EAT TO THE BEAT — Page 16

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Mike Henry received a Peabody Award in 2012 for the public radio series "Inside the National Recording Registry" as a partner in production firm Media Mechanics.

Henry Believes in Radio "From the Bottom Up"

Consultant believes that when you stay focused on the consumer and the local market, radio works

NEWSMAKER

BY RANDY J. STINE

LAKEWOOD, Colo. — Mike Henry, founder and CEO of media research and consulting firm Paragon, has referred affectionately to radio as "the cockroach of all media." As in: You can't kill it.

Henry's musings about radio are grounded in his belief in the medium's ability to innovate and evolve. The longtime radio consultant says radio's further development depends in part on its ability to monetize live events and new digital revenue streams.

Henry, who began his career in college radio at WUOG(FM) in Athens, Ga., in 1979, has spent 33 years analyzing client media research at Paragon. Henry's bio is heavy with startup projects and format launches. He has played roles in the development of the NPR News brand and several music formats, including alternative and adult hits, and is closely associated with a number of Triple A radio stations. He also has been involved with numerous new media projects and companies including Live365, Sirius Satellite Radio, Sony eMarker tagging, Clip Interactive, WeedStream and public media's VuHaus music discovery platform.

His long-held theory, first floated a decade ago, is that radio's success depends on "hyper local content" and "multiplatform" distribution. These are themes that resonate in the age of podcasting, streaming and smartphone apps.

Radio World asked Henry, 57, about his work and the state of radio.

Radio World: *You co-founded Paragon Media Strategies in 1988. Describe*

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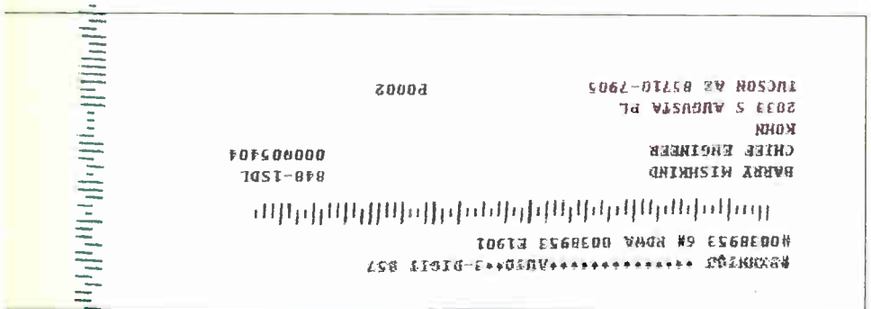

The Future of In-Car Radio: Losing All Restrictions

Fraunhofer IIS explores possibilities raised by intelligent audio-processing technologies

COMMENTARY

BY SEBASTIAN SCHARRER

The author is product manager automotive for Fraunhofer IIS Audio and Media Technologies

Radio, in its wide variety of formats, has long been a vital component of in-car entertainment. And it will continue to be so: Thanks to intelligent audio-processing technologies, the customer experience of in-car radio can be taken to a new level that meets the higher expectations regarding quality and variety.

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Hybrid radio enables passengers to listen continuously to a radio station during a car ride even if they leave its coverage area. The technology combines a radio transmission — regardless of whether it is digital or traditional FM radio — with the accompanying web stream, allowing passengers to listen to their favorite radio station wherever

(continued on page 10)

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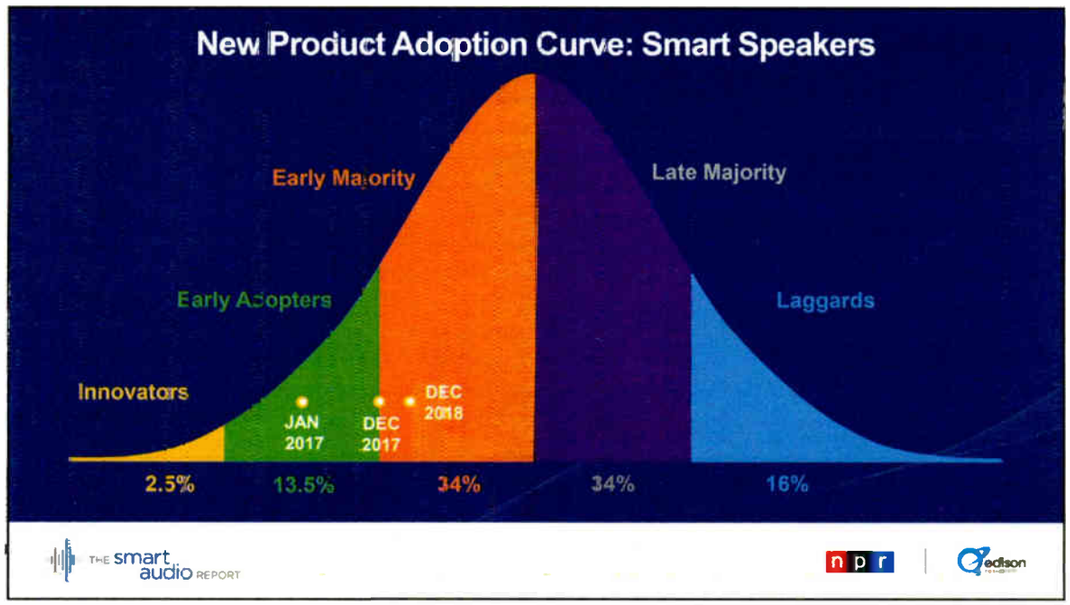
Smart Speaker Penetration Grows



Twenty-one percent of the U.S. adult population now owns at least one smart speaker, and more than half of owners report using the device daily.

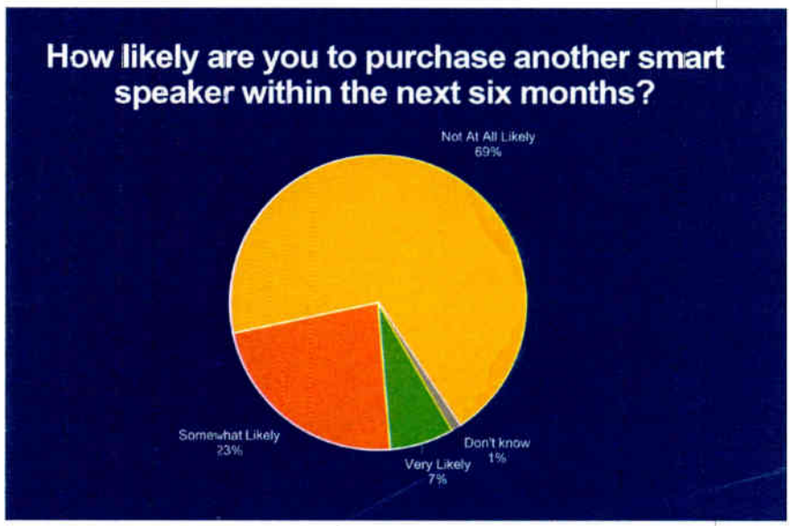
These are among findings of research from NPR and Edison Research conducted after the recent December holidays. They found that voice-activated smart speakers continue to grow, with 53 million Americans owning one. The total number of devices in homes has increased 78 percent from a year earlier.

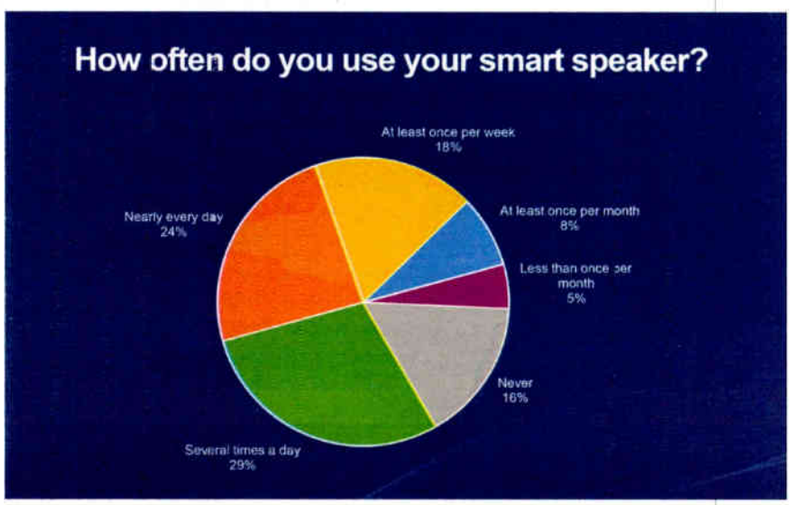
The average smart speaker household now has 2.3 devices, up from an average 1.7 a year earlier. Eight percent of Americans got a smart speaker during the recent holiday season, and 14 million got their first smart speaker device in 2018

"While these devices initially served as audio appliances, they are now becoming integrated into the fabric of everyday life for tens of millions of Americans," said Tom Webster, senior VP at Edison Research, in an announcement. He referred to the "tremendous utility" of voice assistant technology.

NPR has an interest in the topic as a default news source on smart speakers like Amazon Alexa, Google Assistant, Apple Siri and Microsoft Cortana-enabled devices. Approximately 1,000 people were interviewed by phone during the last week of 2018. The findings from The Smart Audio Report was presented during the CTA Research Summit at CES and is available at *npr.org/smartaudio*.

— Paul McLane





The study found that the average smart speaker household has 2.3 devices; 52 percent of speaker owners report using their device daily; 8 percent of people in the U.S. got a speaker during the 2018 holiday season; and 14 million people in the U.S. got their first one in 2018.

World Radio History

EU Directive Reveals European Vision for Radio Digitization

New legislation aims to align EU members on the future of radio

COMMENTARY

BY PATRICK HANNON

The author is president of WorldDAB.

Patrick Hannon

In late 2018, the European Parliament and the European Council adopted the new European Electronic Communications Code. This directive requires all new car radios sold in the European Union to be capable of receiving digital terrestrial radio, in addition to any FM or AM functionality which manufacturers may want to include. The code also grants EU member states the power to introduce rules requiring consumer radios to include digital capability.

Following its adoption by the European Council, the directive was published in the Official Journal of the European Union on Monday, Dec. 17, and entered into force on Dec. 20. For the automotive industry, the key section of the European Electronic Communications Code is Article 113, Annex XI:

"Any car radio receiver integrated in a new vehicle of category M which is made available on the market for sale or rent in the Union from … [two years after the date of entry into force of this Directive] shall comprise a receiver capable of receiving and reproducing at least radio services provided via digital terrestrial radio broadcasting. Receivers which are in accordance with harmonized standards the references of which have been published in the Official Journal of the European Union or with parts thereof shall be considered to comply with that requirement covered by those standards or parts thereof."

The code ensures that millions of car drivers across the European Union will have access to the various benefits presented by digital terrestrial radio — including an increased number of radio stations to choose from, more consistent audio quality and enhanced data services. In Europe, the most common form of digital terrestrial radio is DAB/DAB+.

The adoption of the directive has been welcomed by broadcasters and other industry experts as clear evidence that DAB+ is now recognized, at a pan-European level, as the core future platform for radio. Applied equally to EU member states with established DAB markets, as well as those in the earlier stages of development, the code will provide a strong impulse to the adoption of DAB+ in cars across the EU.

WHAT IS NEXT FOR EU MEMBERS?

As of Dec. 20, each EU member country has two years to introduce national legislation in accordance with the EU directive. It is therefore expected that all EU member countries will put in place their respective national laws requiring all new car radios to be capable of receiving and reproducing digital terrestrial radio broadcasting by the end of 2020.

> **This directive requires** all new car radios sold in the European Union to be capable of receiving digital terrestrial radio, in addition to any FM or AM functionality which manufacturers may want to include.

Italy, for example, having anticipated the successful rollout of DAB+, introduced a law similar to the EU directive in order to guarantee the best possible listening experience for the millions of daily radio listeners across the country. The legislation in question states that as of

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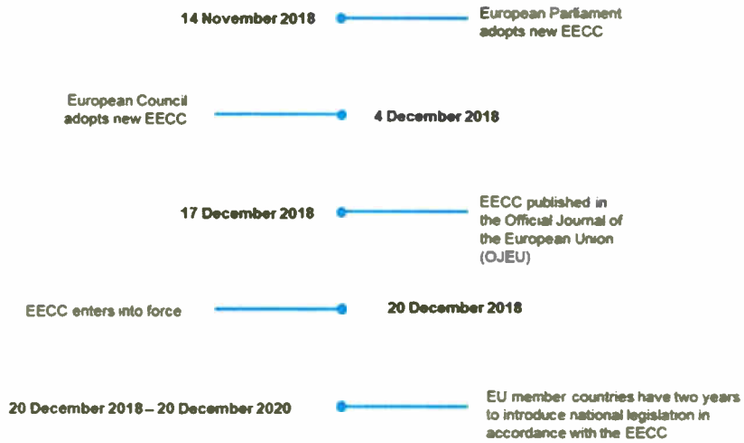

Jan. 1, 2020, all domestic and automotive receivers will be required to include digital audio capabilities. The positive results are already reflected by the growing number of new cars sold in Italy that are equipped with a DAB+ radio — 46 percent as of June 2018, compared to only 28 percent in the second quarter of 2017.

In France, DAB+ population coverage has reached 20 percent following the launches of DAB+ in Lyon and Strasbourg. Having achieved this 20 percent threshold, the Conseil supérieur d'audiovisuel [the French media regulatory authory] is expected shortly to trigger the French receiver law requiring all new radios — automotive included — to be capable of receiving digital broadcasts. The law states that within 18 months of the law being triggered, automotive manufacturers will have to include DAB+ chips in new car radios. Currently standing at 20 percent, the number of new vehicles equipped with DAB+ radios in France will therefore dramatically increase as the new legislation is applied starting from the second half of 2020. A similar impact is expected for consumer radios.

For consumer receivers, several other countries are considering the possibility of introducing a requirement to include digital capabilities. These include Germany, the Netherlands and the United Kingdom.

Outside the EU, two of the most advanced DAB+ countries are Norway and Switzerland. In Norway, the first country to have switched off national FM services, 98 percent of new cars are equipped with DAB+ radios. In Switzerland, this figure stands at 85 percent, with a digital switchover scheduled to be completed no later than 2024.

As we look back on the past 12 months and the significant developments regarding the rollout of DAB+ across Europe, there is little doubt that DAB+ is seen as the core future platform for radio, both in and out of the car. More updates are expected to follow as we prepare for the WorldDAB Automotive 2019 event taking place in Turin June 20.

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

World Radio History

MIKE HENRY

(continued from page 1)

what it is you do.

Mike Henry: Paragon originally only did purely audience research for radio stations. Now we work pretty much with anyone who produces content for the consumer, so everything in the entertainment and media world, digital media, mobile and even satellite radio. We provide clients with audience research and do straight consulting on content, marketing and programming. We focus on all of the audience engagement aspects for clients. And we can help a company or radio station build out their website social media platforms. We have an incredible and long-term staff of researchers and consultants at Paragon.

***RW:** What is it about radio that makes it so "resilient," as you put it?*

Henry: I think first and foremost it's because it is still free. It's convenient and accessible. Almost like a utility in that people know it will always be there. Secondarily, radio listening is a habit learned at a very early age and habits are hard to break.

I'd like to think that radio can respond to consumer demand, even though right now I wonder if it could do better in that regard. A large part of my career has been working with radio stations and networks specifically that remain focused on the consumer and not shareholders. We focus on operators that focus on the local community and have stayed away from the major consolidated broadcast companies.

***RW:** You pitch your theory of delivering hyper local content along multiplatforms as a winning strategy. How is the radio industry doing as a whole on that front?*

Mike Henry. "Radio to me is a bottom-up game," he says. "That's a very foreign concept to the large consolidated broadcasters."

Henry: I think it is doing well. It's probably doing better on the multiplatform distribution part of it than hyper local. I think some of the larger commercial groups struggle with reality versus their smoke and mirrors of being local. But certainly local operators and regional groups and all of public radio are very focused on local content, and I think that is why some of them have thrived during an era of consolidation when many observers figured they would be smothered by the consolidated groups.

It bears out that if you stay focused on the consumer and the local market, it works. Radio is a community asset that can organize and engage a local audience. I have seen that for 40 years in my career. That's been the case since I started my radio career at a college radio station in Athens, Ga., in the late 1970s.

***RW:** Are your radio clients finding ways to monetize their digital platforms?*

Henry: Oh yes. Just name a platform and there are sponsorships happening and money to be made, whether it is on websites or social media platforms. At every level a radio station touches a listener we are able to monetize that. Podcasts being the latest example. You can add in events and festivals.

Sometimes it's not immediate and not a direct turnaround of creating a new touch point and monetizing it, but over time radio has shown the ability to do that.

One space that I'm still not sure about is smart speakers. It's not clear how radio can monetize that. That's tricky, because right now all smart speakers are doing is raising the amount of royalties owed by a radio broadcaster but not increasing ratings because it is not measured and therefore not having a direct return on investment for that audience. That's been elusive so far.

