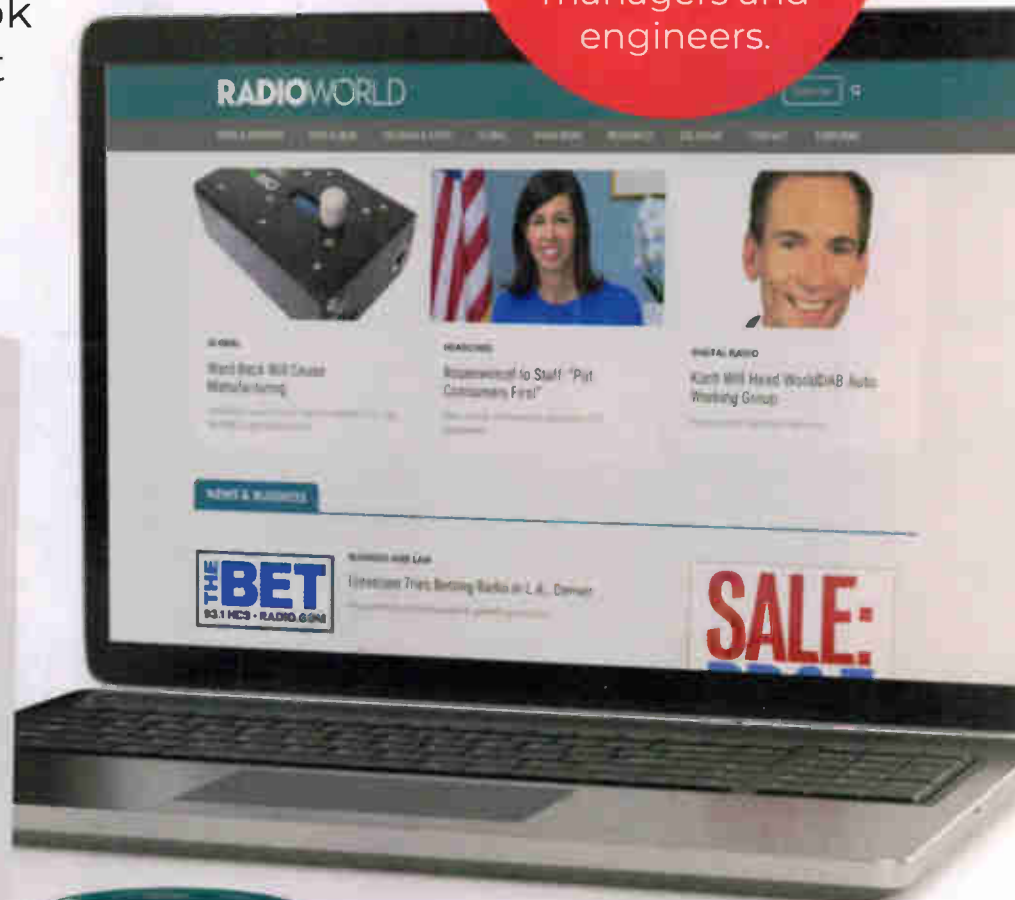
### RADIO VIA ATSC 3.0 IN THE HOME?

Listening to the radio while watching TV is an unusual use case. Still, one recently converted TV broadcaster in Seattle is carrying local radio stations on its ATSC 3.0 payload, making these radio stations available via a web-based

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