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In search of excellence

Our annual award salutes engineers who are making a difference right now



Paul McLane
Editor in chief

In this issue we honor one of the industry's top engineers, Roz Clark. You'll find my story about his career on page 5.

It's hard for me to believe, but Radio World has now been recognizing outstanding radio engineers for 18 years. Some awards tend to be given to recipients at the end of their careers and understandably so. But when our publisher John Casey and I created the Radio World Excellence in Engineering

Award, we wanted not only to honor technologists but to focus on those who are doing good work right now in the industry.

I hope we've lived up to that.

Making my annual phone call to notify a recipient is one of the best parts of my job. I'm also proud of our circle of recipients. They include some of engineering's leading names, chosen at the peak of their careers, as well as some who were "on the way up." And I appreciate the camaraderie that I've seen grow between our past honorees.

This time of year can be a little bittersweet, because I remember making those calls to friends who have since passed away, namely John Lyons and Barry Thomas.

But if John were here, I know exactly what he would do now. He would bust on me for being "follicly challenged," just like himself; he would compliment me on our choice this year; and then he would call or email Roz Clark and tell him: "Congratulations to Number 18 from Number 3! Welcome to the family!"

If you have someone in mind who deserves to be considered in the future, I welcome your suggestion. Email me at radioworld@futurenet.com.

Also in this issue, you'll read what Gordon Smith had to say in his final address to the NAB community as president/CEO of the association. Smith came into that job in 2009 with a reputation as a moderate politician and a pragmatic leader. He fully lived up to that in his 12 years on the job. His comments on page 29 give insight into his approach to leading NAB, a philosophy that has helped the association retain its reputation as one of the Washington's most effective lobbying organizations.

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NPRM to Allow Computer Modeling for FM Antennas


A proposal to allow computational directional FM broadcast antenna pattern modeling in the United States is a step closer to being approved.

In November the FCC issued a notice of proposed rulemaking asking for comments.

The commission's text makes clear that it thinks this is a good idea, but it expressly also asks for help from "engineers, broadcasters, antenna manufacturers, and other interested parties" to help clarify some issues raised by the proposed rule.

The proposal was made in a joint petition from Dielectric, Jampro, Radio Frequency Systems and Shively Labs, all of which make antennas, as well as broadcaster Educational Media Foundation.

Currently, the rules for verifying FM directional patterns require physical modeling and measurements. The FCC says more than 2,000 full-service FM broadcast stations, or more than 20%, use directional antennas.

You can read the NPRM and submit a comment by going to www.fcc.gov/ecfs/ and entering "21-422" in the "Specify Proceeding" field. 


PEP Upgrades for WBZ and KIRO

In the event of natural disasters or national emergencies, Boston's WBZ(AM) and Seattle's KIRO(AM) are prepared to keep the public informed.

They are the 13th and 14th stations to upgrade their emergency broadcasting capabilities as part of the National Public Warning System.

Maintained under FEMA's Integrated Public Alert and Warning System (IPAWS), the country's 77 Primary Entry Point stations are the primary intake sources of initial broadcasts for a national alert. Together, the PEP stations provide coverage to 90 percent of the United States.

The all-hazards upgrade typically includes outfitting a hardened shipping container with a full radio studio, transmission equipment, a 60-day supply of food and water, and sleeping and bathroom facilities, along with sustainable power-generation capabilities.

WBZ is an iHeartMedia station; the PEP container is at its transmitter site in Hull, Mass. KIRO is owned by Bonneville International; the emergency studio is at its transmitter site on Vashon Island, Wash., in Puget Sound. 



FEMA Region 10 via Twitter

KIRO's Jake and Stacy broadcast their midday sports show from the emergency studio. Note the boxes of Meals Ready to Eat.

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Roz Clark embodies business continuity at Cox

Veteran technologist is recipient of the
Radio World Excellence in Engineering Award

We're pleased to present Roswell Clark with Radio World's Excellence in Engineering Award for 2021-22. Honorees represent the highest ideals of the radio broadcast engineering profession and reflect those ideals through contributions to the industry. Roz Clark is the 18th recipient.

We are recognizing Roz for his accomplishments as senior director of radio engineering for Cox Media Group. In choosing our inductees, we also look for people who are making a difference right now in our industry and whose work will benefit engineers in years to come.

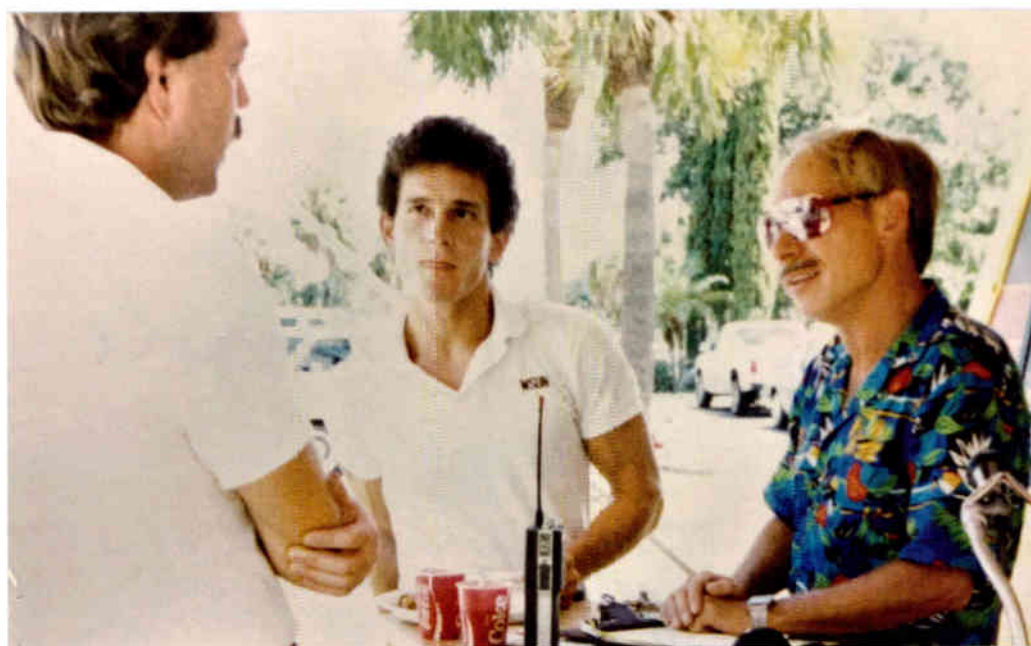
Radio World readers know from our news coverage and ebook interviews that Roz is doing just that in his work with the NAB Radio Technology Committee's Next-Generation Architecture Working Group.

We're also saluting him for his important contributions to the IEEE Broadcast Technology Society, the Society of Broadcast Engineers, the National Radio Systems Committee, the Nielsen Technical Advisory Committee and other groups

Given his decades of work on behalf of his employer and of the broader business of radio, he is a worthy choice.

“I've been very fortunate to work with general managers who have a deep appreciation for engineering and the part it plays in the business.”





Above
Roz Clark, center, works a remove with air talent Jack Russell for 620 WSUN(AM), circa 1985.

Intermarried disciplines

Clark, 59, oversees the technology aspects of Cox's broadcast radio operations — "anything electrons flows through," as he told me — which encompasses about 60 FM and AM signals in 11 markets.

Cox employs about two dozen technology team members in its markets.

"Anything to do with technology is our business," Roz said. "Email servers, networks, broadcast, they're all so intermarried that it's difficult otherwise to make sure responsibility is properly focused and maintained."

Roz is one of five senior directors who report to SVP/CIO Mark Beck and oversee areas such as radio, TV and network infrastructure, meeting weekly to coordinate and establish roadmaps. The radio market directors of engineering generally answer to local general managers and interact with Roz on a "dotted line" basis, though he has a few direct reports as well.

"It's one big conversation. A finance product or an email function may be critical, but broadcast is real time and it needs to be completely seamless — that's a whole different level of focus and attention. How do these systems interact with each other, and how do we safely connect them?"

Meeting that challenge is a high bar, as broadcast engineers know well, but it also extends to software and anything that has a network connection. "We have to be very careful about the technologies we employ — that they're actually suited and designed for such real-time functionality."