***RW:** Are you at all worried about the connected-car listening space for radio going forward?*

Henry: Yes, that's an issue, and it will be interesting to see how that plays out. The technology is still evolving. As long as a smartphone is the device controlling the content in the car, then I think radio will be in good shape. If the driver's or rider's personal smartphones are not accessible and are blocked by the car's dashboard technology, then it is another story.

***RW:** Through the years, Paragon has played a role in the launch of many*

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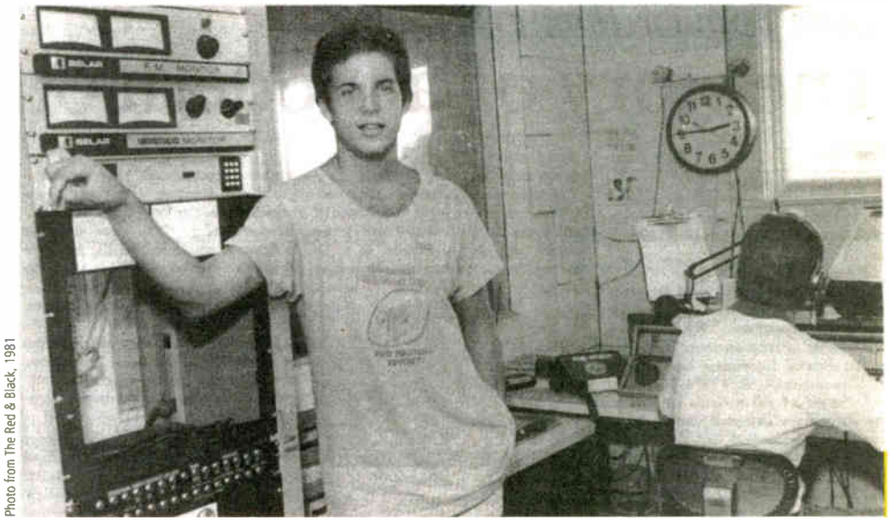

Photo from The Red & Black, 1981

Young Mike Henry was student general manager of WUOG in Athens, Ga., in the early 1980s, what he describes as "the go-go days of influential college radio."

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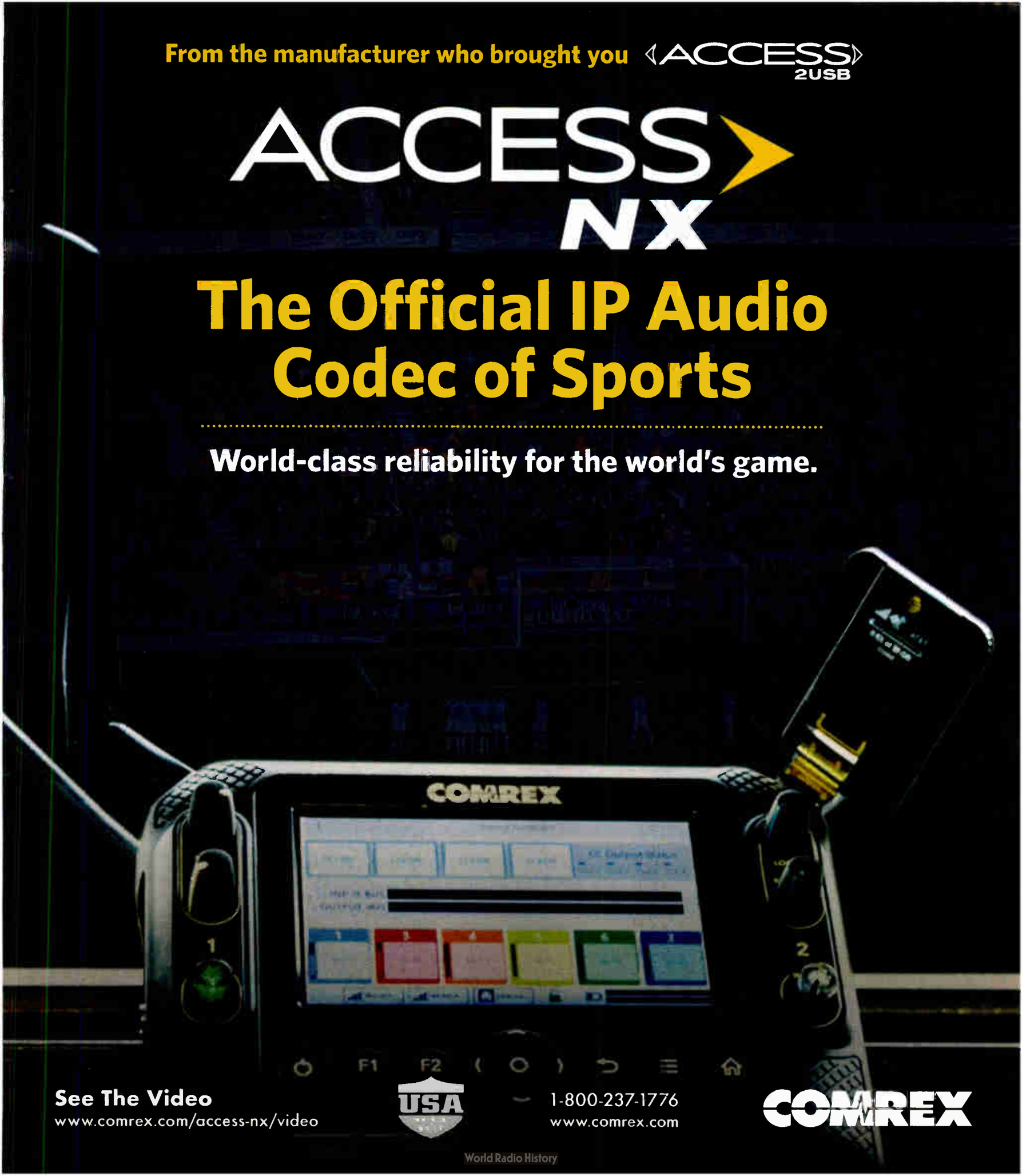

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World Radio History

MIKE HENRY

(continued from page 6)

music formats. How do you do that?

Henry: I find the most pleasure in identifying new formats and concepts to bring people into radio. It's a combination of research and gut feeling, I guess. When I see popular trends that are not being reflected on the radio, that's an obvious one. You can see those trends in streaming and records sales and touring revenues for different acts. Radio needs to react to what the consumer is doing.

However, research can only get you so far. We try to read the research and respond to it but not follow the data and cross-tabs right over the cliff. Data can lie to you. There are radio format dead ends all over the place. You have to be able to read between the lines and understand the concept of external validity. Sometimes when you know the data isn't consistent with external validity you have to go with your gut.

RW: Is there a hot new music format that excites you?

Henry: I'm working on one now that really excites me. It's called urban alternative. It's a public radio music format for young ethnic listeners. Think of the same music discovery concept as Triple A but in a form that concentrates on young ethnic listeners and plays hip-hop, R&B and urban, house and dance and everything else.

We are working through a grant from the Corporation for Public Broadcasting and launching the format on public stations in Denver, Houston and Norfolk, Va., this year.

CPB has their passion and funding behind this because it is critical that public radio find ways to bring in young ethnic listeners. It's critical to their continued success. We believe it will have a major impact on the radio landscape. To take the time to build and watch these new formats and audiences grow is very rewarding.

RW: If you were to place a new FM radio station on the air today in a medium market somewhere in this country, what would it sound like?

Henry: The hole in about every market in America is to play a lot of new music. The stations I work with play 50 percent to 70 percent currents and re-currents. And that stands out as being very different from the safe and predictable library-based music formats that seem to dominate most markets.

Mike Henry and family with performer Paul Janeway of St. Paul & The Broken Bones at the Boulder Theater last fall. Bottom, from left: son-in-law Luke Askelson, Paul Janeway, daughter Rachel Askelson. Middle: son Boone Henry, wife Susan Henry, daughter Michelle Conrad, Boone's fiancée Emily Troxler. Top: Mike Henry, son-in-law Mike Conrad.

Every market is a bit different, of course, but these days the opportunities seem to point to going younger with new music and become a music discovery source.

However, it's not just the music. It takes being local, with local hosts who live the format and live in the community to serve as guides. Radio to me is a bottom-up game. You let the community help shape the product. That's a very foreign concept to the large consolidated broadcasters.

RW: Are your clients making money off hosting live events?

Henry: Absolutely. I have clients making six figures of off single events, but you have to have a creative business model. In some cases, you own the event. In other cases you have partners in order to monetize the event. In the case of public radio, the model is member events where you sell high dollar tickets for exclusive events and access.

Really, in commercial and noncommercial radio, my clients are making money off events every year.

RW: What do the next five to 10 years hold for radio?

Henry: Additional distribution platforms and more ways to get the content out. I believe opportunities will continue to grow. And radio's not going anywhere. Here we are in 2019 and when I was graduating from the University of Georgia's Journalism School in 1983 they were talking about the demise of radio by 2000. Then it became 2005 and then 2010. And yet here we are.

The reality is that producing local radio is not easy. It takes hard work. What is easy is building cookie-cutter brands with national personalities. What is not easy is building local brands with local content, local talent and developing local connections with the audience and business community to grow sponsorship opportunities.

With technology it's easy to get distracted by the concept of a shiny silver bullet in the distance. However, while everyone else chases the silver bullet, smart radio operators will keep their head down and focus on the local community.

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

ON THE ROAD

Westwood One technical staff was onsite in Atlanta as the Patriots defeated the Rams in Super Bowl LIII. Shown working behind the scenes are, from left, engineers Robert Carroll, Al Rosenberg, Raul Velez and Dave Sniff. Said a Westwood One spokeswoman, "We can't get on the air without them."

NEWS WATCH

REGULATORY I: A bipartisan House Communications Subcommittee duo called on the FCC to protect incumbents in the C Band, which is used for satellite delivery of programming to radio and TV stations, satellite radio services and cable head-ends. The FCC wants to open it up to wireless broadband to help close the digital divide and promote 5G.

In a January letter, Reps. Tony Cárdenas (D-Calif.) and Adam Kinzinger (R-Ill.) said they had concerns about the proposed rulemaking. Cable operators and broadcasters have both been telling the FCC it needs to do more study before taking a final vote on the proposal.

NAB, NCTA, ACA and NPR jointly thanked the representatives for their support in protecting incumbent C Band users from "interference, higher prices or service loss."

"Tens of millions of Americans rely on the C Band to receive news, entertainment, weather and sports content every day," they wrote.

REGULATORY II: Another pair of lawmakers want to give the PIRATE Act a new lease on life. Reps. Paul Tonko (D-N.Y.) and Gus Bilirakis (R-Fla.) reintroduced the H.R. 583 in an effort to target illegal operators by upping fines and giving the FCC more enforcement authority.

The Pirate Illegal Radio Abuse Through Enforcement Act unanimously passed the U.S. House of Representatives in July; it was then referred to the Senate Committee on Commerce, Science and Transportation. No action was taken during that session of Congress.

The act proposes to hike fines up to $100,000 per day (about five times the current daily maximum) and would give the government the authority to impose a maximum penalty of $2 million for illegal broadcasters. Other provisions include annual sweeps of the top five radio markets experiencing pirate activity, and giving the FCC the authority to skip a Notice of Unlicensed Operation and go straight to a Notice of Apparent Liability.

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FRAUNHOFER IIS

(continued from page 1)

they are. This also offers an opportunity to strengthen the connection between station and listener by removing distance as a factor — even for listeners on the road.

The tricky part is switching from the radio broadcast to the web stream: Compared to receiving a radio signal, a web stream can have a delay of 20 seconds or more, resulting in portions of the feed either being lost or played twice — like a scratch on a vinyl record that causes the needle to jump back. Both issues are highly irritating to the listener.

This is why Fraunhofer IIS developed Sonamic TimeScaling. This technology synchronizes both signals with each other to produce a precise, seamless transition.

When the system realizes that the radio signal will soon be lost, it begins connecting to the station's web server via the vehicle's embedded cellular modem or a smartphone connected to the car stereo. It calculates the existing offset to the web stream in order to delay the audio signal in an inaudible way. As soon as the two streams are synchronized, the system seamlessly switches to the web stream and volume levels are adjusted automatically.

This also works in reverse: When the system recognizes that the radio signal is strong enough for good reception, it can make a seamless transition from the web stream to the radio signal, keeping the amount of mobile data used for Internet access low.

GOOD AUDIO, LOW BIT RATES

With regard to transmission costs for streaming a radio station over the Internet, broadcasters understandably prefer low or very low bit rates. To meet this demand, Fraunhofer developed the xHE-AAC audio codec.

This latest addition to the AAC codec family provides consistently high-quality audio for all signal types, such as speech, music or mixed content, and at bit rates starting as low as 12 kilobits per second for stereo services — up to 500 kbps and above. It is designed for adaptive streaming, allowing seamless bitrate switching over DASH and HLS. xHE-AAC is included in Google's Android 9 Pie mobile operating system, with MPEG-D DRC providing mandatory loudness and dynamic range control.

If a station has not upgraded its web stream to xHE-AAC yet, low bit rates can lead to audible artifacts. Those artifacts can be minimized with Fraunhofer Sonamic Enhancement — a toolbox that carries out the required repairs and optimization in real time following an analysis. The semantic algorithms restore high-frequency signal components and others, remove scratching and roughness, and reconstruct lost auditory source width. Fraunhofer Sonamic Enhancement can work with other sources, too, such as a user's own mp3 collection.

Sebastian Scharrer

The solution does not require any additional information about codecs or bit rates, and high-quality audio material remains unchanged. It can process all relevant audio codecs such as mp3, AAC, AC3 or codecs used in satellite radio, so it does not matter if the playback is music, speech or mixed content. There is also no impact on the channel (streaming, satellite radio, etc.) that is receiving the audio content.

CONSISTENT VOLUME

Switching between different audio sources, or even between different radio stations, often confronts the listener with different levels of volume. This has to be adjusted manually, most often by the driver — which is not only inconvenient but presents a safety risk by briefly distracting the driver from the road.

The Sonamic Loudness technology developed by Fraunhofer can provide a remedy here, ensuring consistent volume when switching among radio stations, media sources or individual audio data sources, and thus increasing comfort and safety.

Sonamic TimeScaling synchronizes broadcast and web signals to produce a precise, seamless transition.

The loudness normalization works with any source, no matter if it is line-in or Bluetooth, CD, FM, digital radio or internet streaming. Depending on the source, additional information available is used for Sonamic Loudness, e.g. "next title," "same/new CD" or "known radio station." At the same time, the technology maintains the original dynamic range of what is played back.

If radio is chosen as the source, a previously specified loudness value is used as the starting point for normalization. This value can be determined in various ways without disturbing the user: In the case of radio, the solution can use a second tuner in the background or online updates. If there is no starting value, continuous volume measurement and adjustment are active.

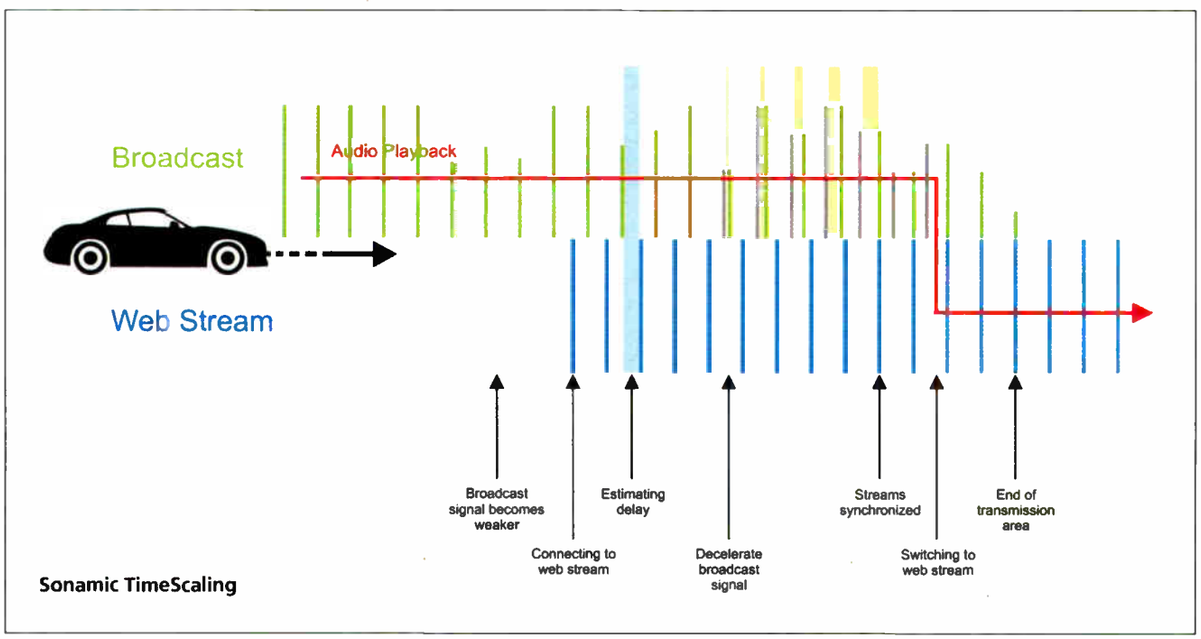
IMMERSIVE SOUND

To bring immersive in-car entertainment to small, compact and midsize vehicles, Fraunhofer IIS has developed the Sonamic Panorama solution (while for large and luxury cars, it offers the Symphoria technology).

