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Radio's biggest business challenges

Six experts took our questions

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WBA salutes Steve Brown

Wisconsin state association honors longtime Woodward engineer

Paul McLane
Editor in Chief

Broadcast engineer Steve Brown will be inducted into the Wisconsin Broadcasters Association Hall of Fame.

Michelle Vetterkind is president/CEO of the WBA, a state association that knows how to celebrate broadcast engineering. In the announcement she described Steve as a career engineer with a reputation for giving back and thinking of the future.

He's also part of an increasingly rare breed, an engineer who has spent virtually his entire career with one local radio broadcasting company. He began as an announcer/engineer with Woodward stations WAPL(AM/FM) in the 1970s and soon was named assistant chief and then chief engineer before being named director of engineering in 1985.

He held that post until this January.

"When I was around 12 years old, I drove my parents crazy by dragging home big old console tube radios and 1950s-era TV sets to experiment with in the basement," Steve told me.

"At 14 I talked a kind old TV repairman into letting me 'work' for a dollar a day, stripping old TV sets for parts and watching his store while he went on service calls. At 16, a friend got me a beginner's job at a 'real' TV repair shop at minimum wage."

In high school Steve took electronics vocational courses; at 17 another friend got him into a starter job at WAPL operating the board for baseball games and DJing the weekend overnight hours.

"Eventually I worked almost every job in what was then a very small radio station, working my way through college that way. The day after I graduated, I was offered a combination job as relief DJ and assistant to the chief engineer. And the hook was set."

> **"At 14 I talked a kind old TV repairman into letting me 'work' for a dollar a day, stripping old TV sets for parts and watching his store."**

THIS ISSUE

NEWS
3 From the Editor
5 What are radio's biggest business challenges?

FEATURES
10 Crash? What crash? Let's fix this
14 In Illinois, a blast from radio's golden past
22 Wheatstone sees an industry in transition
26 I audited our metadata and here's what I found

BUYER'S GUIDE
30 The LiON brings big-market sound to FM translators
32 Optimod 5950 drives home the sound of WCKC

OPINION
37 Readers' Forum

World Radio History

Over the years Steve earned a master of science degree in engineering management from the Milwaukee School of Engineering, as well as a bachelor's degree in economics and an associate's degree in science.

He retired from Woodward this January, but still consults to the company.

A bio from the WBA described him as "a broadcast engineer who's focused on giving back to his industry, cultivating relationships, and building a future for broadcasting on a local, state, and national level. ... Known as an 'engineer's engineer,' Brown earned a reputation for being able to interact with all personality types and explain engineering issues in practical and relatable terms."

He helped launch the Fox Valley chapter for the Society of Broadcast Engineers and has served in many roles for the society since 1982. He has been a Chapter Engineer of the Year, served on the national board for two terms and was elevated to SBE Fellow in 2023.

Above
Steve Brown

Woodward Radio Group General Manager Kelly Radandt said of him then that Steve "is able to interact with all personality types. From sales to programming, he is able to describe the 'why' in very relatable terms and consistently demonstrates patience with people."

Brown also has worked with the Wisconsin Department of Workforce Development to develop a youth apprenticeship pathway for media broadcast technicians, to train high school students in broadcast engineering.

At its Hall of Fame event in June, WBA will also induct Matt Lepay, Patty Loew and Dave Robinson. Congrats to them as well.

But when broadcast groups and associations make the effort to recognize broadcast engineers, I celebrate. So well done, WBA, and well done, Steve Brown. Thanks for all you do for our industry.