When Cox Enterprises sold its majority interest to Apollo Global Management in late 2019, Roz also began to play a larger role in the business continuity management

for all of Cox Media Group, based on his experience dealing with Florida hurricanes and writing articles and giving presentations about disaster planning.

"We had tabletop exercises, getting key stakeholders together and talking about scenarios: What if your building caught fire and burned to the ground? What if your tower fell down?"

They even put together a scenario for a worldwide pandemic like bird flu — not expecting that within two months they would be activating it because of COVID-19.

Getting started

Roz Clark wasn't one of those people who knew at age 5 that he wanted to be a radio engineer. "I've always been a curious cat about how things

work under the hood, but I wasn't building Heathkit radios at home."

He studied electronics in a two-year program at what is now Truman University in Kirksville, Mo. He then moved to Florida and ran a business selling and servicing C-Band downlink systems.

It was at this time that his uncle Max Sitero, the chief engineer at the local CBS O&O, urged Roz to give radio a try.

"This was in the days when getting into the business as an engineer was very difficult. You had to have the First Class FCC license and a track record just for someone to answer your phone call."

But his uncle's passion and interest in broadcast were contagious. Sitero helped young Roz obtain a part-time job. It turned out to be a great place to start.

CBS-owned WSUN(AM) was a full-service, country-formatted station and flagship of the Tampa Bay Buccaneers, served by the world's first AM directional array. Its sister station WYNF(FM) was a rocker with a popular, high-energy morning show, big-time concerts and lots of remotes.

"To work at this AM/FM combo was unbelievable. I mean, really? Many people had to work in small markets for many, many years, but I got my foot in the door at an epic AM/FM owned by CBS. It was a big deal."

There he met two people who would play important roles in his life. One was his future wife Bobbie. The other was Chief Engineer Frank Berry, who mentored Roz and encouraged him to learn.

"Getting inside a radio station and seeing how all this technology worked together — it was all so exciting," he said.

"I'm interested in everything from generators and power distribution to air conditioning and you name it.

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Everything comes together in a broadcast facility. I still feel like a kid in this business.

"Even today I just got off the phone talking about three completely different technology challenges and how to solve them. If you're interested in solving puzzles or in having a different experience every day, I don't think there's any business more diverse than broadcasting — audio, RF, power distribution and computer networks, it goes on and on. The sky's the limit on where your interests can take you."

One thing he is not interested in is being on the air. It was squeezed out of him early. While waiting for a full-time position to open up at WSUN/WYNF, he took a gig as a board op at another station — playing reel-to-reels and cart machines, recording the top of the hour, taking AM readings, fielding calls for the talk show host. And Roz didn't like it.

"I was in nervous-sweat panic mode every second of that job. It was a nightmare for me. I understood how the equipment worked; but trying to make sure the content flowed and the on-air person got what he needed, making sure you didn't forget to play the commercial, was very stressful.

"I have a great appreciation for board ops and people on the air, because as soon as that job option opened to get behind the curtain I was out of there. It was not for me!"

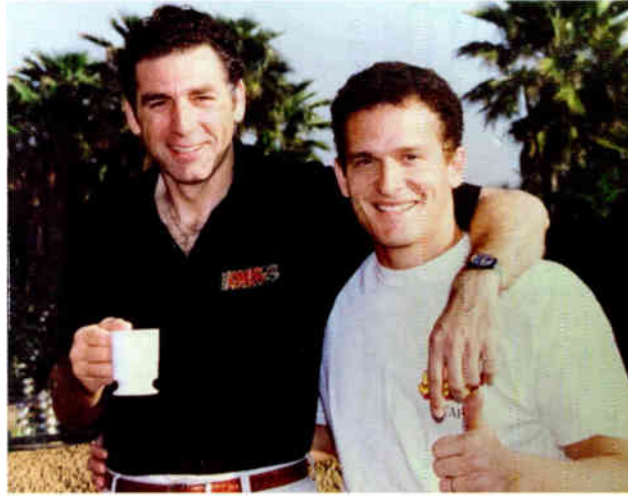
To Infinity and beyond (or back)

Roz worked full-time at the CBS station for two years as assistant chief engineer, and loved the organization. Yet in 1988 he left to take part in an exciting engineering project.

Frank Berry had moved over to work at Infinity Broadcasting, which had studios a few doors away. Berry tempted him with the promise of working on the overhaul of WCBF, a recently acquired 50 kW AM facility.

As related by the website *radioyears.com*, Berry took that station off the air for an extended period to do a complete rebuild of the transmitter facility, including all of the towers, and gutting and reconfiguring the building, then installing new audio processors, STL gear, phasing and tuning equipment and remote control. The studios also were upgraded.

"Frank said, 'We're going to take this thing apart and it's going to be off the air for four months while we completely



Above
Roz Clark hangs out with actor Michael Richards, aka Kramer from "Seinfeld," at a remote in 1989, and is shown in 2001 checking out the 1,500-foot tower supporting a new FM master antenna in Tampa.

rebuild it, studios and all," Roz related.

"Some readers might hear this story and say, 'AM? What, are you crazy?' But to build a 50 kilowatt station from the ground up within a span of four months, and do it right, with Frank Berry, and with consulting engineers like Alan Gearing, who were just masterminds — it was a great experience, never to be repeated."

The station relaunched as WQYK; today it is owned by Beasley and has the call letters WHFS.

After that time with Infinity, Roz came back to CBS in 1992 to become director of technical operations at WYNF. It looked now as though he'd be with CBS for the long term — until the organization announced it had agreed to swap its Tampa properties with a Cox station in Dallas, and the local CBS employees were let go.

"I didn't even reapply because I figured Cox had their own plans, but a week before they assumed control, they called me up and said, 'Aren't you going to apply for this job?' So I did, in the role of assistant engineer."

How to "solve for that"

Since that time Roz has been a bulwark at Cox. He has been based in Tampa his entire career and worked his way up to chief engineer, then director of technical operations for Tampa (later adding Orlando), and then to his current role as the company's senior director of radio engineering.

During his tenure he worked on numerous important internal issues including IT security, automation standardization, RF safety policies and broadcast data transmission under the wise leadership of Sterling Davis, who was VP of technical operations for many years.

Roz wrote a mission statement to hang on his office wall to remind himself that the goal is not just to do good engineering, it's to help the company meet its business challenges.

"How can we 'solve for that'? Whether it's your cell phone or your car or rockets, everything is about how technology can solve these sorts of puzzles, which seem to be insurmountable until you get smart people together."

For example one memorable engineering project came about when Clear Channel acquired Jacor in the late 1990s and had to divest itself of several stations. Cox, which had

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- 2018-19
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- 2019-20
Dave Kolesar
- 2020-21
Jason Ornellas
- 2021-22
Roz Clark

three signals in Tampa, suddenly had six and decided to integrate them.

“Right about that time, an earlier boss at Cox resigned. So I was the only engineer during a transition where we were taking over three stations. It was an exciting time, to say the least.

“We had to build radio stations from scratch. We built one in a closet and barely got it on the air — literally at the stroke of midnight, with the general manager walking around with the camcorder, all excited. We hit the post, so to speak, technically. No one knew the drama that was going on behind the curtain.”

During this time he has continued to expand his skill set, earning credentials as a Microsoft Certified Systems Engineer, SBE Certified Professional Broadcast Engineer and SBE Certified Broadcast Network Engineer. He has twice won his employer’s Engineer of the Year honor.

Today he spends a lot of his time envisioning the future of the radio air chain, both at Cox and across the industry. When I asked him how engineers and managers can be better prepared for that future, he mentions certain core concepts to keep front of mind.

“Our businesses run on processes. People throw around buzzwords like cloud, but pretty much everything we do, whether it’s in an appliance or not, is software of some sort. We as engineers need to understand how the signal flows and how the business processes work. That includes remote systems management, remote broadcast and broadcasting from home.

“Then it’s the technologies of networking, whether it’s transporting real-time content or connecting systems together; these are so important. Then how do you configure or design systems so they are very secure — who’s allowed to do what, at what time and where — ‘managing identity.’