Sonamic Panorama does not require any additional hardware and separates the individual sound sources of stereo content, evenly distributing them in a U-shaped soundstage that surrounds the passengers. Side components in the stereo signal emerge behind the listener, while the mid components remain acoustically unaltered directly in front. That way, everyone in the car can appreciate details that otherwise would be imperceptible in the pure stereo signal. The playback is kept free of artifacts and is robust to FM noise and poor digital reception. So if, for example, a radio station is broadcasting a live concert by a passenger's favorite band, they might feel as if they were right there on stage with the musicians.

With the new possibilities presented by intelligent automotive audio-processing technologies, radio listeners in cars can enjoy their favorite stations to the full — not only without any disturbances or artifacts, but even with added value.

The Fraunhofer Institute for Integrated Circuits IIS, based in Germany, is an application-oriented research institution. Its Audio and Media Technologies division offers solutions for AV streaming, TV broadcast, digital radio, mobile telephony, virtual reality and automotive.



Sonamic TimeScaling

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FCC Looks at Local Ownership Rule

Here's a summary of what's at stake in the current commission NPRM

BY KEENAN ADAMCHAK

The author is an attorney with Fletcher, Heald & Hildreth, on whose blog this article originally appeared.

On Dec. 12, 2018, the Federal Communications Commission issued a Notice of Proposed Rulemaking commencing the 2018 Quadrennial Review of the commission's media ownership rules.

The FCC is required under Section 202(h) of the Communications Act to review most of its broadcast ownership rules every four years to determine whether the rules continue to be in the public interest (and to repeal any rules that no longer serve the public interest) because they ensure a competitive broadcast marketplace. (Importantly, the national television ownership cap is excluded from the quadrennial review process).

These proceedings usually involve court challenges and typically take years to complete — as demonstrated by the fact that the commission did not complete the 2010 and 2014 quadrennial reviews until 2017.

In the NPRM, the commission is specifically reviewing its local radio and television ownership rules, as well as the "dual network" rule. The FCC is also considering the adoption of several diversity-related ownership proposals proffered by the Multicultural Media, Telecom and Internet Council.

Each of these items under the commission's consideration are reviewed below.

The FCC is back to full strength after the Senate confirmed Commissioners Brendan Carr and Geoffrey Starks. From left: Jessica Rosenworcel, Michael O'Rielly, Chairman Ajit Pai, Brendan Carr and Geoffrey Starks. (Carr tweeted about this image.)

Despite its name, the NPRM does not in fact propose any specific rules, but rather requests comment broadly on any changes that should be made to these ownership rules. Instead, Chairman Ajit Pai requested an "intellectually honest conversation" about the current state of the media marketplace, and that any changes to the rules would "follow where the facts take us."

LOCAL RADIO OWNERSHIP RULE

The Local Radio Ownership Rule limits both the total number of radio stations an entity may own within a local market and the number of radio stations an entity may own in that market within the same service (AM or FM). Currently, the FCC divides markets into four tiers based on their size, allowing an entity to own more stations in larger markets. The rule currently permits entities to own up to five commercial radio stations in the smallest of markets (14 stations or less) — no more than three of which may be in the same service — and up to eight commercial radio stations in the largest of markets (45 stations or more) — no more than five of which may be in the same service.

The FCC requested comment on whether the Local Radio Ownership Rule should be eliminated, modified or remain the same in light of any changes to the broadcast marketplace. As in past quadrennial reviews, the commission seeks comment on whether it should modify or eliminate any, all, or none of: the relevant market definitions, market size tiers, numerical limits and AM/FM subcaps.

The commission also requested comment on the National Association of Broadcasters' proposal that the commission relax its radio ownership limits due to increased competition for listeners and advertisers posed by other services including streaming services, satellite radio, podcasts, Facebook and YouTube.

Specifically, NAB proposes that entities in the top 75 Nielsen Audio Metro markets be permitted to own up to eight commercial FM stations and an unlimited number of AM stations. NAB proposes that all ownership limits on radio stations be eliminated in all other markets.

The FCC is also seeking comment on:

- whether the interim contour-overlap methodology should be made permanent;
- the issue of embedded market transactions;
- the impact that eliminating or modifying the rule would have on minority and female broadcast ownership; and
- whether the relevant markets should be defined as to encompass the increasing competition broadcasters face from satellite radio and online audio sources.

LOCAL TELEVISION OWNERSHIP RULE

The Local Television Ownership Rule limits the number of full-power television stations an entity may own within the same local market. The rule permits entities to own up to two television stations in the same market so long as no more than one of those stations is a "top-four" station within that market. As of last year, however, entities may request waiver of the "top-four" rule under certain circumstances.

The commission in the NPRM requested comment on whether changes in the television marketplace and the video programming distribution industry necessitate elimination, modification or retention of the current rule. Notably, in light of the evolving video marketplace, the FCC requested comment on whether:

- the local television market definition should be expanded to include non-broadcast sources of video

World Radio History

programming such as multichannel video programming distributors and online video distributors; as well as social media platforms and Internet websites; and

- if the rule were to be maintained, the numerical limit and the "top-four" rule could be adjusted or eliminated to ensure continued competition in the television marketplace.

DUAL NETWORK RULE

The Dual Network Rule prohibits ownership of multiple television stations affiliated with two or more of the Big Four broadcast networks (ABC, CBS, Fox and NBC). A version of this rule, which effectively prohibits a merger between or among the Big Four Networks, has existed since the 1940s.

The commission requested comment on whether current competition in the television and advertising marketplace mandates the elimination, modification, or retention of this rule. Specific focus was placed on whether increased competition from OVDs necessitated changes to the rule given the commission's previous findings regarding the promotion of broadcast localism.

MMTC PROPOSALS

The commission requested comment on MMTC's three diversity-related proposed amendments to the media ownership rules:

(1) the extension of cable procurement requirements to broadcasters;
(2) the development of a model for market-based "diversity credits" to serve as an alternative to prescribed ownership limits; and
(3) the adoption of formulas creating media ownership limits that promote diversity.

Under the cable procurement requirement, cable systems must encourage minority and female entrepreneurs to conduct business with all aspects of a cable system's operations. Cable systems may accomplish this obligation by recruiting qualified entrepreneurs from a pool of sources likely to representative of female and minority interests. Specifically, the FCC requested comment on whether the Communications Act permitted the adoption of such a rule for broadcasters, and if so, whether the rule would aid in increasing broadcast ownership diversity.

MMTC also proposed that the FCC should adopt a system of "diversity credits" which could be traded between broadcasters and "redeemed" by station buyers to offset increased ownership concentrations resulting from a station acquisition.

The proposal centers on the idea that a transaction deemed to promote diversity — for example the breakup of a local radio ownership cluster or the sale of station to a socially and economically disadvantaged business — could provide the seller with "diversity credits." These credits could then be used by the seller to have a greater concentration of media ownership than otherwise permitted by the commission's rules. Comment was sought on whether the Communications Act provided the FCC with authority to implement such a system, and if so, whether such a system would be feasible in increasing diversity in the broadcast industry.

MMTC's third diversity-related proposal concerned the adoption of either a "Tipping Point Formula" or "Source Diversity Formula" to be used in establishing media ownership limits and promoting broadcast ownership diversity.

The Tipping Point Formula is a methodology for determining whether a transaction would result in the reduction of the amount of available revenue for supporting independent operators in a given radio market to an unsustainable level. If so, the transaction would be barred for having a negative impact on ownership diversity in that market. In contrast, the Source Diversity Formula is not limited to the radio service. The formula, however, relies on a complicated set of variables to assess whether a market manifests strong, moderate, or only slight diversity, which would then be used to assess the permissibility of a given transaction. The FCC requested comment on the feasibility of these proposals, and whether their adoption would aid in encouraging broadcast ownership diversity.

Comment deadlines had not yet been published at press time. File comments in MB Docket No. 18-349 at www.fcc.gov/ecfs/.

World Radio History

Server "Drawer Glides" Support Unused Equipment

Also: Do you have a backup plan for missing keys?

WORKBENCH

by John Bisset
Email Workbench tips to johnpbisset@gmail.com

Okay, so you have all this analog gear that you removed from service because you installed AoIP equipment. Now, what to do with all this stuff until you can (A) get rid of it or (B) repurpose it somewhere else?

Omaha's Spirit Catholic Radio Director of Engineering Mark Voris built an under-counter pull-out rack where the equipment can just sit in storage, or actually be used. Mark writes that his rack sure beats piling the equipment in a corner, on a shelf or in an equipment rack where it takes up space.

Mark has used L brackets to hang an individual piece of equipment when a rack wasn't an option. If you are handy with a welder, you can manufacture one of your own. The drawer glides are from an old server rack Mark salvaged. These are made to handle a lot of weight. Mark used a couple of pieces of square stock for the rails.

This could also be an idea for rack-mounted studio equipment. Gear racked up in the studio — especially under the tabletop consoles — is prone to being bumped. Mount a drawer-type rack system like this to keep vulnerable controls up and out of the way as well.

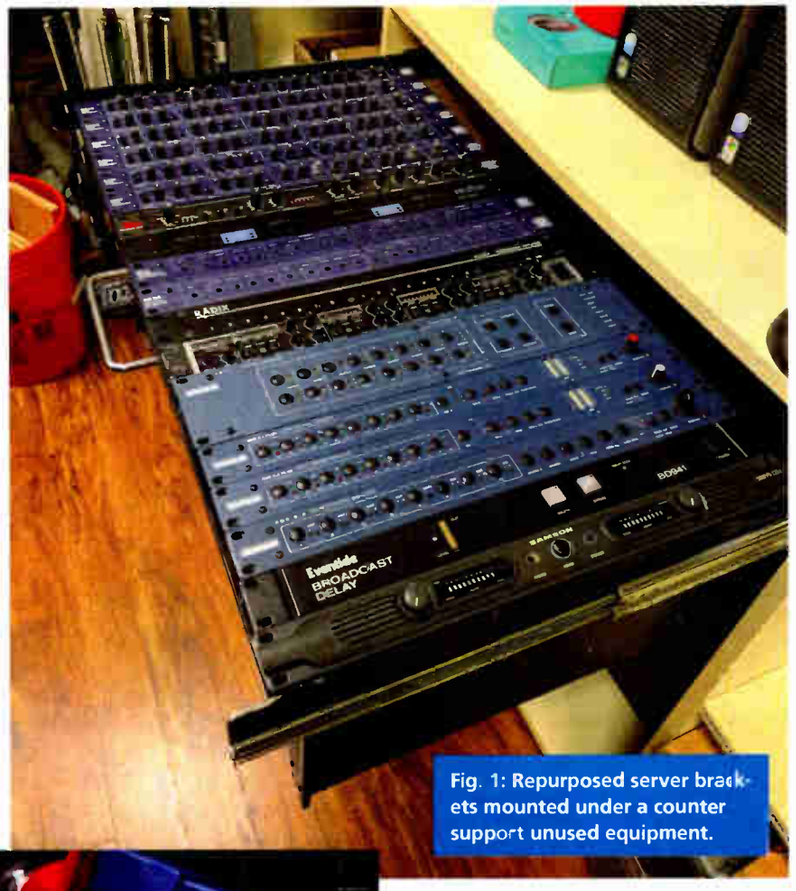

Fig. 1: Repurposed server brackets mounted under a counter support unused equipment.

Fig. 1 shows the under counter rack assembly that Mark constructed. Fig. 2 shows the rack drawer pushed back under the counter. Fig. 3 shows Mark's L-bracket mount for single pieces of equipment.

Mike McClain writes that in a past assignment he used a snowmobile to service remote sites. Every year, he was required to train in snow machine safety and operation training.

They told the story of a tech who left the keys in the ignition of the snowmobile while he was inside the transmitter shack. Well, ravens are amazingly smart birds and they are attracted to shiny objects like keys. A raven stole the keys from the ignition, and when the tech came back to the machine, the keys were gone.

The moral, which applies to building and fence locks, too: Always take the keys with you; and for the snowmobile, carry a spare. Keep a spare set in the transmitter building as well.

Another story relates to maintenance crews working a land-use agency of the federal government. They would put a spare ignition key behind the lens of a parking light on the truck. If they lost the keys while working, they could use

(continued on page 18)

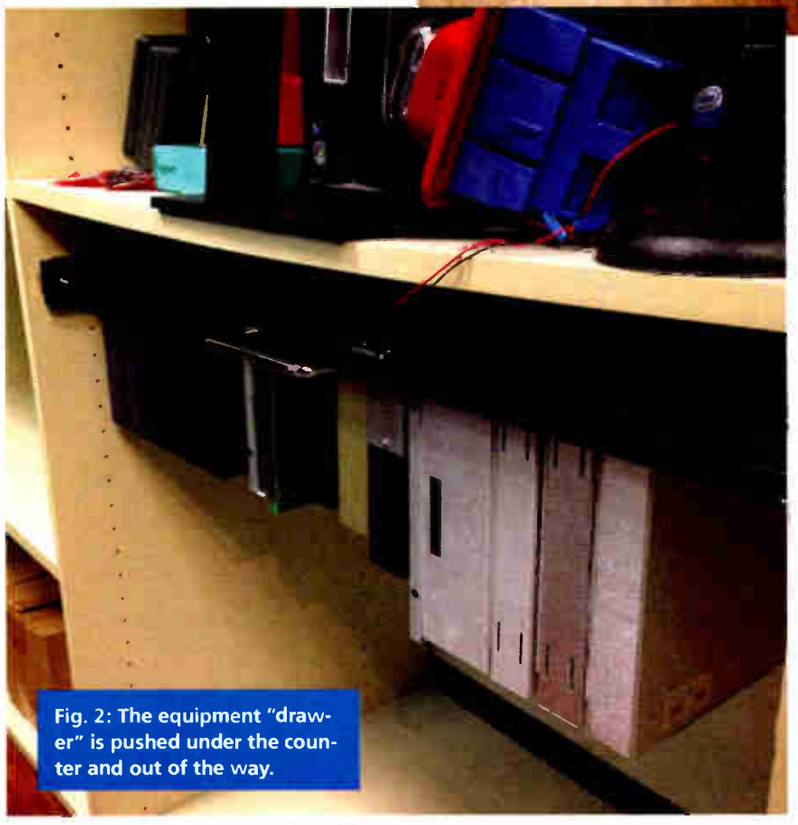

Fig. 2: The equipment "drawer" is pushed under the counter and out of the way.

Fig. 3: L brackets are ideal for mounting single pieces of equipment under furniture.

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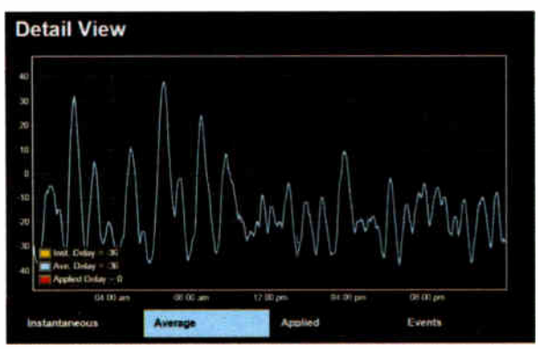
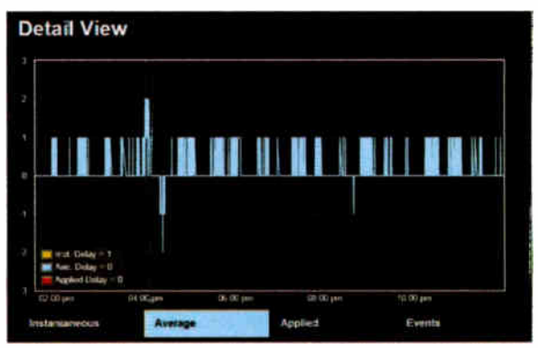


Typical FM/HD1 drift over a 24 hour period.



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INOVONICS BROADCAST

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Listeners Eat to the Beat With KJZZ's Soundbite

It's the only known mobile radio broadcast studio in the U.S. that's also a food truck and performance stage

INNOVATION

BY STEVE HARVEY

Part radio studio, part kitchen, NPR member station KJZZ FM's Soundbite truck may well be unique in the United States. The 40-foot custom vehicle, based in Phoenix, combines a radio broadcast studio and control room, an industrial-grade kitchen and — oh, by the way — a drop-down performance stage.