“And then monitoring and control. If we don’t know the system status of all of our assets, the critical parameters and how to react to those measurements, we’ve got a problem.”

To manage these facets efficiently, Roz said, a business must standardize where it can, so Cox Media Group is taking that concept to the next level, not only choosing to buy the same products or software across its various stations, but thinking more broadly about the company’s 60 stations as being part of one big market. “We can get the best solutions and put them across every market and

have the best results in a consistent manner.” For Cox that doesn’t mean sweeping centralization as much as it means consistency and efficiency in the business approach.

Like all good radio technologists, Roz is also concerned that the medium keep its place in the dashboard and stay competitive in how it presents its product to consumers.

Given the emergence of hybrid radio systems that meld broadcast reception with online connectivity, he thinks consistency in the listener experience is crucial, which means broadcasters should be paying attention to metadata.

“It requires a deeper understanding by content creators and managers, to understand the technical capabilities of the different delivery mechanisms and make sure that we exploit and standardize that capability.”

For example Cox was an early participant in RadioDNS. It also signed on with Quu’s visual programming service, and it supports Xperi’s DTS AutoStage initiative, which Roz says does a “mind-blowing” job of presenting visual information to the listener.

“I don’t believe we should stake our ground in one thing in the digital world; we have to have relationships with all of these platforms, because not one solution fills all the holes.”

“ I got my foot in the door at an epic AM/FM owned by CBS. It was a big deal. ”

Business partners

Almost three decades since “flipping” to Cox, he remains a huge fan of the company.

“I can’t say enough about Cox as a whole and about Cox Media Group. It continues to do things

right, empowering people and investing in them.

“I’ve been very fortunate to work with general managers who have a deep appreciation for engineering and the part it plays in the business. Keith Lawless, who now manages multiple markets for Cox, once described me to someone as a business partner. That’s a huge compliment. If the culture of your company appreciates the partnership that we in technology have with the business, that’s a big thing. I can tell you that, in Cox Media Group, we’re very much part of business decisions and strategy.”

Roz gives back to his profession in numerous ways.

He has delivered several papers and chaired sessions for the NAB Show, and he was involved in an NAB group that researched the use of separate antennas for HD Radio, a concept he conceived known as space combining. For the NAB Radio Technology Committee, he chaired the HD Time Alignment group that developed a best practice document that was adopted by the NRSC. Today he chairs the Next-Generation Architecture group, helping the



industry to learn how to put concepts like virtualization and the cloud to work in their air chains.

For the Society of Broadcast Engineers, Roz is an elected board member, chair of its finance committee and a member of the executive officers committee. In 2015 he was honored as the SBE Engineer of the Year. At Chapter 39 he has held multiple offices including that of chairman.

In the early 2000s he was actively involved in the Media Reliability and Security Council and the integration of local Emergency Operations Centers in the Tampa Bay area into the EAS system. He has represented CMG in EAS Operational Areas 7 and 8.

Since 2009 he has been an active member of the IEEE Broadcast Technology Symposium; he chaired the event for three years and was an elected member of its ADCOM for two years.



He is the technical representative for CMG in the Broadcasters' Traffic Consortium. He also is a ham radio operator, WA4YNF, and serves on the board of a repeater network that serves a large part of Florida. Whew.

A lifestyle choice

When I asked him to describe his management personality, he replied, "I try to treat others as I would want to be treated. And at Cox there's a culture of getting the right person and empowering them, giving them the tools they need and then letting them do their job.

"That sounds really easy, but it's not," he continued.

"Technology is challenging, but the most important thing is getting the right people doing the right things — giving the right leaders the right boundaries and allowing them to do their job, supported by coaching and followup. For instance, recognizing that some people are more creative than task-driven.


"You have to understand the technology too — invest in reading, trade shows, learning from vendors and adjacent businesses. We have to lead by example with that," he said.

"But we also have to make sure people are given the flexibility and freedom to execute and be successful on their own."

Outside of radio, Roz enjoys camping and the great outdoors, and is active in his church. He also restores muscle cars and still owns a 1967 GTO that he purchased 40 years ago.

Roz and Bobbie have two grown sons, one of whom is a mechanical engineer, the other a business/marketing professional, as well as two small grandchildren.

Would he encourage a young person to get into radio broadcast technology today?

"It's not like any other type of engineering job. If you're interested in all sorts of technology, the answer would be yes — but understand that it's a lifestyle choice." 

Top left

Disaster planning and business continuity are part of Clark's oversight responsibilities at Cox Media Group. He's shown in Miami in 2005 with Cox colleague Mitch Wein after Hurricane Wilma crossed the southern Florida peninsula.

Top right

Clark is active with the IEEE Broadcast Technology Symposium. In 2015 he welcomed keynote Ron Rackley at the event in Orlando.

Left

Bobbie Clark holds grandson Lincoln. They are framed by sons Justin, left, and Brandon.





John
Bisset
CPBE

The author is in his 31st year of sharing reader tips in Workbench. He handles western U.S. radio sales for the Telos Alliance and is a past recipient of the SBE's Educator of the Year Award.



Standard stuff

Search for information about AES standards at www.aes.org/publications/standards/

The importance of microphone cable shields

Also, watch how a computer can model an FM directional pattern

John Schmidt, P.E., is principal of John Schmidt Audio Video Systems Design in Hempstead, N.Y. For 36 years until retirement, he worked for ABC Television in New York as a senior audio video systems engineer, designing and supervising the installation of audio systems.

After reading our Oct. 29 column, John offered a few suggestions to help the uninitiated create more problems than they solve when working with microphone cable shields.

Individuals involved in connecting analog audio equipment should familiarize themselves with two Audio Engineering Society standards: AES 48 and AES 54. These describe best practices in dealing with cable shields.

John's first suggestion based on the guidelines is that the microphone cable shields need to be connected — typically to Pin 1 of an XLR connector, as seen in Fig. 1 — in a continuous, preferably isolated path from the mic to the input of the mic preamp.

Keep in mind that mics that utilize phantom power will not work without a shield (Pin 1) connection, as the cable shield provides a return path for the phantom power that operates the electronics inside the microphone.

Even if the mic does not use phantom power, failure to connect the shield may leave the mic circuit subject to hum or buzz due to capacitive coupling to one or the other of the active conductors, or interference due to RF pickup.

Now the issue moves to the line-level interconnects. Here there is a conflict between the practicality of the interconnecting equipment — which may not have been designed with best practice for grounding the shield connection (Pin 1 on the XLR) at the equipment interface — and requirements for RF immunity.

If all equipment was designed with proper termination of the shield connections for both its inputs and outputs, in accordance with AES 48, one would be advised to connect the shields of all input and output cables where they interface with the equipment at both ends. But as many of us have learned, this sometimes creates hum in the form of a ground loop.

At the expense of losing some RF immunity, connect the shield at only one end.

If breaking the shield at one end solves your hum/buzz issue but leaves the equipment RF susceptible, try connecting the unterminated end of the shield to the metal case of the equipment through a small capacitor.

Transformer boxes can be useful, but John recommends specifying transformers with internal shields between the windings. Otherwise the capacitive coupling between the windings can pass interference.



Right
Pin 1 is considered
ground on a three-
pin XLR.

“**Audio Engineering Society standards AES 48 and AES 54 describe best practices in working with cable shields.**”

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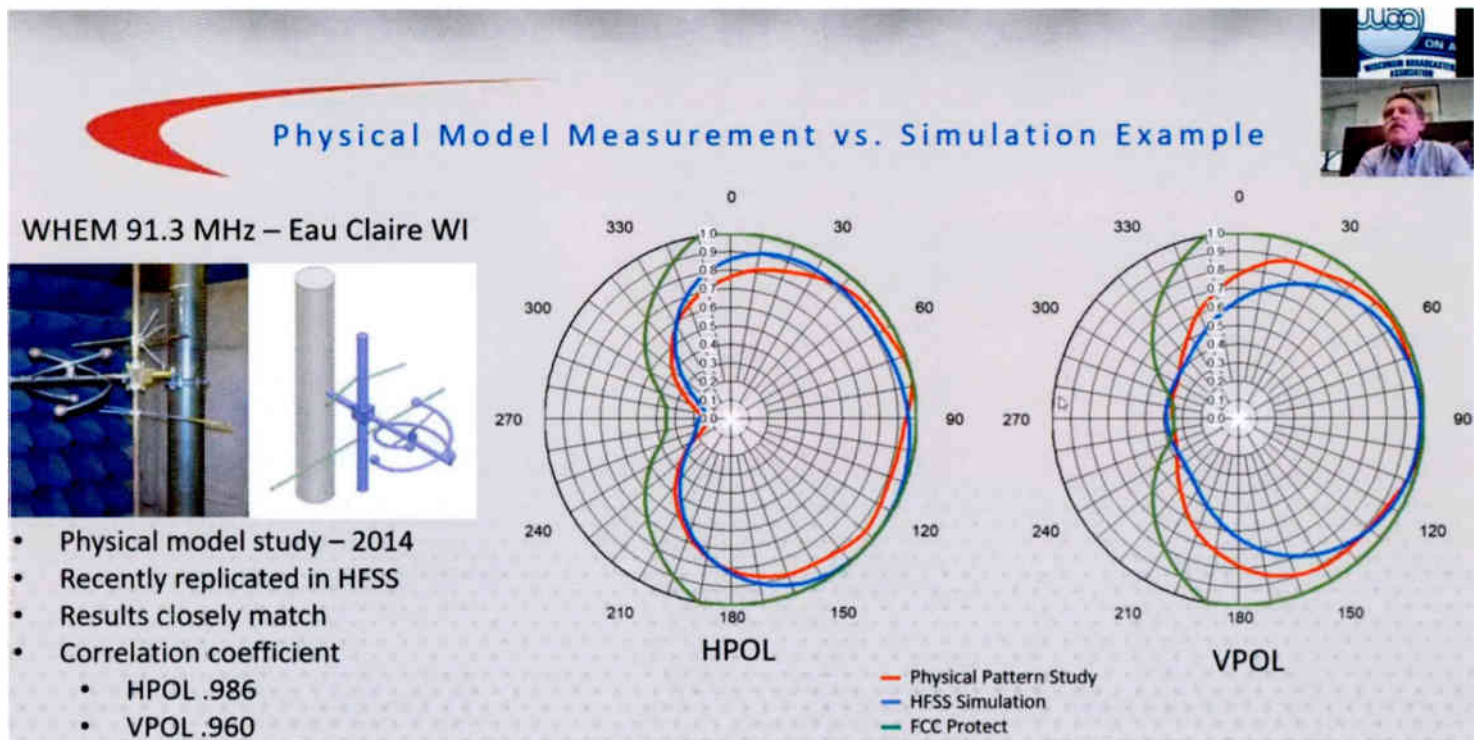
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Above
An image from the Dielectric presentation to the Broadcasters Clinic about computational modeling of FM directional antennas.

Also keep in mind that some transformers have very poor frequency response when fed from a low-impedance source. If your circuitry is unbalanced, with the shield grounded at both the output and the input, and is carrying the return side of the audio signal, all bets are off, and you may really have a ground loop.

Finally, regarding analog video: Yes, the coax is fed with an unbalanced signal; however, most professional video equipment uses differential receive amplifiers, where the shield of the input is not grounded. The same is true for the unbalanced "composite" input of many FM exciters.

As readers can see, this is not a trivial issue.
John Schmidt's website is <https://www.john.schmidt.audio>.

A better way to model

Also in the Oct. 29 issue, Radio World reported on a proposal by Dielectric and other antenna manufacturers to allow computer modeling of FM directional antennas.

The FCC has opened a notice of proposed rulemaking to take industry comments about this. It says more than 2,000 full-service FM stations, more than 20% of them, use directional antennas. The change would allow any of them that replace existing antennas to avoid the expense of field measurements. It would apply not only to applicants for new FM facilities but to FM licensees applying for facility modifications.

John L. Schadler, a friend and former co-worker of mine when I was at Dielectric, outlined the studies that support this proposal in a presentation for the Broadcasters Clinic in October.

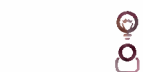
“ In just a few minutes, patterns can be modeled and adjusted reliably. ”

John's presentation is available online and is fascinating. Of particular interest are the computer simulations John shows of FM coverage. Adjustment of parasitics or spacing yields nearly instantaneous display of the FM coverage pattern. These measurements, done physically on a range or in an anechoic chamber, currently take hours or days. In just a few minutes, patterns can be reliably modeled, modified or adjusted to meet coverage restrictions.

At YouTube, search "Computer Simulation for FM Pattern Studies."

Final thought

Kuala Lumpur engineer Paul Sagi has followed our discussion of converting to LED lighting. He writes that heat is not the only enemy of LEDs; the wrong type of power supply can also shorten their life. LEDs work best on a constant current supply, rather than a constant voltage supply, which can also reduce their service time. 7



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Writer
Paul
Kaminski

CBT

Veteran radio news reporter and RW contributor, and host of msrp.com's "Radio-Road-Test."



Where to find it

SiriusXM with 360L is available in vehicles from Stellantis' Ram, Chrysler, Dodge and Jeep brands; GM's Cadillac, Buick, Chevrolet and GMC brands; Ford F150s and Ford vehicles equipped with SYNC4; Lincoln Navigator and Nautilus; most BMWs; and most Audis and Volkswagens. It is standard across the Maserati lineup. It will be available in the New Range Rover and will be standard in Jaguar and Land Rover vehicles equipped with the PIVI Pro infotainment system by model year 2023.

18

Above
SiriusXM with 360L is a hybrid system that combines satellite and streaming content delivery to provide more channels and control.



SiriusXM with 360L: An impressive dashboard experience

Our Road Warrior tested it in two vehicles and liked what he heard (and saw)

During the years that I've produced the program "Radio-Road-Test," I've seen in-dash entertainment evolve from basic to high-end AM and FM radios and cassette decks to sophisticated units capable of accessing entertainment from terrestrial stations, satellite channels and streaming audio.

More and more, such units occupy a prominent place in the center stack of the automotive dashboard. SiriusXM with 360L is the latest iteration of the satcaster's platform. The name 360L is intended to suggest a 360-degree listening experience.

When it debuted in 2019 in the Ram 1500 pickup with 12-inch Uconnect 4.0 system, SiriusXM with 360L delivered content from both the satellite and through streaming via internet access through on-board modems.

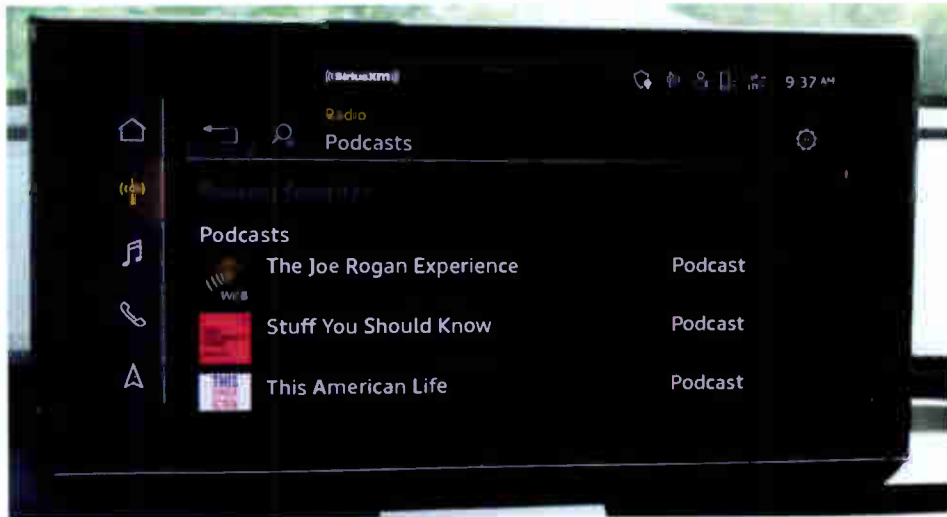
This "hybrid radio" capability opened up online channels that weren't available in the car and offered on-demand programming — interviews, podcasts and other features — based on listening preferences.