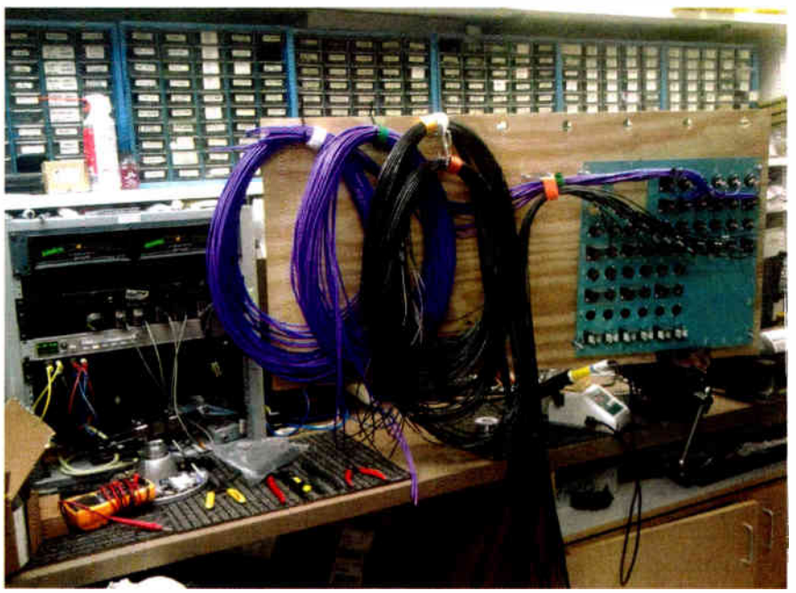
"The idea for the truck came from a desire for the station to have a larger presence in the community," explains Scott Morrow, production coordinator for KJZZ(FM) 91.5 MHz, KBAQ(FM) 89.5 MHz/K-BACH, Sun Sounds 89.5 MHz (HD3), KJZZ's youth media center Spot 127 and Soundbite. "The metro area is a big place with a diverse community. One of the folks at the station said, 'The best bridge between people and cultures is food and music.' That was the genesis."

The custom vehicle, built by Apex Specialty Vehicles, a food truck fabricator, provides KJZZ (news by day, jazz and blues at night) and sister station K-BACH (a 24-hour classical music station) with a way to physically engage with the community. "We can go to art festivals or music festivals, put music on the stage and do interviews," says Morrow.

> **One of the folks** at the station said, "The best bridge between people and cultures is food and music." That was the genesis.
>
> — Scott Morrow

The kitchen, which occupies the rear third of the truck, is operated by Short Leash, a local restaurateur offering signature hot dogs and doughnuts. The rest of the truck houses a radio studio, with a large picture window that looks out onto the stage, and a control room.

The studio seats three and is equipped with Shure SM7B microphones, Morrow reports. The control room, acoustically isolated from the studio, is outfitted with a Wheatstone digital radio console and seats either a board operator or a host/operator.



Key to the Soundbite truck is its main I/O panel, seen here as it was being wired.

"The best part is that we have an internal Ethernet network with a switch and a router," says Morrow. "We have internet access for reporting, and it also provides a connection for our rack-mounted Comrex unit linking back to the station."

LIVE AND BROADCAST

Interviews are typically recorded to a laptop running Adobe Premiere Pro, says Morrow. "It's very basic; we're just using it as a bit bucket. We handle editing afterward."

For live streaming or broadcast, "We can send the audio back over a machine-to-machine 4G wireless connection that operates with multiple SIM cards," Morrow continues. "On the station side, they can handle the audio however they like — record it, put it on air or put it to a live stream. We do have the ability to livestream directly from the truck, but we haven't done that yet."

Soundbite's live broadcast debut was technically challenging, Morrow reports. "We really bit off a lot," he laughs. "It was a performance with an 80-piece orchestra. On the day of the event, we had 11 people working: our engineering department, IT department, on-air staff and some technicians

(continued on page 18)

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Who says small can't be mighty? ruby's mixing engine, Power Core, is equipped with redundant IP networking, dual-redundant power capability, and tons of built-in I/O – 384 stereo channels, standard – with room to add even more. There are dozens of DSP channels, and a built-in routing switcher, too. It's like 12 rack units of power, packed into only 1RU.

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WB

(continued from page 14)

a rock or a stick to break the lens and get the key. Maybe parking light lens assemblies are too expensive these days, but a saving spare key in a good hiding place on the truck is still common at that agency.

Mike wraps up with another survival kit tip: A candle and an empty tin can provide a surprising amount of light and heat if you happen to get stuck in your vehicle. A magnesium fire starter and some waterproof matches are also in his "blizzard bag" for the winter months.

A candle in an empty tin can provide a surprising amount of light and heat if you happen to get stuck in your vehicle.

Fig. 4: A heavy-duty support rack shelf from Navepoint.

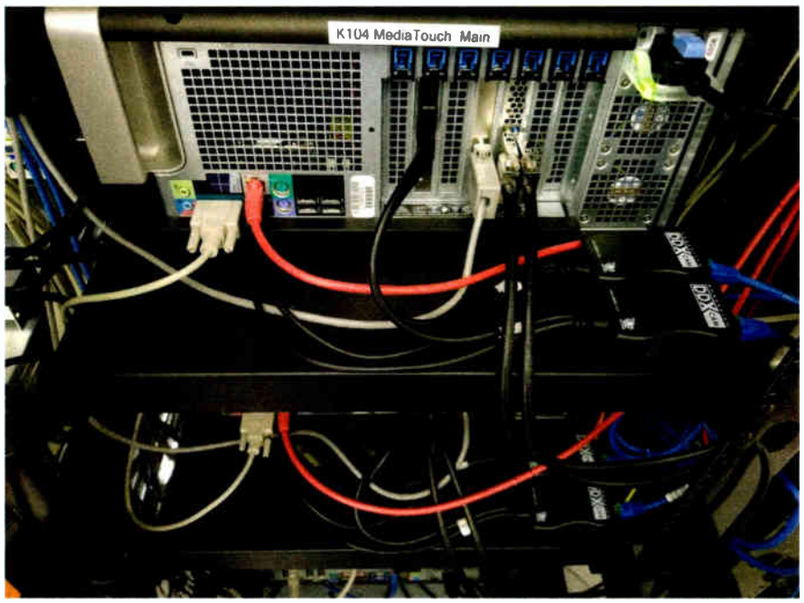

Fig. 5: The support has adjustable rear support rails.

Gary Wachter is director of engineering for the Service Broadcasting Group in Dallas. Gary shares an additional heavy-duty rack shelf mounting solution.

Navepoint makes a large selection of four-point rack shelves. They have the usual rack rail mount in front, and adjustable slide rails on back to attach to various rack depths. This makes a solid mount for heavy and sensitive equipment. Slots allow for air circulation. The best part? They are $32 each. Gary used these throughout his new facility in Arlington, Texas.

You can find more information at *www.navepoint.com*. Front and rear pictures are seen in Figs. 4 and 5.

Contribute to Workbench. You'll help fellow engineers and qualify for SBE recertification credit. Send Workbench tips and high-resolution photos to johnpbisset@gmail.com. *Fax to (603) 472-4944.*

Author John Bisset has spent 49 years in the broadcasting industry and is still learning. He handles western U.S. radio sales for the Telos Alliance. He is SBE certified and is a past recipient of the SBE's Educator of the Year Award.

SOUNDBITE

(continued from page 16)

at the station."

Partner live production specialist Central Sound at Eight, a group associated with PBS broadcaster Channel 8, based at Arizona State University's Walter Cronkite School of Journalism and Mass Communication in downtown Phoenix, supported Soundbite. "They put up a Decca Tree and were doing multichannel recording and gave us a live stereo mix. The host in the truck had a video feed from the stage and did a live announce for the radio audience."

MAIN PANEL

Key to the Soundbite truck is its main I/O panel, seen here as it was being wired.

The external drop-down stage can accommodate a handful of performers. "We carry a small PA of QSC K Series mains and monitors, and we use a rackmount Midas mixer with 32 channels in, 16 out. We also have a complement of Shure SM57 and 58 microphones and Radial DI boxes, plus an assortment of snakes from Whirlwind."

The bulk of the truck's gear was purchased from local supplier EAR, he reports. "They've been very helpful and are a longtime Phoenix outfit."

Morrow, who was hired to run the truck, oversaw equipment installation after the vehicle arrived from Apex. "I had a lot of help," he says. "Our engineering department is small but mighty; they're very knowledgeable."

He is especially proud of an I/O panel that he implemented between the inside and exterior of the truck, he says. "I can take audio inside the truck, like an interview, and put it outside on the P.A. Or if there's music on the stage running through the Midas mixer, we could also make a broadcast or recording mix in the truck and send it to a recorder or back to the station."

FOOD!

KJZZ's Soundbite in Phoenix is the only known mobile radio broadcast studio in the United States that's also a combination food truck and performance stage, able to serve up audio, video, artists and hot dogs with ease.

The cable trough between the onboard console and the studio rack is about 15 feet, Morrow notes. "I've been keeping track of every piece of wire in that trough. We have 2,680 feet."

External displays are positioned to either side of the stage area. "They're fed by HDMI. Sometimes what we do with the truck is internal, representing the station, and sometimes it goes to events supported by an underwriter, so we can put our own material on the screens or sometimes it's an underwriter's material. The audio can also be split off the HDMI signal and put into the truck's audio system, into the Wheatstone board inside or the Midas outside."

An event in January that Morrow was prepping for offered an opportunity to drive the screens from a laptop in real time and showcase the truck's abilities: "It's a mountain bike relay race, Six Hours in the Papago. We're going to be displaying live race results on the screens, announcing the race from the stage and serving food from the truck, all at the same time."

Food and music really are a bridge, says Morrow, who hopes that the Soundbite truck will spark the imagination of other broadcasters. "We're waiting for someone to do something similar, but as far as we know, there isn't one yet."

The truck is also available to rent for private events. "It has attended a couple of corporate events and has been to a couple of weddings, but no one has yet been married on the stage," he reports. "I'm hoping that's going to happen someday."

Comment on this or any story. Email radioworld@futurenet.com.

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Power Your Equipment Safely

You can never have too much power protection

TECHTIPS

BY MARK PERSONS

Yes, ground fault circuit interrupters are a nuisance at times, but they are there to keep you safe from 120 VAC power.

These devices are required wherever there is water near electrical circuits, such as in kitchens, bathrooms, garages and on outside outlets.

A man recently was killed while standing in water, holding an electric drill at a lake dock. There was a short between the metal case of the drill and its power cord. He was electrocuted instantly. That could have been avoided if the drill was plugged into a GFCI-protected outlet. A small amount of current to ground would have shut off the GFCI breaker and saved the man's life.

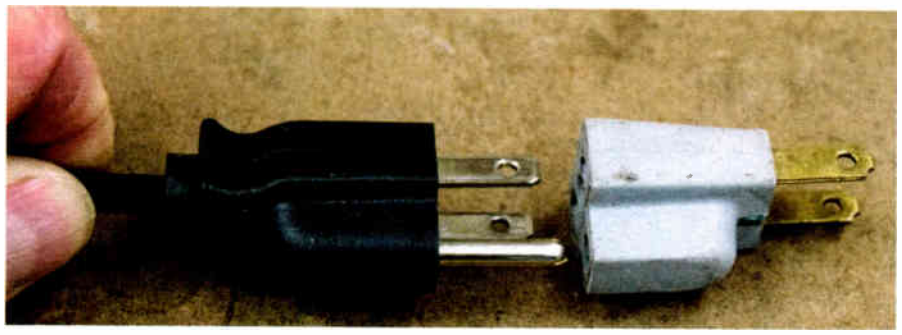

Fig. 1: Don't use a cheater adapter.

The same applies on my service bench. I get an occasional GFCI trip, but it is a minor inconvenience when the result could have been injury or death. It also tells me when I have a piece of equipment that has leakage to ground and should be worked on before it goes into service.

A power cord's third wire is a safety ground that goes to the equipment chassis. Yes, there are devices today that have two-wire power cords. Look for a UL sticker, showing the equipment has been tested by United Laboratories and is deemed safe to use.

Check equipment at your stations. If you find a two-wire powered device without a sticker, replace the equipment or consider modifying it by replacing the power cord with one that has three conductors. That third wire, the ground, needs to be connected reliably to the equipment case.

Years ago there were no ground wires. It was normal on occasion to get a tingle from a radio receiver with leakage to its chassis. You are in greater danger today of being shocked, or even electrocuted, from one of those older devices. A power transformer can develop a short from a winding to its core. That could put a full 120 VAC on the metal case. Ouch!

CHEATING

A three-wire power cord does you no good if it is plugged into a three-wire to two-wire cheater/adapter, as shown in Fig. 1. Adapters of that sort will defeat the ground connection and can create a dangerous situation.

CIRCUIT PROTECTION

Every piece of equipment should be protected from overcurrent.

Some older devices do not have fuses or circuit breakers. Again, you should consider replacing any equipment that is a safety hazard.

Some engineers will drill a hole in a chassis and install a fuse holder in the hot side of the incoming power cable. Others will use an inline fuse, inside the chassis, to do the same thing to solve this safety hazard problem. Note that insurance companies check for those things when examining a damage claim.

UPS BATTERIES

It may not be legal in all locations, but I like to move uninterruptible power supply batteries to the outside of a UPS unit to keep them cool. Some UPS manufacturers offer boxes and cables for external batteries.

My experience is that batteries fail more quickly when they are kept in the warm/hot environment of the inside of a UPS unit.

Fig. 2 shows the one at my place. The photo shows only see the back of this rack-mounted 3000 watt APC brand UPS. On the batteries are a permanently attached inexpensive voltmeter and documentation showing what date the batteries were installed, along with the normal voltage.

As the only UPS in the facility, it runs seven computers, a security system, smoke alarms, the internet connection and a phone system. The UPS only needs to run for the 10 seconds required for the automatic backup power generator to come online, plus 10 seconds or so for the UPS to deem the power safe before switching back during a power outage. It is a good and seamless system.

The grey PVC box, to the right, handles 120 VAC going to and from the UPS. Wiring is arranged with plugs and jacks so the UPS can be easily bypassed if it fails.

UPS POWER DISTRIBUTION

The output wiring of this UPS ties to a standard Square D QO series load center with circuit breakers for all the UPS supported circuits.

Added to it, and all other load centers in the facility, are Square D QO2175SB Surgebreakers (a trademark name of Schneider Electric) that plug in like standard circuit breakers. This product is the size of a two-pole circuit breaker, but without a breaker handle. A green light indicates all is well. Its

(continued on page 22)

Fig. 2: UPS batteries kept outside the UPS.

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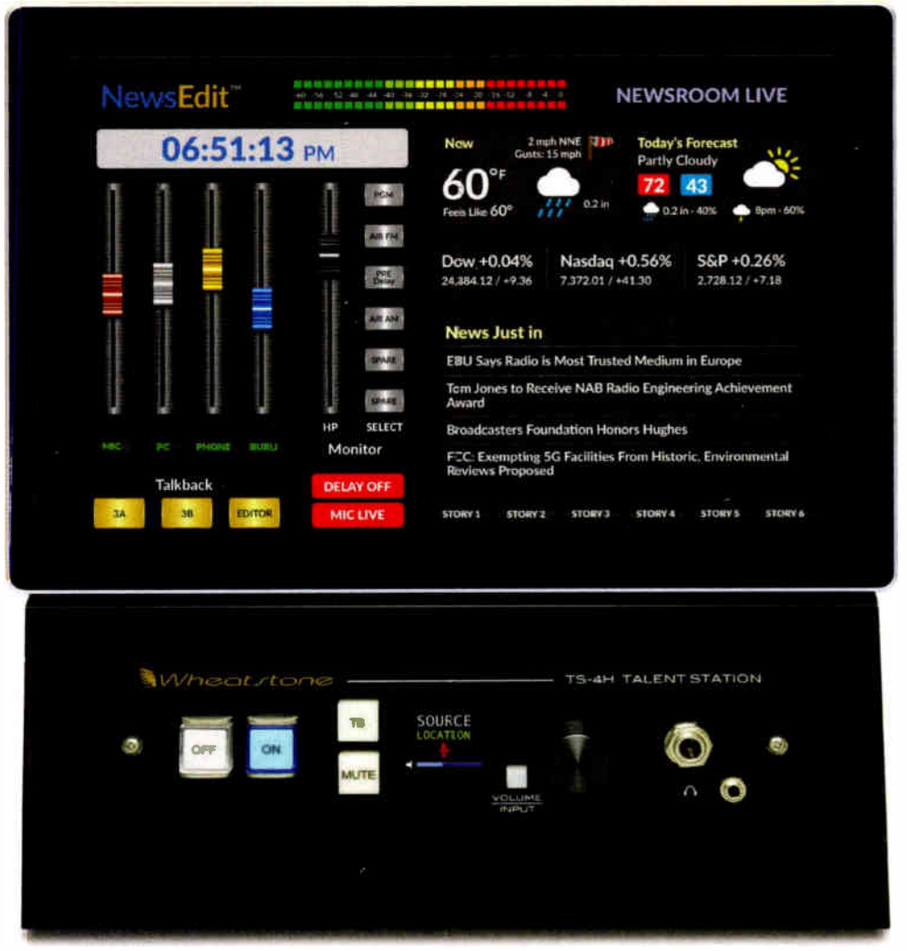

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Augmenting your hardware with application-specific software can create cool, unique solutions. In this case, a standalone news desk with access to all news functionality from a tablet, but with key controls and interface from the Talent Station.