In October 2020, the ability to create an artist channel through its subsidiary Pandora was added to the 360L experience in Ram trucks for those subscribers with SiriusXM's Platinum Plan, along with sports notifications, which give listeners an alert about their favorite sports teams, and the ability to tune directly to the broadcast of the game.

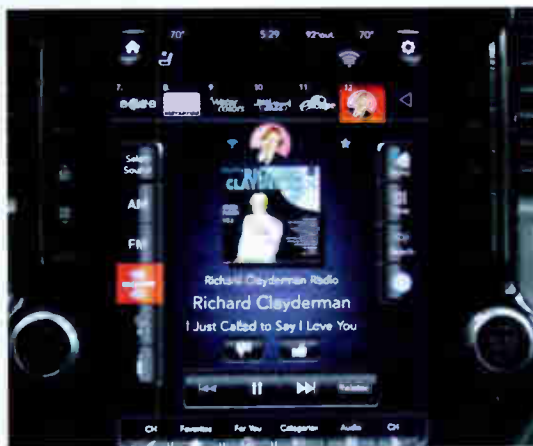
Ram owners with the 360L platform from 2019 received over-the-air subscription updates to add those abilities to their units.

SiriusXM says subscribers can also create individual listener profiles, so multiple drivers and passengers can customize and maintain their presets and favorites. Profiles can be synced with a listener's mobile phone to access their favorites and pick up listening where they left off in the car on certain content.

How does this work in practice? In the Audi Q5, I was able to receive the audio stream of SiriusXM Channel 69 when the satellite feed was not available because of terrain. In the Ram 1500 TRX, I could create a channel by an artist unknown to all but a few radio listeners today, Richard Clayderman.



This feature used Pandora protocols to curate the channel's music, adding music from other artists in the genre to Clayderman's music, thus creating a "Richard Clayderman Radio" channel that was streamed. This is appealing to listeners like me who enjoy music from artists not usually heard on terrestrial radio — in my case Mantovani and Kostelanetz, in your case maybe its Weezer and Måneskin — and listeners who want to hear more music from their favorite artist when they want it.



When I wanted to return to satellite programming or other radio programming in the Ram, all I needed to do was select the appropriate source, which could be done by touchscreen or voice control, with an old-school knob to back up the touchscreen and voice controls.

The on-demand programming offered by 360L gives a listener the ability to listen to a podcast or previously

recorded show with a touch. In the Ram, the Uconnect unit will load mixed content in its presets (AM/FM/HD Radio, satellite channels and streaming audio selections).

Ford, GM, BMW and Volkswagen are among car manufacturers offering 360L-capable units in their newest vehicles.

We've been hearing from radio advocates like RadioDNS, the NAB and Xperi that local broadcasters need to have a

strategy in place for competing with platforms like this. If one compares the channel and song displays from a typical SiriusXM channel to the display of a typical terrestrial station today, the comparison is striking. My experience suggests that the 360L is a formidable competitor to terrestrial radio for the ears and eyes of drivers and passengers. There's a lot to be said about giving listeners what they want, when they want it and for making it easy for the listener to access those choices. **RW**

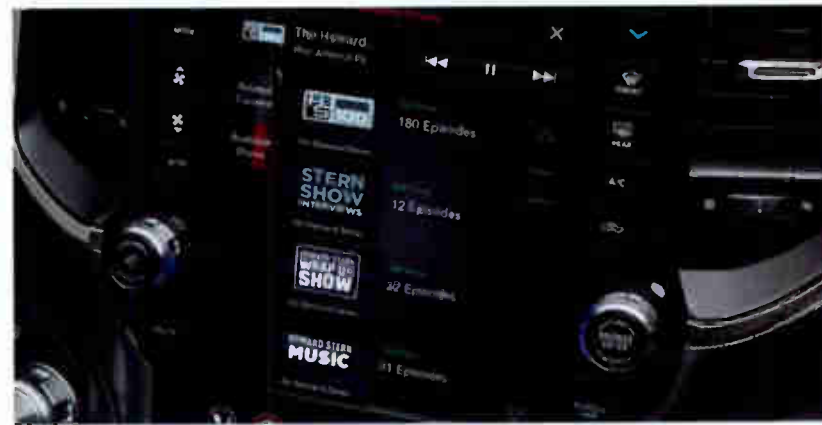
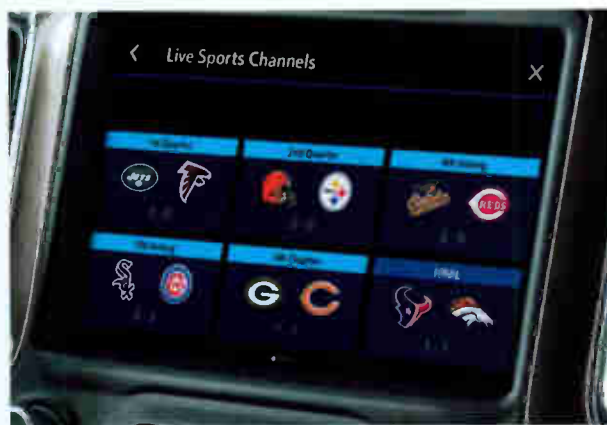
Top left
The Ram TRX 1500. The 360L feature made its debut in Ram trucks in 2019.

Top right
Missing a podcast? Users can find them here.

Middle
Pandora is a part of the 360L experience, and it allows listeners to create an "artist channel."

Below left
Listeners can access the official broadcasts for pro and college teams.

Below right
Some of the on-demand content available through 360L.



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Congratulations Roz! You are an exceptional professional and your passion and dedication to broadcast engineering are unmatched. Thank you for your leadership and contributions at CMG and in the media industry.



We could not be more pleased to see your hard work and dedication to our industry recognized. Thank you for your support and friendship over the decades.



Congratulations from your fans at GatesAir. Thank you for your continuing commitment to improving this great industry's technologies and workflows!



Congratulations, Roz and thank you for your ongoing contributions to broadcasting.



Your work has been like a magic act — doing 20 things all at once, including FM PPM and XPN-AM field testing with us, yet doing them incredibly well.



Your dedication to the ideals of the Society of Broadcast Engineers and devotion to high technical standards are reflected in your work and your service. The SBE salutes you.



Congratulations, Roz, on your many accomplishments in the radio engineering profession.



You share our passion for developing and delivering extraordinary experiences to the listeners of today and tomorrow. Well done, Roz.



You are an exemplar for your attention to your craft and your support of your peers. For all you've done and all you give to this cherished industry of ours, thank you.

RADIOWORLD

Writer
Steve Walker

Assistant chief engineer,
Radio One
Dallas



More Walker

The author wrote recently about his experience using Asterisk and FreePBX. At radioworld.com, search "FreePBX."

What's in your audio library?

Are your digital song files mismatched and overly compressed? We can help.

When our station KSOC (now KZMJ) became the first in Texas to broadcast in HD Radio, we knew that we needed to be on top of our audio quality in order to best take advantage of the new technology. But like many stations

we really had no idea where much of our music came from.

We knew that, although the songs in our playout system were all stored as uncompressed WAV files, at least some had originated as MP3 files. We wanted to find a way to identify those songs so that they could be replaced with pristine, uncompressed audio files.

It's important to use the best-quality source material for on-air broadcast, but especially so when you are broadcasting in HD. The GIGO principle applies: Garbage In, Garbage Out.

Kirk Harnack, senior solutions consultant at Telos Alliance, had this to say about broadcasting previously compressed source audio on an HD Radio station: "Audio that's been psychoacoustically encoded and decoded is now missing the 'low-hanging fruit' that the original encoder identified and eliminated or modified. If we cascade another psychoacoustic audio encoding algorithm after the first one,

the second encoder will not have the benefit of the natural audio's content that was easy to eliminate."

So it's in our interest and that of our listeners to ensure that the audio we broadcast, which will be processed by the HD Radio encoder, hasn't already been subjected to a lossy compression algorithm. With hard drive space as abundant and affordable as it is today, storage space is no longer a reason to obtain our music in a compressed format such as MP3.

But short of listening to every song in the library with a critical ear in a studio, how could we determine which songs had once been psychoacoustically compressed? All of our songs are now stored as WAV files so just looking at the file extension or the file size gives no hint whatsoever.

It turns out that there are certain clues visible in the spectrogram of an audio file that can help identify the formerly compressed songs. The most obvious one is the cutoff frequency used by the encoder.

When a file is compressed to MP3 format, the algorithm attempts to remove parts of the audio that the designers of the standard felt wouldn't be missed by the human ear in an attempt to reduce file size.

Part of this is the cutoff of all audio content above a certain frequency. That frequency varies according to the bitrate of the MP3 compression scheme.

From my tests, it seems that a bitrate of 192 kbps results in a cutoff of audio above about 18 kHz. A rate of 128 kbps cuts off above 16–17 kHz. This is easy to see when looking at the spectrogram of an MP3 song.

See Fig. 1. Notice that at 17 kHz, the audio levels of this file are already in the noise floor.

Looking at the uncompressed version of the same song in Fig. 2, we don't get to the -67 dB level until we reach the 21 kHz frequency range.

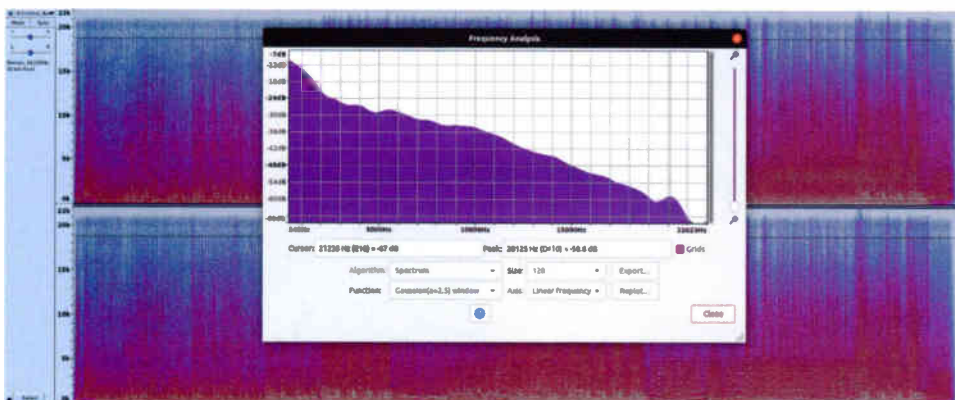
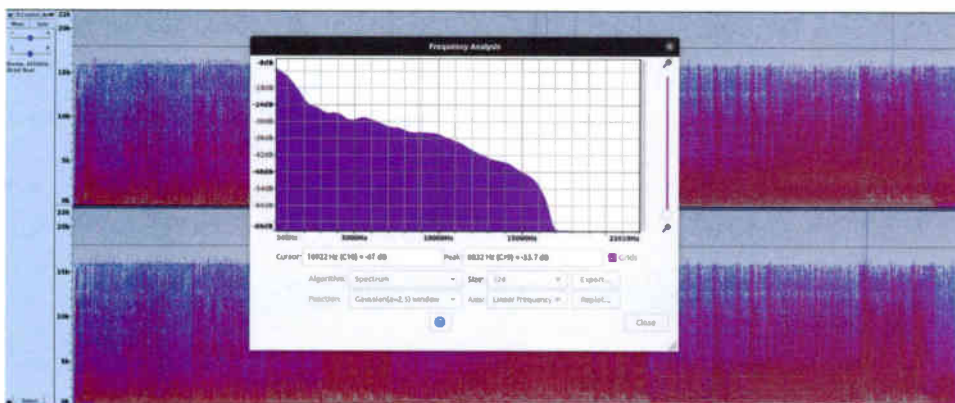
Put on your SoX

This finding allows us an opportunity to examine our library programmatically. There is a command-line audio utility called "SoX" (for "SOund eXchange") that we can use along with a scripting language to open files and examine their frequency content.

I decided to see if I could figure out how to use this utility to check out all our audio. The hope was that it would identify the songs that may have once been compressed so that

Top image
Fig. 1: Spectrogram of "Crystal Ball" by Styx as MP3

Bottom Image
Fig. 2: The same song, linear uncompressed.



we could examine these more closely and replace them if necessary.

I ended up with a Python script that loops through a folder with the audio files, opening each and using SoX to create a temporary file from the song after applying a high-pass filter at, say, 17 kHz. Then a second process takes the RMS amplitude value from this temporary file and compares it to a value previously discovered by experimentation. If below this nominal value, the file is flagged as a potential candidate for replacement.

These files can be examined manually with a program such as Audacity or Adobe Audition that offers a spectrogram view. The spectrogram can be examined and the file can be played in a controlled studio environment so that a determination can be made as to the need for replacement of the audio.

The line that creates the temporary high-pass-filtered audio file (filtered at 17 kHz) looks like this:

```
sox [original_filename] [output.wav] sinc 17k
```

The code that does rest of the heavy lifting (determining the RMS value of the high-pass-filtered audio file) is a little scary looking:

SP0016.wav	SNOOP DOGG	GIN AND JUICE	0.000612
SP0040.wav	EVE F/GWEN STEFANI	LET ME BLOW YA MIND	0.004500
SP0046.wav	50 CENT	P. I. M. P.	0.000049
SP0037.wav	JAZZY JEFF & THE FRESH PRINCE	SUMMERTIME	0.002358
SP0024.wav	FUGEES	READY OR NOT	0.001042

Above

Fig. 3: Any song with a value below 0.001 in the right column is suspect.

```
sox output.wav -n stat 2>&1 | sed -n 's|^RMS amplitude:[^0-9]*\([0-9.]*\)$|\1|p'>>./rms.txt
```

All this really does is take a look at the temp file (output.wav) and call up the stats of the file. Then the sed program searches the resulting statistical output for the phrase "RMS amplitude" and writes the numerical value of that stat to a file called rms.txt. The rest of the code, not shown here, inserts the name of the song or audio file alongside the RMS value of that file. We end up with a list that looks something like Fig. 3.

In this case, any song with a value below 0.001 is suspect. Subsequent inspection of those songs' spectrograms confirmed that they had a "flat top" at about 17 kHz, thus we know that, although they are WAV files now, they have likely been compressed at some point in the past. Those songs should be replaced with known linear audio.

It should be noted that at high bitrates such as 320 kbps, this method won't work as well because the frequency cutoff is close to 20 kHz. 🎧



More Info

If you'd like the complete Python script, email me at swalker@radio-one.com and I will send it along.



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Telos Offers a Streamlined Quasar

Telos Alliance introduced a streamlined version of its Axia Quasar AoIP surface.

The Quasar SR replaces the Axia Fusion in the company lineup and is part of the Livewire+ AES67 ecosystem. It uses the frame, power supply and master module of the original Quasar, but the fader modules are not motorized and there are fewer, larger and easier-to-reach buttons on each strip, which Telos said makes it easy for operators to use while also introducing cost efficiencies.

The surface includes a 12.1-inch touchscreen user interface so an external monitor is not required, though one can be used if desired via the external video output.

Expert Source Profile controls let power users set custom logic associated with each source. "The user can program GPIO control, mix-minus routing, talkback and other functions based upon console channel state," Telos said. Flexible Record Mode gives control of monitors, meters, headphone feeds, program bus assignments and other functions.

Show Profiles allow up to 4,000 console "snapshots" of settings, layouts and defaults. Auto mix-minus and automixing are available on all channels. Features include touch-sensitive encoders, faders and user buttons.

The model introduces a remote control option called Quasar Soft that lets broadcasters control the surface from an HTML5 browser. Quasar Cast, included as part of the Quasar Soft license, is a remote



monitoring solution that lets users listen to what is happening in the studio and on the air while they operate the console remotely.

And Telos announced availability of a free Quasar V2.0 Major System Update, which converts an original Quasar console to Quasar XR. This adds scalability and modularity, Quasar Soft and Quasar Cast, integration with Telos Infinity IP Intercom and support for planned accessory modules. The update makes Quasar more flexible for applications like working from home.