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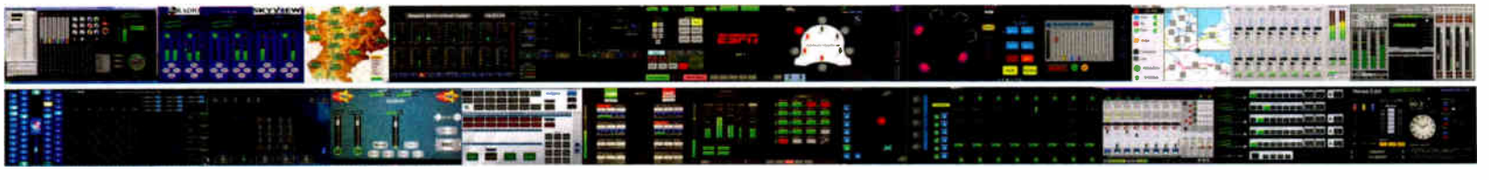

All these Screens were built with ScreenBuilder to create unique solutions and functionality.
You can see and learn more about them at: **wheatstone.com/screenbuilder2-news-rw**

Designed and built in the USA

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PROTECTION

(continued from page 20)

job is to shave voltage spikes from lightning strikes and power surges. The Surgebreaker is even, as I understand it, capable of drawing enough current to trip the main breaker in the box and thus protect the connected equipment.

Likely other manufacturers have similar products. Every circuit breaker panel should have one. You can never have too much power protection!

CLEAR MARKING

In this case, all UPS supported power is sent to orange 120 VAC receptacles labeled "UPS loads *only*."

Remember, a load too large for any UPS will bring down the entire system. I've seen it at radio stations. Just because there is an available power outlet doesn't mean anything can be plugged in.

You should use electrical outlet safety caps to keep people from inserting a power plug where it shouldn't be. Covers often come in 12 packs for about $2 (Leviton 12777 or equivalent) at hardware and department stores. You can use any extra covers to help keep electrical outlets safe from kids at your home.

LIGHT BULBS

Repairing older equipment often requires replacing incandescent indicator lamps. I often use a resistor in series with lamps to lower the voltage and extend lamp life. In fact, 10 percent less voltage will double its life. So what value resistor is right?

Fig. 3: A surge arrester in a circuit breaker panel.

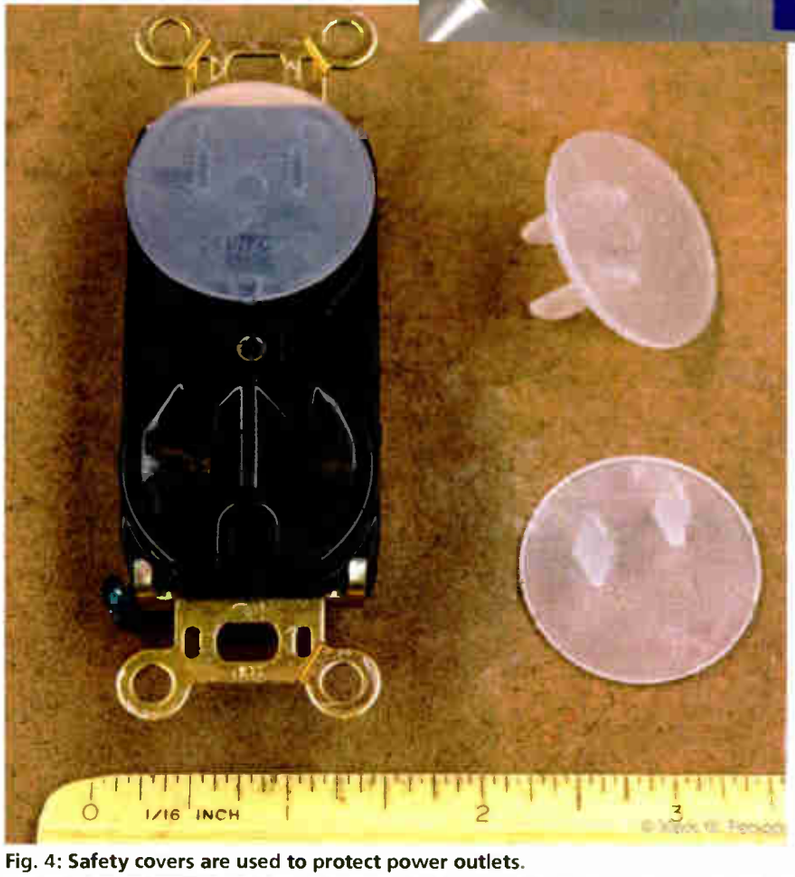

Fig. 4: Safety covers are used to protect power outlets.

We start by knowing the resistance of the lamp. Using an ohmmeter to measure a lamp will not reveal a correct answer. Resistance changes as the lamp heats up. My recent article ("Ohm's Law Answers Your Questions," RW Jan. 16) shows a way to figure it out.

If the lamp is a #47, it is rated at 6.3 volts and draws 0.15 amperes of current. To find its resistance, divide 6.3 volts by 0.15 amperes. The answer is 42 ohms. Adding a resistor of one-tenth that value in series will result in about a 10 percent reduction in voltage at the lamp. A 4.7 ohm resistor is the nearest standard value and is close enough. Now the lamp runs at 5.67 volts and is almost as bright as it was at 6.3 volts. The other important resistor rating is its power dissipation capability. Ohm's Law tells us that just under 0.1 watt will be lost to heat in the resistor. Use at least a 1/2 watt resistor because it will be dissipating power/generating heat whenever the light is on. More resistor wattage capability is better in this case.

There are replacement LED lamps that are direct drop-in replacements today. On the other side of the coin, incandescent lamps will run the same on AC or DC power. LEDs want DC at about 2 volts. Use a series resistor to keep current within LED specifications. I typically like to see LED indicators run with 10 m.a. of current. You can use them on AC if you don't exceed their maximum allowed reverse voltage specification, which could be as low as 5 volts. A #47 lamp might cost less than $1 while its LED drop-in replacement, with built-in resistor or other electronics, could be $7.

DO IT SAFELY

It is up to you to use good judgement when modifying equipment. If you are unsure of how to get the right results and/or your capabilities in doing it well, then have an experienced tech do the work. It makes perfect sense.

Mark Persons, ham W0MH, is an SBE Certified Professional Broadcast Engineer and SBE Engineer of the Year in 2018. He is now retired after more than 40 years in business. His website is www.mwpersons.com.

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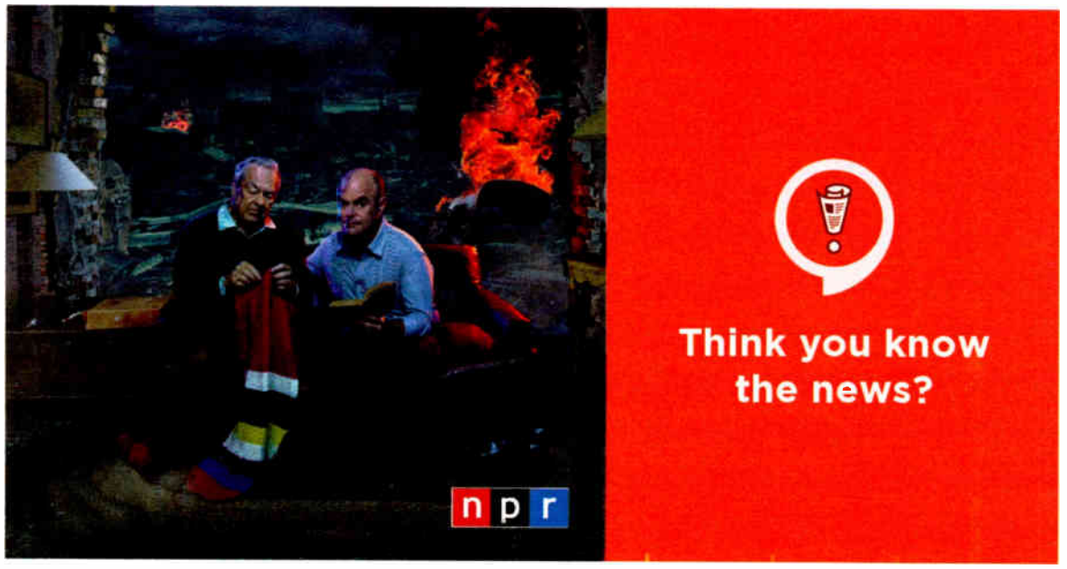

Voice-Controlled Wait Wait Quiz "Checked All the Boxes" for NPR

And New Platform Partnerships VP says to expect "more from NPR in the voice assistant space in 2019"

Q&A

BY EMILY M. REIGART

NPR recently launched its first interactive, voice-controlled feature — and it's a fun one. Fans of the WBEZ staple "Wait Wait... Don't Tell Me!" can now play along to with the weekly news quiz via Google or Amazon smart speakers.

(If you're curious how the Wait Wait Quiz works, NPR hosts Ari Shapiro and Sam Sanders both gave it a whirl. Watch them demonstrate it on YouTube.)

We turned to three "Wait... Wait" insiders to learn about the voice-controlled quiz's development and goals.

RW: *What inspired the Wait Wait Quiz?*

"Wait Wait... Don't Tell Me!" Executive Producer Michael Danforth: We've been trying to create an interactive version of WW for years. Met with app developers, PC game designers, board game builders. We did a newspaper game for a bit and even flew Peter [Sagal] and Bill [Kurtis] from house to house for family game nights. The smart speaker game checked all the boxes and required no travel.

Senior Project Manager Mathilde Piard: NPR has a strong history connecting with listeners, audience participation, and games and quizzes. There's "Wait Wait... Don't Tell Me!," but "Also Ask Me Another" and even newer shows like "It's Been a Minute With Sam Sanders" has its "Who Said That" segment.

So when we brainstormed different ideas for smart speaker prototypes a year ago, "Wait Wait... Don't Tell Me!" seemed like the perfect show to test an interactive game concept out. After some rapid prototyping and rounds of user testing and user interviews that showed high levels of interest and engagement with Peter Sagal and Bill Kurtis as the hosts of the quiz, we realized we had something really compelling on our hands and started the work to make it become a reality.

RW: *How does this quiz fit into NPR's larger mission for its presence on smart speakers and other nontraditional/non-radio devices?*

New Platform Partnerships Vice President Joel Sucherman: For NPR, phase one of our approach to voice assistants was to simply ensure that the content listeners expect from public radio was available in as easy-to-use utterances as possible. So we wanted to make sure live streams from all member stations were available and discoverable by saying, "Play NPR." We wanted to ensure that our top-of-the-hour newscasts — "NPR News Now" — were available on demand throughout the day. And finally, it is important to listeners that they can find podcasts on smart speaker devices. Some of those, like "Up First" and "The Indicator" from Planet Money, are available as Flash Briefings too.

But the Wait Wait Quiz begins phase two for NPR, bringing bespoke content, created specifically for Alexa and Google Assistant devices. And it also reflects a real organizational commitment, with the entire "Wait Wait... Don't Tell Me!" team from Chicago engaged on a weekly basis, with writers coming up with new jokes and Peter Sagal and Bill Kurtis going into a studio each week to record the new questions and answers.

So far, the response has been phenomenal from listeners, who really seem to love being able to play along at home. You can expect to hear more from NPR in the voice assistant space in 2019.

RW: *What did you look for in choosing a collaborator? And why did NPR ultimately select VaynerSmart for the quiz's development?*

Sucherman: From the initial conversation, it was clear that Vanyer got what we were trying to do. Their presentation fit our vision, and we knew from their work with the Ellen Show on the Heads Up game that they could handle the deadlines and scale demanded of a high-profile project.

RW: *Are there plans to add any other interactive elements to NPR's smart speaker presence, such as voice commands related to membership?*

Sucherman: As with any project, this is just the first version. We expect to continue to iterate, but we haven't determined what other feature set we might eventually build it. We just wanted to make sure we launched with a game that people loved in the same way that they love the radio show and podcast.

PEOPLE NEWS

Mukesh Chaudhary
Inovonics Inc.
promoted to regional sales manager for South Asia and the Middle East

Eric Hadley
iHeartMedia
named senior vice president of marketing

James Hamill
Entercom Communications
will serve as interim principal accounting officer and controller

Cathy Hughes
National Association of Broadcasters
will be inducted into the NAB Broadcasting Hall of Fame

Sarah Harris
Entercom
to fill the newly created position of vice president of social impact

Hossein Hashemzadah
The Association of Federal Communications Consulting Engineers
recognized with the 2018 E. Noel Luddy Award

Leonard Wheeler
NAB Radio Board
added as a director

Send information to radioworld@futurenet.com *with People News in the subject field.*

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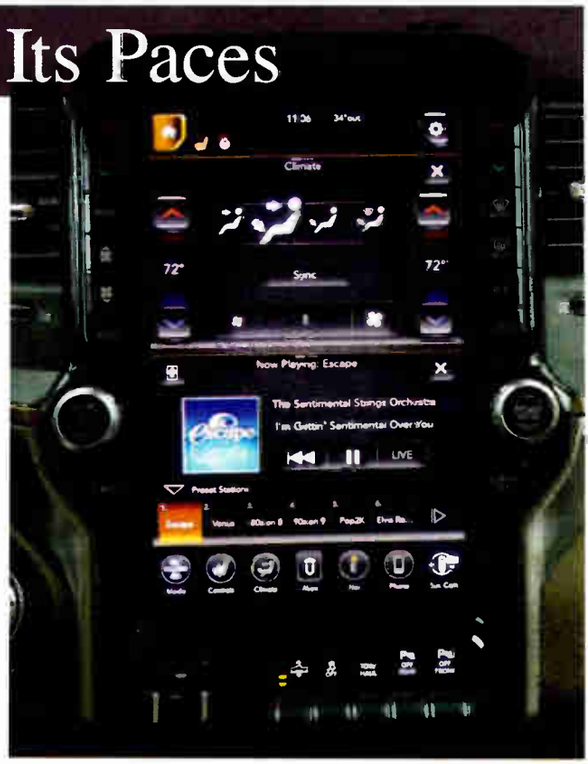
Putting the Uconnect 4C Through Its Paces

RAM 1500 at the North American International Auto Show in Detroit

CONNECTEDCAR



Where the battle for the listener's ear begins: This is the home screen for Fiat Chrysler's Uconnect 4C 12 inch display.

Fiat Chrysler's latest infotainment system keeps radio but adds bells and whistles

BY PAUL KAMINSKI

The Uconnect infotainment system has evolved significantly since its introduction as an integral part of Fiat Chrysler vehicles sold in the United States, ranging from the Fiat 500 to the North American Truck of the Year for 2019, the RAM 1500.

When I tested the RAM 1500 Longhorn Crew Cab four-wheel drive pickup for my "Radio Road Test" program, I also took the latest version of that infotainment system, the Uconnect 4C, through its paces.

How the senior broadcast band is displayed on the latest generation of Fiat Chrysler's Uconnect infotainment systems: This is the AM screen.

Here's what an HD2 signal looks like displayed on the FM/HD screen. The HD1 signal for this station has metadata information.

BIG TRUCK, BIG DASH, BIG DISPLAY

With a wheelbase of 140 and 1/2 inches and a curb weight approaching 5700 pounds, the RAM 1500 is a big truck. That called for the 12-inch Uconnect 4C upgrade (part of an option package), which added a foot-tall touchscreen display in the ample center stack of the RAM's dashboard.

The Uconnect system controls all the radio flavors (AM/FM/HD and satellite) and streaming options (through an optional 19-speaker Harman Kardon sound system), navigation and the usual vehicle monitoring and supervision.

Unlike some of the infotainment systems that use a joystick and touch screen (BMW and Mazda for example) to make menu choices, the Uconnect 4C system uses a belt, belt and suspenders approach: For example, tuning the radio can be done through the touchscreen, by voice command (when the system isn't streaming audio through Bluetooth) and for us oldsters, the tried-and-true volume and tuning knobs on the dashboard. When one is dealing with big horsepower and deteriorating road conditions, the familiar controls give users a sense of confidence, without giving up system capability. The Uconnect 4C user experience was named by Wards Auto as one of the 10 Best for infotainment systems. Fiat Chrysler has three levels of Uconnect systems available: the Uconnect 3 (the basic model),

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Uconnect 4 and the Uconnect 4C, which comes in an 8.4-inch touchscreen version and the 12.2-inch version shown here.