Info: telosalliance.com

Comrex Introduces Gagl

Comrex introduced a service that delivers conferenced audio from multiple contributors to the company's hardware codecs in high quality.

Called Gagl, the service is cloud-based and allows one to five users to send and receive audio from computers and smartphones.

"Participants can connect and send audio by simply clicking a link using any common web browser," the company announced.

"Their audio is conferenced (if there's more than one user), and delivered to a Comrex hardware codec such as ACCESS or BRIC-Link II. All participants can hear other participants, and the codec can send audio back to them."

Comrex says Gagl could be used as the hub for a round-robin reporting program or for a "morning zoo" radio show to support multiple simultaneous connections at once.



"Because it offers low latency, it's appropriate for call-in talk radio. Gagl could also be used to allow a single contributor to connect back to the studio from a computer or smartphone."

The service will be available by the end of the year.

Comrex said the system is easy for users of any level of technical expertise to use and that the service provides stable connections with limited bandwidth.

"Gagl uses the Opus audio encoder, with a bit rate that delivers both voice and music in excellent quality. Gagl also delivers audio directly to a Comrex codec with all the stability enhancements, pro-grade audio connections, and features that hardware codecs provide."

Info: comrex.com





WorldCast Connect Puts Kybio on Kubernetes

Kybio from WorldCast Connect is now based on Kubernetes. The company says this change will assure reliability in its cloud deployments.

Last year, a new "software as a service" licensing option was made available to users of Kybio network monitoring. WorldCast Connect now says it has created a major update to that SaaS service.

"After a rigorous benchmark of technologies to best meet Connect's need for more scale and performance, its SaaS version of Kybio is now powered by Kubernetes, the standard container orchestrator for cloud," the company stated.

Kubernetes is an open-source platform for managing containerized workloads and services.



WorldCast quoted Product Manager Julien Libeau saying, "Using Kubernetes technology radically changes the way our team and engineers work on the SaaS offer. It also adds significant added value for our customers in media and broadcast, especially by speeding up the time of deployment. They can literally have Kybio up and running in less than 10 minutes."

He said the cloud-hosting solution lets Kybio scale more easily because the architecture provides the correct amount of compute power needed for each customer, depending on usage and license size.

It said its in-house local software agent, EdgeBots, played a role in the deployment of this cloud infrastructure. "They bring the ability to combine on-premise remote monitoring with a full cloud environment," the company said. "The Kybio cloud offer is intended to be used in a decentralized network. By connecting EdgeBots with their remote network, users are quickly and securely connected to Kybio SaaS, offering high scalability for large network infrastructures."

The company is offering users have the opportunity to test Kybio SaaS with a free trial license for one month.

Info: worldcastconnect.com

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Mark Lapidus
is a veteran multi-platform media and marketing executive.



Build some buzz through boards

Radio stations too often view billboard creative just as a branding exercise

Above Times-Shamrock Communications ran this billboard series to highlight its Rock 107 format in a pandemic context. The Scranton-based station serves northeastern Pennsylvania, or NEPA.

So maybe you think you need to invest your entire brand advertising budget in digital/online/social platforms only. The music industry knows better. The new cutting-edge platform being used for many top-tier artists? Billboards!

It seems counterintuitive that great billboard advertising can get fans talking on social media, but it is a fact that the music industry noticed years ago.

Example: Drake's album releases and concert appearances have been promoted regularly on billboards since 2011. The campaigns are clever and sometimes only understood by his

legions of fans, which adds to his allure and makes one feel as if they're part of a special club of insiders.

More than ever, it's important to recognize that big billboards require big thinking. Out-of-home has always had the potential to be sexy, controversial and cost effective, but radio stations advertising their own product too often view billboard creative as a branding exercise.

To get the most out of your creative, it may be necessary to contract an advertising agency that specializes in getting attention.

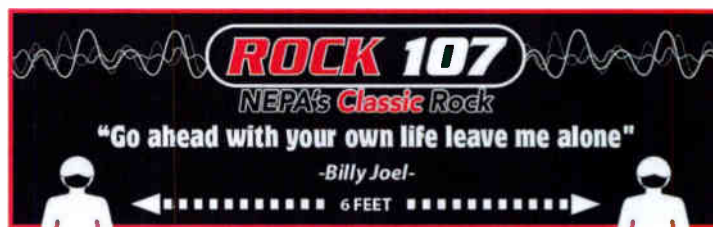
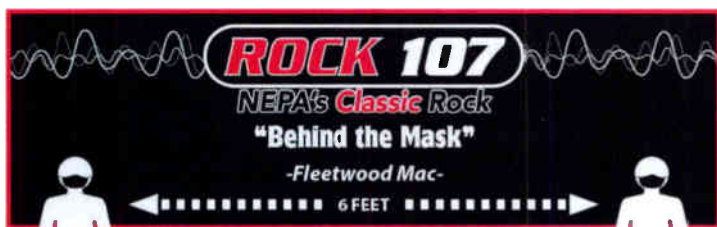
You should consider testing your creative. The message must be so simple that it can be understood from a moving car in just a few seconds and yet it still should generate some emotion as soon as it is seen. Fortunately, it's not difficult or expensive to test creative, either online or through in-person focus groups.

One challenge with billboards is that it's difficult for some folks to see the creative on a computer screen and then try to imagine what it will look like when it's blown up to huge proportions and seen from a

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

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distance. When in doubt, make one board, put it up, and rethink before making 20 of them.

If you're still not sold on the relevance of outdoor advertising, consider the success of Apple's and Amazon's recent campaigns. "Shot on iPhone" shows rotating selfies on digital billboards. The creative shows off Apple's smartphone camera features and the quality of the imagery is gorgeous, proving without a doubt that new iPhones take terrific photographs.

The hashtags are taking the campaign from the boards to social and back to the boards to see more. Amazon is using motion to grab attention. Passersby in New York are now seeing otherworldly creatures appear to jump out of gigantic billboards in promotion of Amazon's new "Wheel of Time" series.

You won't be able to afford to cover your entire city by buying up boards everywhere, but you can place ads on boards where you have the most potential for growing audience.

Or maybe your entire goal with a board or two is to gain the attention of a specific company, media outlet or

even individual. The movie industry is famous for placing boards where stars and producers can see them so that the star will do more appearances to promote the film, or the producer will see that the studio is actively advertising the product.

Billboards are the perfect place to launch stunts and fortunately, digital boards can go up and come down quickly. Capture reactions of social media and amplify on-air and all your platforms. If your stunt is good, the action will catch fire. Putting out that fire is a topic for another day! 🌶️

“More than ever, it's important to recognize that big billboards require big thinking.”

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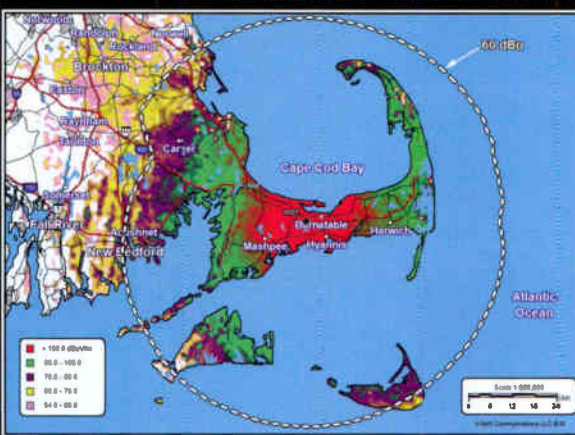
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Gordon Smith reflects on his tenure

He also offered nine lessons from his career as a senator and association head

Gordon Smith was true to his reputation as a pragmatist in his final State of the Industry remarks in November. His talk also provided some insight into why he is regarded as historically one of NAB's most effective leaders.

Smith, a Republican former U.S. senator, will leave his position as president/CEO of the National Association of Broadcasters at the end of the year; Curtis LeGeyt will succeed him.

Smith gave his talk online, because the NAB Show and Radio Show were both canceled this fall. This text has been edited for length.



“ Treat others well. This is a key ingredient to strong advocacy. ”

While this is not how I had hoped to share my final state of the industry address with all of you, know that we are building towards a strong NAB Show in April, and I look forward to seeing all of you there where we can continue focusing on building a thriving and vibrant industry.