This newest version has Android Auto and Apple CarPlay connectivity through the USB connections, which adds the Android and Apple music apps. This system marks the Fiat Chrysler debut of SiriusXM's 360L, which offers on-demand audio content and a personalized listening experience. 4G LTE Internet access is available on a subscription basis after a three-month trial.

NUTS AND BOLTS FOR THE ENGINEER

The RAM 1500 comes in V6, HEMI V8 and HEMI V8 "etorque" mild hybrid versions.

With the HEMI V8 and eight-speed automatic, it will tow a 12,500 pound trailer (a class IV receiver hitch and seven-pin wiring harness for trailers is standard on the Longhorn version). The RAM Longhorn is equipped with a standard 115 volt auxiliary AC power outlet inside the cab and a standard spray on bedliner.

My test vehicle had the optional etorque system, which is rated in fuel economy testing by the Environmental Protection Agency at 17 miles per gallon in the city and 22 MPG on the highway. This might make a proper engineering vehicle for those transmitter site excursions through mud and snow.

STATION CHECKLIST

Given all of the streaming choices from a smartphone, Android Auto, Apple CarPlay and Sirius XM 360L available for users of the Uconnect 4C, a radio station has a major battle to look good in that big 12-inch display and sound good through those 19 speakers.

It's becoming a familiar theme in our articles about how radio appears on modern car platforms; but to succeed in this effort, a station needs to formulate strategy, emphasize preparation and pay attention to detail. That means management, engineering and operations departments working together to ensure properly encoded metadata and RDS information for all program, promotional and sales elements. Engineering must ensure that the station's RF and audio chains are up to specifications and optimized for performance. Station strategy involves producing content compelling enough so the listener will make the conscious choice to listen. And all key personnel should spend time in today's new cars to understand how consumers are interacting with audio platforms, including yours.

An idea: If your station has an advertising or promotional relationship with a Fiat Chrysler dealer, it would behoove your contact person for that relationship to get familiar with the Uconnect system, that's easily done by visiting its website (*driveuconnect.com*). Another idea for station-dealership partnerships: Request that your station be pre-programmed as a favorite during the pre-delivery routine, so the new customer will hear — and see — the station when the radio is turned on.

Paul Kaminski has been a contributor for Radio World since 1997 and is the host of msrpk.com's *Radio-Road-Test program. Reach him on Twitter (@msrpk_com) and on Facebook (PKaminski2468).*

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Henry SportsCaster Organizes Broadcasts

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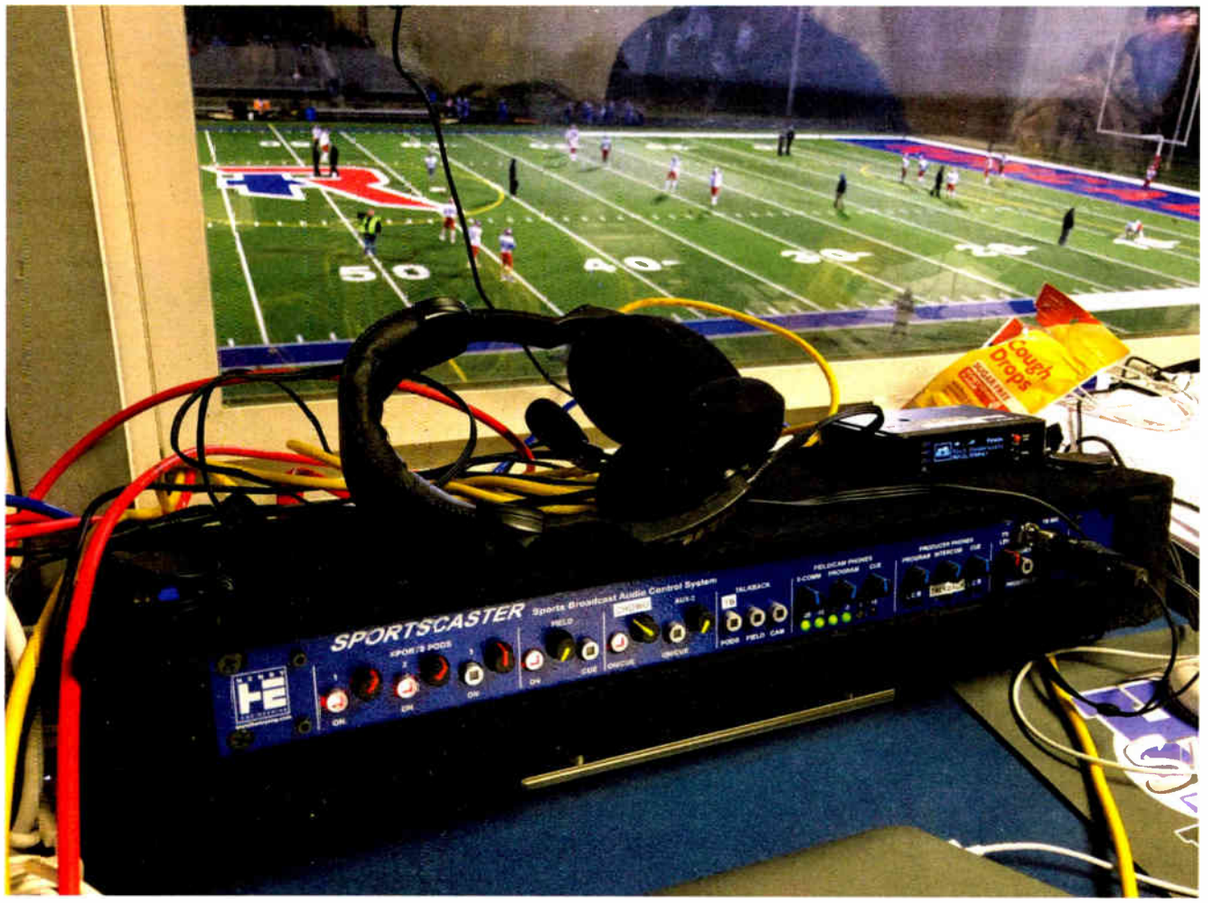

USERREPORT

BY RICK VANDERWIELEN
Sports Video Producer
Indiana High School Athletic Association

INDIANAPOLIS — In the last several years, small college, high school and amateur sports webcasts have become popular. I have produced hundreds of IHSAA sports broadcasts, most staffed by students. They call the game, run the cameras and operate the gear.

Small prosumer cameras deliver an incredible point-and-shoot image. Much of the video gear (switchers, effects, storage) is PC-based, making it easy to install and use. I wish I could say the same for the audio.

REQUIREMENTS

The audio seems simple until you actually put a game on the air. A typical football game will have a director, two announcers, a spotter/statistician and often a field reporter on the sidelines of the playing field. There will be camera operators taking direction from the director who "calls the shots." The director may also coach our student announcers who are learning how to call a live game.

So we have several mics to mix, which is easy. Any conventional mic mixer will do, and this is what the small and newbie production crews will try to use. Then it gets complicated.

Everyone needs headphones: the producer, director, announcers, spotter, field reporter and camera ops. But everyone needs to hear something slightly different, so they each need a separate headphone mix. I've used small mixers, one for each announcer, but it gets complicated to install and difficult to use. And we're not done yet.

INTERCOM

Plus, we need an intercom! Everyone needs to have an off-air "backchannel" to communicate without disrupting the live play-by-play. The director needs to coach the announcers. The spotter needs to quote player statistics into the announcers' headphones. The director needs to cue the field reporter (independent of what he's telling the announcers), and he'll need to direct the camera operators. Now I need to add this mishmash of multiple intercom channels into the headphone system. It becomes a nightmare of mixers, DAs, amps, home-brewed intercom switchers, and lots of wiring.

In early 2017, I discovered Henry Engineering's Sports Pod. This product became a building block in my quest to simplify the mess of audio gear I was hauling to each game. I had some ideas, so I called Hank Landsberg at Henry and gave him a laundry list of all the things I was trying to accomplish.

We determined that a "big piece of the puzzle" was missing: a "magic box" that would handle all the audio functions I needed for play-by-play. After numerous conversations, Hank and I refined what would become the SportsCaster. About eight months later, I received the first unit.

The SportsCaster is a specialized mixer and audio controller. It mixes the mics (and other sources), but it also creates the different headphone mixes I need for the broadcast team. And it gives me a "three-button intercom" so I can selectively communicate with the announcers, the field reporter and the camera ops.

The SportsCaster is indeed a "magic box," but it's the combination of the SportsCaster and the Sports Pods that makes everything work together. Each announcer has his own Sports Pod, which lets him mix program and intercom audio in his headphones. He also has an intercom button which lets him talk to the director, spotter, or other announcers.

SPOTTING

The spotter also uses a Sports Pod. He uses his intercom to give player statistics to the announcers, via their headphones, as they call the game. Sometimes we'll use a fourth or fifth Sports Pod for a timeout coordinator or a replay official. They all daisy-chain with Cat-5, so it's easy to add them "on the fly" if they're needed.

The SportsCaster has an isolated headphone mix for the field reporter. He can hear program, plus my intercom mic. I can "solo-cue" the field reporter without bothering anyone else.

Ditto for the camera ops: With their isolated headphone mix and my intercom, I tell them where to point the cameras.

There's even a way for the announcers to chat, off-air, with the field reporter. If they want to air a player interview, they can cue each other and then easily insert the sideline report to the coverage. It all works seamlessly because the intercom is integrated with the headphone mixes.

The SportsCaster has taken the hassle out of our play-by-play audio. Our air talent and tech staff now understand that teamwork and communication is critical to a successful broadcast. The SportsCaster system has made that possible for the sports video that I produce. And best of all, it's all in a compact 1-RU package.

For information, contact Hank Landsberg at Henry Engineering in California at 1-562-493-3589 or visit www.henryeng.com.

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TECHUPDATE

AETA SCOOPTEAM BRINGS FLEXIBILITY TO SPORTS COVERAGE

AETA Audio System offers the ScoopTeam commentary unit for sports remote coverage applications.

The system features a double mono codec for live audio transmission of one or two audio signals of up to 20 kHz and offers a maximum of four commentary positions and 11 audio inputs.

According to AETA, while ScoopTeam is suitable for use with IP networks, it can also be used with ISDN lines. Alternative transmission modes are available as options; these include AoIP via 3G/4G, Wi-Fi via USB, along with mobile voice (including HD Voice).

The premium version allows users to transmit via a Ravenna interface (AES67, Dante-compatible) and offers two additional analog inputs and one AES input.

The company also recently introduced a new network module that enhances the ScoopTeam's number of supported AES67 streams. The update brings the number up to eight output streams and five input streams, allowing more flexibility for intercom use.

AETA's Remote Access can be integrated into ScoopTeam. The optional feature allows operators to control their codec remotely and in real time via IP, including 4G mobile networks, through an HTML web server.

In addition, the new MyScoopTeam application lets users control ScoopTeam through its graphic interface, directly from a laptop. MyScoopTeam is available in LAN or remote (IP) edition.

For information, contact AETA Audio Systems in France at +33-1-41-36-12-00 or visit www.aeta-audio.com.

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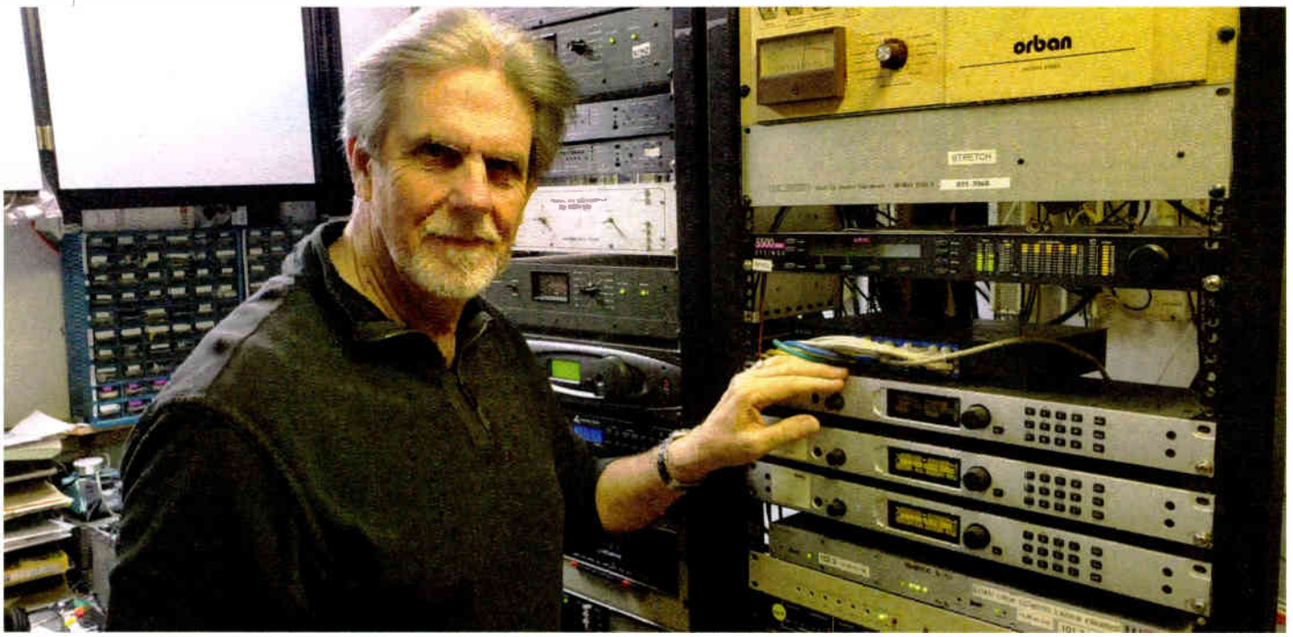

USERREPORT

BY DINO CORBIN
GM/Partner
Deer Creek Broadcasting

CHICO, CALIF. — At Deer Creek Broadcasting, we have been broadcasting high school and collegiate sports for well over 60 years. I got my start at KHSL(AM) Radio 1290, where we carried Chico State football, baseball and basketball with Ray Narbaitz for more than 20 years, and have been in the industry for almost 50 years, if you can believe it.

Today, we continue with the Chico State tradition on KPAY(AM) 1290, along with carrying Butte College football. If that doesn't say passion, how about the fact that Sports Director Mike Baca and morning man Mike Wessels have been broadcasting Cal State University Chico baseball and basketball together for over 20 years? Not too bad for a small-market radio group.

Over the years we have seen all the different technologies for remote broadcasting, from the dial-in POTS with a large console, mics and a wire leading to a phone jack, to the STL two-way radio lash-ups requiring a portable mast and lots of cable running outside to a truck, to newer technology that used a portable codec to plug into a facility's internet network. Each system of course had its pros and cons, from compatibility to lugging large cases of equipment through the airports for away games.

Fast forward some years later, and enter the LUCI Live smartphone codec and Telos Z/IP One IP broadcast codec. Pairing our broadcast equipment with a cellphone sending program data, and linking that data stream back to the Z/IP One in our studio, was a new technology to us; so we had some small issues to work through before we were up and running. The first was the compatibility with the various cellphones and the cellphone services. This ranged from data streams not being available and cell service not available at distant sites, to signal issues and some minor configuration challenges.

As time passed and we worked out any issues, we found that the best phone for use with the LUCI Live and Telos Z/IP One is the Apple iPhone. It seems to be the most stable and provides the best audio chain. We use Verizon as our provider as it seems to be the one where there is the most coverage on the West Coast. This allows us to easily use the cellphone or data stream depending on what is best and requires little equipment with regards to our mixer.

When we first started with LUCI Live we used a six-channel portable mixer; it worked well but was a pain to lug around. Now we use a mixer just a bit larger than a cellphone with mic inputs for two headsets and a crowd mic. Our kit for remote broadcasts is so light now that we can't help but laugh at our memories of lugging large cases of equipment around.

We have been using this setup for four to five years, and I would say that we are overall about 98 percent problem-free. Once in a while we have dropout and artifact issues in the feeds, but it is rare. More often than not, this is a function of the internet that we are connected to; or the data stream being impacted by an overloaded cell switch where there are hundreds of cellphones connecting to a single tower nearby.

We conducted some experiments with the cellphone and LUCI Live where we simply bypassed the headset mics and mixer and set the phone in front of us and called a game. It worked surprisingly well except for the fact that talkback from the studio was not available.

We not only use the setup for sports, but each one of our on air staff has LUCI Live on their phone as back-up to a cellphone dedicated to regular remote broadcasts. We have four Z/IP Ones, one for each station, and the ability to switch back and forth to feed our *KPAYSPORTS.com* app and feed a game or event that is only streamed. Overall, we are very happy with both LUCI Live and Z/IP One. There was a learning curve and a bit of tweaking and experimenting, but for the costs and logistics involved it absolutely can't be beat.

For information, contact Cam Eicher at The Telos Alliance in Ohio at 1-216-241-7225 or visit www.telosalliance.com.