There's never been a more important time to be a broadcaster — in the past 20 months, perhaps more than any other time that I can recall, your role has been invaluable. You have been there for your communities — keeping them informed, connected and safe during this time of uncertainty. And your advocacy team at NAB has been committed to ensuring local stations have the support you need to carry out your vital mission of serving your communities during this critical time.

From delivering on critical pandemic relief and paycheck protection to standing up to the Big Tech giants, we are sending a strong message to Congress and the FCC that the vital role of broadcasters and the local journalism they provide must be upheld.

In thinking about what I wanted to say to you today, I couldn't help but reflect on my journey to Washington, D.C., how I built a career in politics, and how I found myself at NAB.

Many of you know that I was born in Pendleton, Oregon, to a father who processed peas and who worked for President Dwight Eisenhower, and a mother whose maiden name was Udall. So, in some sense, I was born to the battle

of peas, policies and politics — and I've loved every minute of it. I've loved my life and I've loved my time in this great city.

I remember vividly when I was eight years old attending the 1961 inauguration of John F. Kennedy. Our cousin Stewart Udall was becoming the president's secretary of Interior, so it was an especially exciting day for my family.

That day reached deep into my soul — and it wasn't just the president's clarion call to a new generation of Americans to ask not what your country can do for you — ask what you can do for your country. The whole occasion struck me as something to aspire to and value.

From that day on, my professional ambition in life was to become a U.S. senator. I feel blessed and humbled to have achieved that dream. And I will admit to you that I was extraordinarily disappointed when the voters of Oregon did not elect me to a new term in 2008. It

was not long thereafter that I was hired by NAB. It was a time in my life I was somewhat lost. But in a divine turn of events, broadcasting once again gave me an anchor in public service.

During my childhood, I had served as a paper boy for two Washington papers — the Washington Star and the Washington Daily News. I became a news addict and read all the headlines and stories. I would come home and ask my mom if she had seen the same stories. And, she'd often say, "Remember, Gordy, the best way to ruin a good story is to hear the other side."

I never lost my passion for politics and hearing the other side. As I reflect on my time in politics and at NAB, a movie from the 1960s called, "A Funny Thing Happened on the Way to the Forum" comes to mind. This humorous movie has several themes — but the ones I remember most are how unexpected life can be and sometimes it's the journey of discovery that matters most.

So, if you can humor me for just a few minutes — I'd like to tell you my side of the story — what I've learned on the way to the forum so to speak. And, how these lessons have led to many of our successes as an association.

1 Never be afraid to negotiate. President John F. Kennedy once said, "Let us never negotiate out of fear. But let us never fear to negotiate." Negotiating is important — it's engagement. If you're going to lose something, get something.

This has been our winning strategy behind the performance tax issue. Our engagement on the Hill is to talk, negotiate and deal to be in the game — stopping legislation that we deem harmful to our listeners and viewers, and shaping other legislation to advance and protect the interests of broadcasters.

There is also a saying that comes to mind that Eddie Fritts used a lot — there are no permanent victories and no permanent defeats in democracy. When you have to win something, you also have to lose something.

2 NAB should never register Republican or Democrat, but as human, local and American. We uphold and defend American values, such as factual journalism and the First Amendment. Neither party satisfies 100% of our issues. We need friends on both sides of the aisle.

3 Spend money on the possible — prioritize our issues. Focus on likely outcomes. When I first came here, I was handed a book of legislative issues that was about 50 pages long. I was asked what I thought about the book. I said I thought it was all very interesting, but you're not telling me what's important and what isn't. There were probably only three main issues. My point is to prioritize — be a rifle, not a shotgun.

4 Invest to thrive, not just to survive. Invest in our future. Investing in new technologies, such as Next Gen TV and hybrid radio, not only provides audiences with more choices and a better viewing and listening experience, it also underpins the values we hold so dearly as broadcasters — keeping our citizens connected and informed with the news they can trust — anywhere they are, and always for free.

5 No matter how many conflicting interests we have (cable, satellite, terrestrial vs. streaming) NAB must always speak for free over-the-air, local broadcasting. If NAB doesn't, nobody else will.

This mission unifies our industry. Whether you're in radio or TV, a network or affiliate, urban or rural, large or small, we have more in common than in difference. And, we will always be stronger with a unified message on Capitol Hill.

6 Our PAC and grassroots are vital advocacy tools that we should continually tap into. We have many other tools in our toolbox. Broadcasters' nuclear bomb is our airwaves, but it must be used judiciously as should our other tools.

Consider your tools, tone and timing.



How to submit

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

7 Hire the best, not the most. Good people equal good policy, which equals winning in politics.

Treat others well. This is a key ingredient to strong advocacy. If you're likable, a good person and have strong policy arguments, you're going to win. Good business equals good policy on Capitol Hill.

8 Reflect the values that underpin an FCC license — civic engagement, relief, rescue, community decency, local focus, fair, diverse, journalism.

Edmund Burke was an English parliamentarian who supported the American revolutionaries. Upon looking up from the Westminster floor where he was giving a speech, he remarked, "there were three Estates — but in the Reporters Gallery yonder, there sat a fourth Estate more important far than they all."

At the time, the first two estates were the clergy and the nobility. The third was commoners, or the people. For us, it's the presidency, the Congress and the courts. The Fourth Estate is still the press.

As the Fourth Estate, we reflect the values and integrity of our communities. We foster civic engagement and root out corruption through our factual journalism. That will never change.

9 Before you take a punch, anticipate the counterpunch. This will tell you whether it's worth it. Some things have to ripen, and you want to calibrate your punch when it's most impactful.


These are just nine lessons learned, and there is more I'd like to share with you, but I'm reminded of a story of former President Woodrow Wilson. Upon hearing of Wilson's Fourteen Points, French Prime Minister Georges Clemenceau stated, "Mr. Wilson bores me with his Fourteen Points; why God Almighty has only 10!"

Lest I surpass God Almighty himself, it behooves me to end at nine points.

I want to thank all of you for listening to my perspective throughout the years. You are not only trusted colleagues, but have also become dear friends. I have learned so much from being in the trenches with all of you. And, I know that NAB will continue to achieve great success under Curtis' strong leadership. He is the right person at the right time for this job.

Like you, my heart will always beat as a broadcaster — as a public servant.

NAB gave me a new way to serve, a way to be in public service, still — a way to utilize all the experience and training of those Senate years in the noble, public cause of broadcasting.

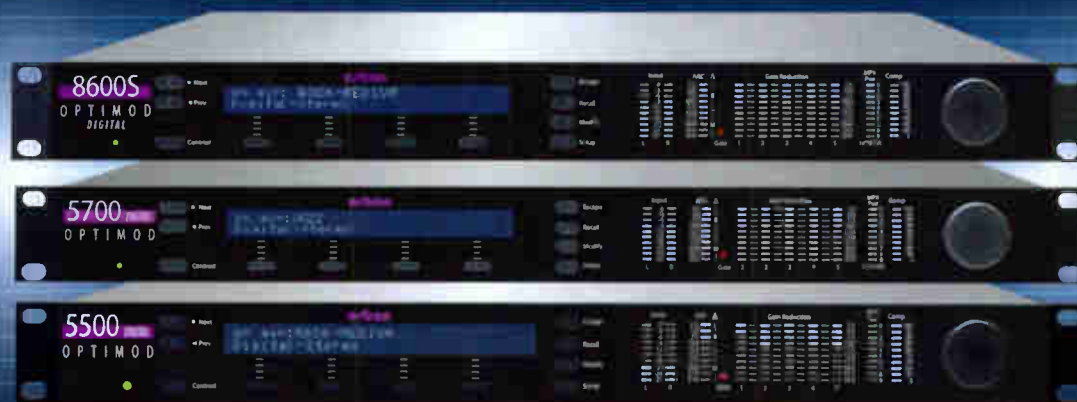
To look back too often at any of life's chapters, with nostalgia or lament, rather than looking forward to the future with vigor and purpose, is to surrender to old age and regret. Together, we have not surrendered. We have won. Thank you. 



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