ABOUT BUYER'S GUIDE

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 **bmoss@futurenet.com**.

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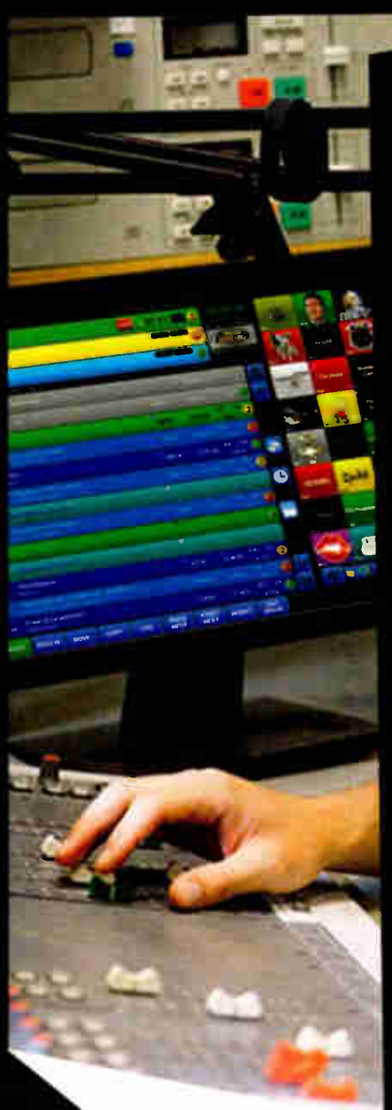

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Entercom San Diego Wins With Tieline ViA

Show travels across the country without a worry

USERREPORT

BY BILL EISENHAMER
Chief Engineer
Entercom San Diego

SAN DIEGO — A broadcast here. A broadcast there. Seems there is a broadcast everywhere. Being the flagship station for the San Diego Padres and a new FM sports station, KWFN "The Fan" there seems to be broadcasts everywhere. This was a special year for the Padres as their very own Trevor Hoffman was inducted into the Baseball Hall of Fame. Along with that comes a broadcast, and I just acquired my second Tieline ViA remote codec. Coincidental? In any case it was time to configure, train our engineer Steve Cilurzo and send the crew off to Cooperstown!

Tieline provides a number ways to make a connection with the ViA. I can do a direct connect and teach those going out to do the "labor," but I prefer to make life easy for the users and create "programs" for many combinations of connections. Program presets can be created directly on the ViA, but I prefer to use the web GUI which also helps manage the units as time goes on.

CONNECTIVITY

As our primary connectivity of choice is IP, those options are configured first to connect to any of my Tieline Merlin PLUS units back home. The wired Ethernet and USB ports are configured first. I have a G3 Commander allocated for POTS connectivity, so that gets programmed, too. I make Wi-Fi available, but we know how flakey that can get. Once configured all I need to do is show the operators how to choose specific programs for specific situations and stations. For Cooperstown the programming department ordered a DSL and a POTS line, but I included a USB 4G LTE modem as my go-to when all else fails. Believe me, all else fails often in the real world.

In Cooperstown, N.Y., the setup was simple and effective. For two air talent and a producer, the three inputs and built in headphone amp makes the ViA ideal for this situation. In testing prior to the broadcast we found the DSL to be limited in bandwidth, made worse by the fact the talent used their laptops and tablets, so the USB modem and 4G LTE comes to the rescue. I have had very good luck with this setup, though we are now making provisions on making such connections more reliable for talk shows. For these two days, it was successful. The live portions of the show went quite well.

The time difference highlighted a feature of the ViA which those who use the Report-IT application know well: recording capabilities. The ViA comes with a SD card slot, standard, just for recording. No more worries trying to keep someone at the station focused on recording, the crew on the road was able to take care of that at their convenience. They were able to record interviews for playback during their live show. The producer would remove the SD card and use a laptop for editing. Once he was done, the SD card was inserted back into the ViA.

RECORDING POWER

The recorded interview can be pulled up while the show is live with no interruption, and when ready, started with a push of "button" or touchscreen in this situation. They were able to record live interviews while on air, for archiving and playback at a future time. It only took a little training to make sure they did not record the return feed, IFB, at the same time using the routing matrix built in to the ViA. Having this feature available on the device without the need of a computer connection is a bonus. Being self-contained makes the device more flexible for the real world.

The compact ViA comes with a battery just in case you are somewhere without power, or if power is lost. On the second day of the broadcast thunderstorms were in the forecast. This was a real concern to the program director. The volley of should-we-stay-at-the-temporary-broadcast-tent-or-move-to-a-cafe was quite interesting. I put them at peace. With a battery that can last eight hours or more coupled with a USB modem, portability was not an issue. The worst-case scenario was to start at the original broadcast area and move if the weather got bad. They could move while on the air if necessary. The decision was left to the team onsite and became a nonissue once they were satisfied they could move at will. It is the little things like the battery which smooth out some tough decisions.

The Tieline ViA has been the backbone of the San Diego Padres road play-by-play, and has proven its worth for last moment broadcast decisions. It is a very good codec at its core. Three XLR inputs, S/PDIF input/output, stereo 3.5 mm TRS input and USB audio in/out gives you flexibility to gather audio. Two XLR output channels to feed audio to an external speaker or another mixer is available. The SD card comes in handy, though simple editing capabilities are not available. I suspect this is in the works, though. There is so much more to say about this device. Today the two ViA arsenal is being used for live broadcasts and high school football, some programming back to back. The ViA is a winner for The Fan, and Entercom San Diego.

For information, contact Dawn Shewmaker at Tieline in Indiana at 1-888-211-6989 or visit www.tieline.com.

World Radio History

Access IP Codecs Are "Lifeblood" for TheBlaze Radio

"When I have Comrex units in the field, I spend very little of my time addressing issues or concerns"

USERREPORT

BY ROB CHICKERING
Senior Vice President of Studio Operations
Blaze Media

DALLAS — TheBlaze (now part of Blaze Media) is a media network founded by Glenn Beck. For several years, I've served as senior vice president of studio operations. Essentially, my role encompasses the production back-end for all of Glenn Beck's programming at TheBlaze television as well as the production side for TheBlaze radio network.

A few years ago I entered my 30th year in radio; Comrex has been with me the entire journey from single-line frequency extenders on POTS lines to IP codecs.

So since beginning to work at TheBlaze radio, Comrex Access and BRIC-Link IP audio codecs have been the lifeblood of the operation. For years, when we've had remote hosts, we set them up with a Comrex codec. We've found that Access IP codecs are reliable for remotes and for home studios.

IN THE FIELD

Comrex Access NX Portable is built perfectly for the field and built tough in the Comrex tradition. I've never had an experience where it hasn't worked when I needed it. The ergonomics are carefully considered, and it's built tough, which is perfect for remotes. Additionally, Access NX is user-friendly. I can pre-configure the unit at the studio. Once out, the unit is easy for a host to use to get on the air.

The secret sauce of the Comrex family of IP codecs is CrossLock, a network management tool that allows us to connect with multiple networks at once, and it intelligently monitors network strength and dynamically adjusts how much data is being placed on each network.

It means our connections are more reliable, and we don't have to worry as much about using public internet or 4G service. Being able to just plug into the public internet without needing to get a private IP address is crucial to success.

When I have Comrex units in the field, I spend very little of my time addressing issues or concerns. When hosts call in with a problem, I can use the browser-based user interface to check connection settings and monitor stats remotely. Being able to see what's happening with the connection makes it easy for me to diagnose problems and find solutions.

TECH SUPPORT

Further, tech support has always been really terrific. I've never had to sit on the phone for an hour, and I've never gotten a half-hearted answer to a technical question. The tech support team is well informed and often knows how to solve a problem immediately.

In the late '80s, I was struggling to set up a new Comrex THX, I called Comrex late one night; and a nice guy named John answered the phone and walked me through what I should do to fix it.

The next day, when I told my boss, he said, "Wait, do you mean John Cheney? He owns the company!" The president of Comrex had taken my call and patiently answered all my questions, even though it was after hours. That culture continues with Comrex and it's why I enjoy working with them and their products.

Since the days of John Cheney, Comrex has been putting out solid products. That continues today and through that I feel like they have earned trust of people like me.

For information, contact Chris Crump at Comrex in Massachusetts at 1-978-784-1775 or visit www.comrex.com.

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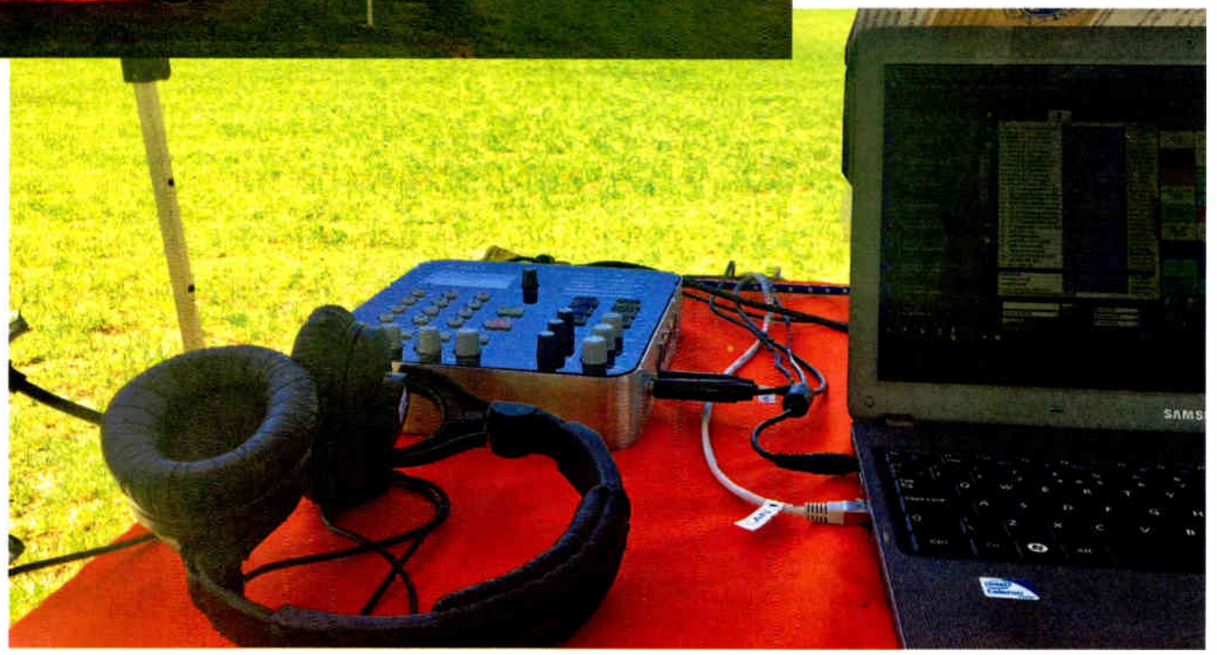
World Radio History

Hills Radio Uses AEQ Technology for Remotes

Phoenix Alio and Mercury have both sides of remotes working smoothly



USERREPORT

BY CHRIS CARPENTER
General Manager
Hills Radio 88.9FM

ADELAIDE HILLS, SOUTH AUSTRALIA — Hills Radio was established in 2014 by Chris Carpenter as a community radio station to serve the Adelaide Hills of South Australia, with the focus of providing a local voice for the 100,000 residents within the two council areas.

AEQ and Broadcast Components have been with us from the first day someone mentioned outside broadcasting. The undulating countryside made line-of-sight transmission impossible and we needed an effective and affordable solution. The AEQ Phoenix Alio, a portable codec, and Phoenix Mercury studio codec provided stable, simple and reliable transmission solutions for Hills Radio. What started as the live call of local football soon developed into a regular outside broadcast to the many townships scattered throughout the Adelaide Hills.

The Alio being both 3G- and 4G-compatible allowed us to utilize the local telco provider to connect to our studio effectively. We have found the unit to be simple, just plug and play. Our remote broadcasts are usually conducted via our OB vehicle affectionately known as BOBB (Big Outside Broadcast Bus). BOBB is a converted Toyota Caster bus that we have converted to a full mobile radio station. BOBB has a green room to relax and chat in and a full studio at the rear complete with our Phoenix Alio for commentary of sporting events and interviews at community events and live broadcast of local music events.

Initially our connection to the studio based in Mount Barker, South Australia, was via ADSL, however, this year we transitioned to the new Australian NBN telecommunications system and this has made even the most data intense transmission a breeze.

To demonstrate how good the AEQ Phoenix Alio is, Hills Radio was awarded winner of the "Excellence in Outside Broadcast" Category in Australia at the November CBAA (Community Broadcasting Association of Australia) Awards. The award was made possible through the use of the reliable and robust AEQ Phoenix unit and our sound engineers who took the feed at the Mt. Barker Carols in the Park Christmas function and broadcast it on air to our many listeners.

General Manager Chris Carpenter said the live broadcast to listeners highlighted the importance of our community engagement through our radio station and that it was made possible with the simplicity of the AEQ Phoenix Alio.

Hills Radio has a channel permanently open on the studio desk via an AEQ Phoenix Mercury unit so it is a matter of plugging a codec in at any venue and the OB is ready to go. The OB crew also connects via a VPN to utilize a remote desk connection and laptop, thus providing a duplicate studio for BOBB the bus anywhere it travels. Announcers can choose to broadcast from within the bus studio or take the AEQ equipment outside to create a wonderful public exposure of what is happening on the day via Hills Radio.

Hills Radio 88.9FM would like to thank Shane and Sean Pritchard of Broadcast Components Sydney. They were fundamental in the setting up of our AEQ componentry and have always been available via phone to sort any technical issue, and may I say that other than finger trouble on our part all of the AEQ units we use have behaved faultlessly each and every time we call the units into action, which is almost daily.

Broadcast Components Managing Director Shane Pritchard commented that he has been delighted with the technical capability of the Phoenix codec family since the original POTS and ISDN devices. With the Alio, advanced configuration options including SIP and IP (RTP) connectivity as well as improved audio algorithms including Opus down to 12 kbps ensures simplicity and stability in outside broadcasting. Broadcast Components has implemented the Alio into an "OB in a Box" to improve speed of deployment and ease of operation, with excellent feedback from the Australian market.

For information, contact Peter Howarth at AEQ in Florida at 1-800-728-0536 or visit www.aeqbroadcast.com.

World Radio History

Bauer Relies on Mobile SureStreamer

APT provides reliable mobile network access point

SPECIAL REPORT

BY CHANTAL FOURGEAUD
Director of Marketing Communications
WorldCast Systems

NEWTONARDS, NORTHERN IRELAND — Bauer Media, with its stations Downtown and CoolFM, is a major radio broadcaster in Newtonards (Belfast), Northern Ireland. Its 710,000 weekly listeners represent almost half the adult population of Northern Ireland. Serving the area's event sponsors as well as the radio listening market with live and local radio content, local events coverage is among CoolFM's main activities

As a new owner of the recently launched APT Mobile SureStreamer, Bauer Media is satisfied with this mobile network access solution, designed for remotes and OBs.

A single hardware unit housed in a lightweight carry-bag, the APT Mobile SureStreamer is approved for all networks, distributes audio over affordable 3G/4G public internet links and offers optimal latency enabling broadcasters and journalists to maximize on-air time and deliver top-quality audio content directly from the field.

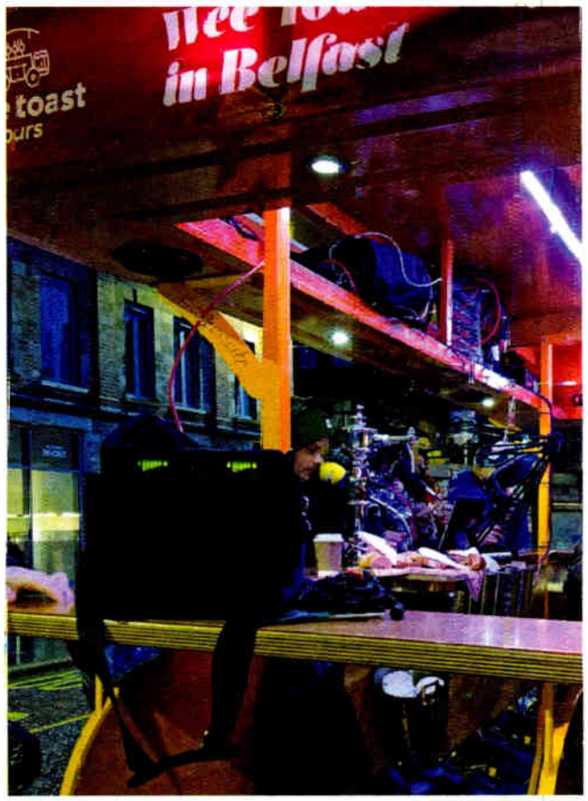
Compatible with any codec type and brand, the APT Mobile SureStreamer improves the quality of OBs and remotes by fixing quality issues users experience on the field.

According to Conor Ewings, broadcast engineer at Bauer Media, the APT Mobile SureStreamer has transformed how his station is able to do remotes. Their previous experiences with known remote broadcasting challenges such as unreliable connectivity for outside broadcasts within difficult areas and latency issues have been solved thanks to the APT Mobile SureStreamer. They now benefit from a reliable connection with no packet dropouts, there is an improved ability to split the hosts, and latency is significantly better, enabling smooth conversation with callers to the studio.

After multiple times on-the-field broadcasting with the APT Mobile SureStreamer, Conor Ewings states that the APT Mobile SureStreamer "has been a game-changer for us in the number and type of remotes we have been able to do. We have broadcast from locations we wouldn't have dreamed of in the past, setting it up is so simple and the latency it gives us is beyond our expectations and has made the biggest difference when we run a show from multiple locations simultaneously and for phone-ins we do for competitions," he said.

"The latency has been rock-solid at 60 ms and we haven't dropped a single packet since we introduced the Mobile SureStreamer to our signal chain. Going forward we're using it for radio, of course, but we can see uses in live social media streaming and any other streaming needs we will have. It gives us the chance to improve and standardize our IP links in remote broadcasting."

WorldCast Systems, with its APT Mobile SureStreamer, was the only company, according to Bauer Media, capable of meeting their selection criteria in terms of capability to interface with their existing Comrex codec, connectivity in previously hard-to-reach areas, providing the lowest possible link latency for remotes, thanks to the TCP-free signal, dropout free



connection and reducing setup and reconnaissance time.

Would Ewings recommend the APT Mobile SureStreamer to other stations looking to maximize on-air time while delivering pristine, uninterrupted audio to their listeners, directly from the field? "Yes, absolutely," he said.

For information, contact WorldCast Systems in France at +33-557-928-928 or visit www.worldcast-systems.com.

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MISCELLANEOUS

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I'm selling between 150 and 200 cassette tapes that consist of old-time radio shows, sports shows, some local New York radio talk shows, etc... Must take entire collection and the price is negotiable. Please call me for details and, my phone number is 925-284-5428.

Radio broadcasts of Major League Baseball, NFL, and some college football games that are on cassette tapes, approx 100 to 125 games, time period of entire collection os from the 1950's – 1970's, BO. Must purchase entire collection. Contact Ron, 925-284-5428 or ronwtamm@yahoo.com

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copy. Ron, 925-284-5428.

I'm looking for the Ed Brady radio show in which he did a tribute to Duke Ellington, the station was KNBR, I'd be willing to pay for a digital copy. Ron, 925-284-5428.

I'm looking for KTIM, AM,FM radio shows from 1971-1988. The stations were located in San Rafael, Ca. Ron, 925-284-5428.

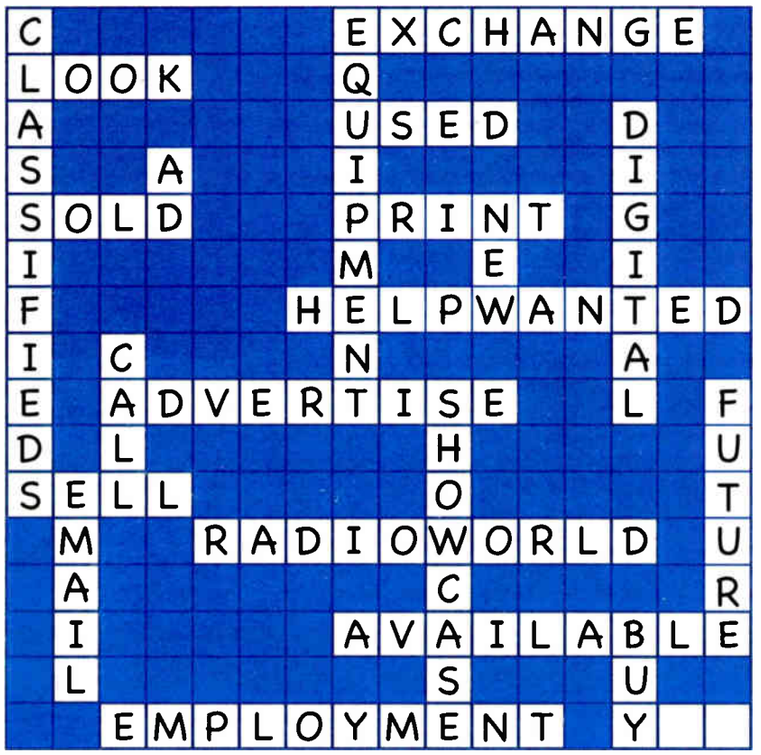
I'm looking for San Francisco radio recordings from the 1920's through the 1980's. For example newscast, talk shows, music shows, live band remotes, etc. Stations like KGO, KFRC, KSFO, KTAB, KDIA, KWBR, KSFX, KOBY, KCBS, KQW, KRE, KTIM, KYA, etc, I will pay for copies... Feel free to call me at 925-284-5428 or you can email me at ronwtamm@yahoo.com.

Looking for a broadcast excerpt of a SanFrancisco Giant's taped off of KSFO radio from 1959, interviews with Willie Mays, Dusty Rhodes & some play by play excerpts, also features a homerun by Willie Mays and Felipe Alou stealing second base, running time is 18:02, also looking for SF Giants games and/or highlights from 1958-1978 also taped off KSFO Radio. Ron, 925-284-5428 or ronwtamm@yahoo.com.

Looking for KFRC signoff radio broadcast from 1930 Andy Potter, running time is 0:22 & also the KLX kitchen the program guest is Susanne Caygill, a discussion of women's affairs with a long promotion for Caygill's appearance at a local store. Anne Truax, Susanne Caygill, running time is 13:44. Ron, 925-284-5428 or email ronwtamm@yahoo.com.

Looking for KSFX radio shows, Disco 104 FM, 1975-1978. R Tamm, 925-284-5428.

Looking for KTIM FM radio shows from 1981-1984 if possible unscoped. R Tamm, 925-284-5428 or ronwtamm@yahoo.com.



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Standard Short-tune series. Bill Cook, 719-684-6010.

(2) LPFM radio stations for sale, located in the NW part of central Florida on the gulf coast, covers the county, get out of the cold weather, come to Florida, call or write for particulars, 352-613-2289 or email boceey@hotmail.com or Bob, PO Box 1121, Crystal River, FL 34423.

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World Radio History

The Role of Broadcasting in a 5G Future

Attorney says broadcasters should plan to "ensure that 5G is an asset rather than a liability"

COMMENTARY

BY ARI S. MELTZER

You need to have your head in the sand these days to avoid talk about the next-generation wireless technology commonly known as 5G.

Proponents of 5G technology tout its ability to create new jobs; spark the growth of "smart cities"; manage command, control and payload for unmanned aircraft systems; and enable significant innovations in health care, transportation and public safety. And while it might be easy to discount 5G as simply a wireless technology, there is significant potential opportunity here for broadcasters, too.

Broadcasters would be wise to educate themselves now about what 5G is and how it could affect the broadcast industry going forward.

5G principally refers to a wireless standard adopted by the 3rd Generation Partnership Project ("3GPP") in December 2017 known as 5G NR ("5G" because it is the fifth generation wireless standard and "NR" for "New Radio"), although some early 5G deployments rely on other 5G standards.

The Federal Communications Commission, for its part, appears fully committed to advancing 5G in the United States. Chairman Ajit Pai and other FCC commissioners regularly speak about the importance of winning the race to 5G, and the commission has backed its words with actions, taking a number of steps to make spectrum available for 5G applications and adopting new rules over the past year to streamline deployment of the potentially hundreds of thousands of small wireless facilities needed to take full advantage of 5G technologies.

The competition to be the "first to 5G" exists both at home and abroad. Here in the United States, wireless providers are vying to be the first to offer 5G, with trial launches already underway in some markets and the promise of nationwide 5G networks within the next few years. Meanwhile, the United States, China, South Korea, Japan and others are battling to be the first country to deploy a commercially viable, large-scale 5G network, which comes not only with bragging rights and the direct benefits that come from deploying a next-generation technology, but also the opportunity to establish the features and implementations to be used worldwide, fueling equipment manufacturing and exports.

5G CHARACTERISTICS

One of the features of the 5G NR standard is that it can operate on a wide variety of frequencies. 5G divides spectrum into two groups: FR1 (450 MHz – 6 GHz) and FR2 (24 GHz – 52 GHz) (millimeter wave spectrum).

Getty Images/bubaone

Today's mainstream wireless networks operate on the low and mid-band spectrum associated with FR1, which travels greater distances and, particularly on the lower end of the frequency range (near existing broadcast spectrum), features stronger building penetration. Millimeter wave spectrum, meanwhile, is characterized by short wavelengths and large bands that can carry substantial amounts of data.

The use of millimeter wave spectrum as part of 5G networks has the potential to transform both how wireless providers deliver data and how Americans consume it. To take advantage of the benefits of millimeter wave spectrum, wireless carriers plan to deploy hundreds of thousands of new small cells — in many cases several per square mile. Networks utilizing this new infrastructure promise to offer more speed, more capacity and lower latency than existing networks. The FCC recently reached a milestone in the transition to next-generation wireless networks with the conclusion of Auction 101, the nation's first auction of millimeter wave spectrum for the deployment of 5G services.

The wireless industry trade group CTIA has estimated that 5G networks, using millimeter wave technology, will generate a throughput 10 times faster than 4G: possibly reaching over 1 Gbps. 5G networks will also offer connection density up to 100 times greater than 4G, meaning more devices will be able to utilize the same frequencies. Finally, lower latency associated with 5G networks will allow for near real-time interactions, allowing wireless networks to fuel applications like virtual reality and remote medical services that are not possible today.

Wireless providers are adopting different approaches to 5G — dictated, in large part, by their existing spectrum holdings. T-Mobile is planning to rely heavily on the 600 MHz spectrum that it acquired in the recent TV Broadcast Incentive Auction for its initial 5G deployments, providing broad coverage and in-building penetration that is not possible with higher band spectrum. AT&T and Verizon, which hold licenses for large amounts of spectrum in the 28 GHz, 37 GHz and 39 GHz bands, are focused on launching 5G using their millimeter wave spectrum, which will require a substantial investment in dense infrastructure to achieve the speed and capacity benefits that come with millimeter wave deployments. Sprint's 5G plans, meanwhile, center around using "massive MIMO" — the use of 64 transmitters and receivers in a single array — to optimize its existing 2.5 GHz spectrum.

While the wireless industry is working to deliver its next generation networks, broadcasters are undergoing a technological renaissance of their own. On the radio side, adoption of digital radio technology continues to expand as more broadcasters employ in-band on-channel digital transmissions and consumers and auto manufacturers increasingly embrace digital radio receivers. On the television side, meanwhile, ATSC 3.0 promises to allow broadcasters to make better use of their spectrum by utilizing IP-based delivery for both video and data content, increasing the usable bandwidth associated with each channel and allowing better interconnectivity with other IP-based systems.

For now, 5G and digital broadcast technologies are operating on parallel paths. But just as the internet has blurred the line between content creators and content distributors, emerging transmission technologies have the potential to blur the lines between wireless providers and broadcasters.

After all, even on existing 4G networks, wireless users consume a substantial amount of data to stream audio and video content. Meanwhile, emerging digital broadcast technologies may allow broadcasters to think about broadcasting less as an audio or video service and more as a service for delivering data, whether it be audio content, video content, or something else entirely. Put another way, just as 5G may enable increased use of traditional wireless spectrum for distribution of audio and video content, digital radio and ATSC 3.0 may enable the increased use of broadcast spectrum for distribution of data.

While there is likely to be increasing overlap between wireless and broadcasting in the future, the technologies are just as likely to emerge as complementary services as competing ones. Even as technology continues to expand

(continued on page 38)

World Radio History

5G

(continued from page 37)

the utility of wireless and broadcasting alike, each will offer its own strengths. While 5G has the potential to revolutionize the way consumers interact with information and with each other, emerging 5G networks are still built around a traditional one-to-one architecture that prioritizes customization and on-demand content delivery over a shared experience.

While it technically may be possible to broadcast content over 5G networks, not only would that require new equipment to reach devices like radios and TVs, but it would not seem to be the best use of 5G networks designed around densification. Nevertheless, streaming is likely to be a major consumer feature of 5G, and broadcasters should be prepared to take advantage of the increased bandwidth and low latency that 5G networks will offer.

Broadcasting's greatest — and unique — strength, meanwhile, remains its ability to efficiently distribute content to many recipients at the same time. To the extent broadcasters attempt to expand their use of spectrum for data services, therefore, the most likely use cases are those intended to reach large audiences (e.g., software updates, music albums, TV shows, movies, etc.) and that require a wide geographic reach, including areas that can't be reached readily or efficiently by small cells.

Importantly, 5G has the potential to transform and improve how broadcasters can operate behind the scenes, as well. Today, broadcasters increasingly rely on wireless networks for everything from uploading a news story from the field to transmitting entire remote broadcasts. 5G networks promise to enhance the reliability of existing wireless data transmissions while making them useful for more data-intensive applications, such as point-to-point links, that currently are frequently relegated to microwave, fiber or satellite.

Just as the internet has blurred the line between content creators and content distributors, emerging transmission technologies have the potential to blur the lines between wireless providers and broadcasters.

The time is now for broadcasters to develop their plans for the 5G future. Although widespread availability of 5G services is not yet here, the promotion of 5G is already in overdrive, and broadcasters should begin planning now for how they can ensure that 5G is an asset rather than a liability. This may include steps such as expanding their streaming offerings to better compete against the plethora of services likely to take advantage of 5G networks in coming years and compete for space on the dashboard to updating capital planning budgets to account for purchases of 5G enabled hardware.

Broadcasters have repeatedly demonstrated remarkable dexterity in adapting to technological change. In the past 20 years alone, they have adapted to the rise of the internet as a content delivery medium to 3G and then 4G wireless services, not only meeting competition head on, but also utilizing new technologies to improve their own product, developing new broadcast standards from digital radio and IBOC on the radio side to DTV and ATSC 3.0 for television.

5G presents a potential opportunity to take things to another level, delivering performance that rivals the best wireline internet services with the flexibility of wireless connection. Consumer electronics companies, medical device manufacturers, city planners, automobile manufacturers and others are already planning for new and exciting ways to take advantage of 5G services, and broadcasters would be wise to be right beside them.

The author is a partner in the telecommunications, media and technology practice at Wiley Rein LLP. Wiley Rein Engineering Consultant Richard Engelman and Consulting Counsel Bruce A. Romano contributed to this commentary.

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READER'SFORUM

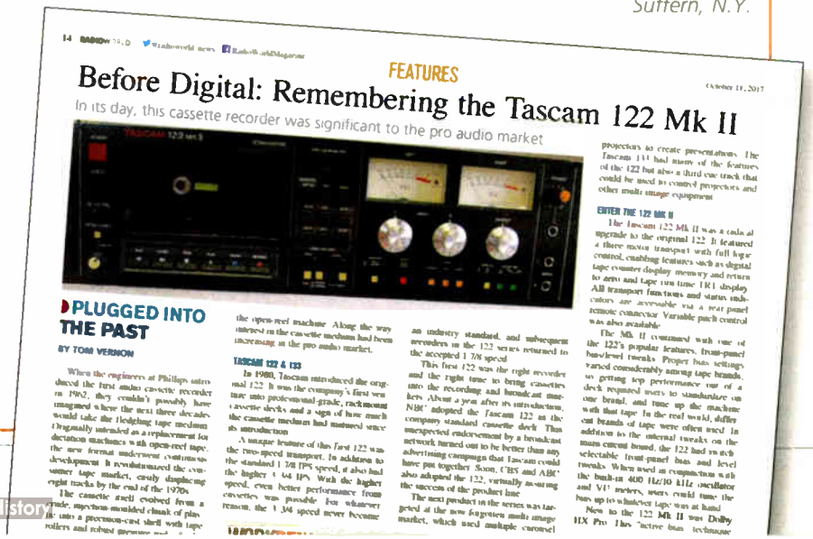
TAPE SIZE ERROR

I thought I would send you a note regarding an error I noticed in an October 2017 Radio World article by Tom Vernon about the Tascam 122 series cassette decks ("Before Digital: Remembering the Tascam 122 Mk II").

In the second paragraph, Vernon refers to the tape inside the shell as 1/4 inch. But in fact, the tape inside an ordinary Compact Cassette is 1/8 inch, not 1/4 inch.

Sony did experiment with proprietary 1/4-inch cassette recorders in the mid-1970s, with the high-end "Elcaset" format, which was similar in some ways to the RCA Victor 1/4-inch Tape Cartridge of 1959-1964 that preceded the invention of Compact Cassettes by Philips.

Steven Alpert
Broadcast Engineer
Suffern, N.Y.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In its day, this cassette recorder was significant to the pro audio market

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