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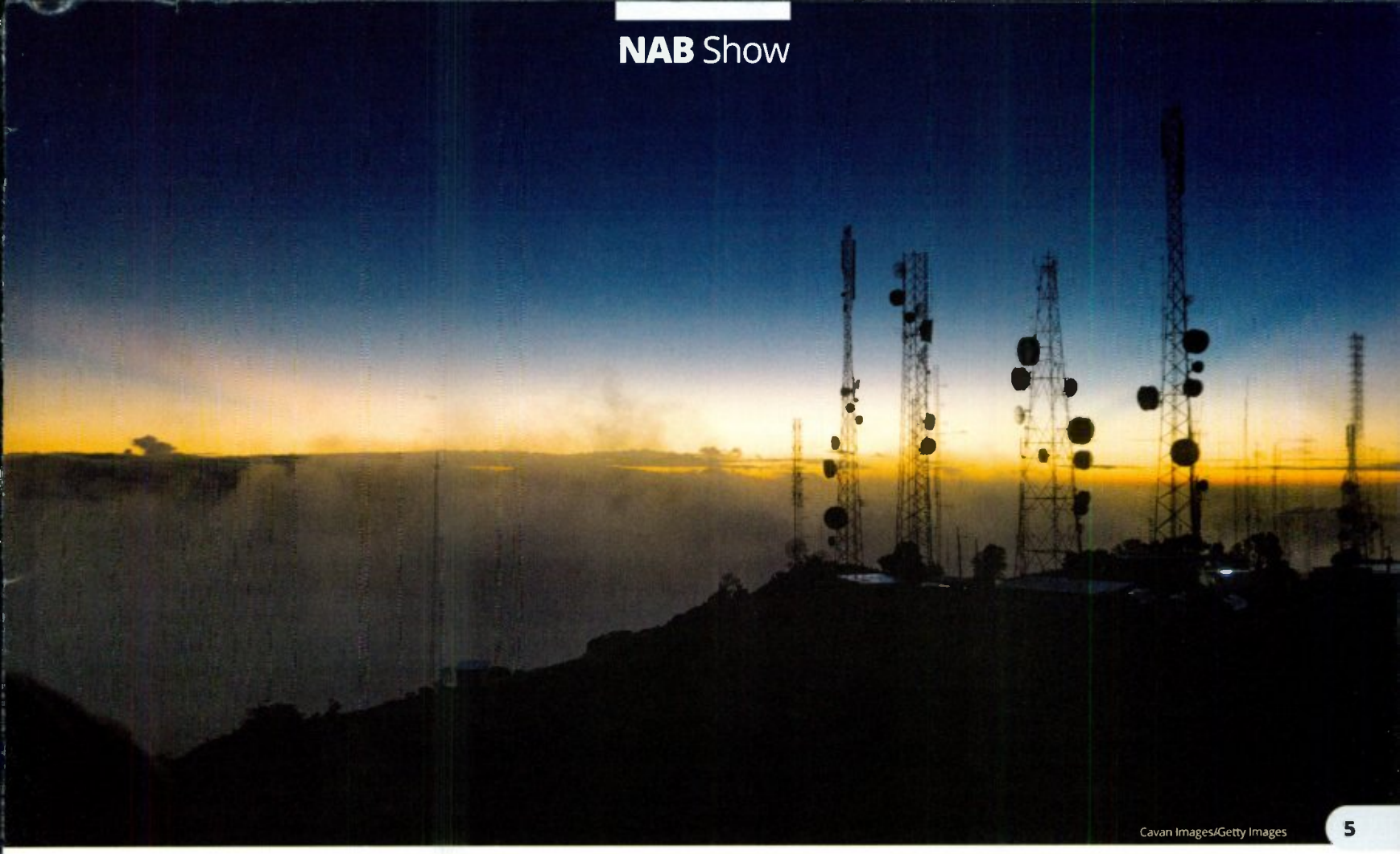

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Writer
Paul McLane
Editor in Chief

What are radio's biggest business challenges?

We asked six experts and queried them about new technologies too

Heading into the NAB Show, what are the most important business issues facing U.S. radio owners and executives? We asked six experts.

"Continuing to keep our over-the-air broadcast relevant for both advertisers and audiences by incorporating new technology platforms to our value offering and compete with other digital content media outlets," replied Felipe Chávez, COO of Bustos Media.

For consultant Mike McVay, "The challenge ahead is shifting radio, as a part of legacy media, into being an integral part of multitier media campaigns. Impressions is important and it's nearly impossible for an audio medium like radio to accurately validate reach. The results must come from selling services, merchandise, products and influence."

Rhonda Lapham, market president of iHeartMedia for Cape Cod and Providence, said, "There are lobbying groups focused on issues like taking free over-the-air broadcast radio out of cars. This would make it harder for us to serve our communities, which is our mission, as well as harder for FEMA to reach people with critical lifesaving information.

"Broadcast radio is the only medium licensed by the federal government to serve America communities; it's our most important priority. Anything that would make that harder, or make it harder for our communities to easily access free, over-the-air broadcast radio, is a concern for me," Lapham said.

Chad Lopez, president of 77WABC and Red Apple Media in New York, wants to correct a narrative that radio is dead. "This has had a trickle-down effect from advertisers, to agencies, all the way down to how investors see us," he said.

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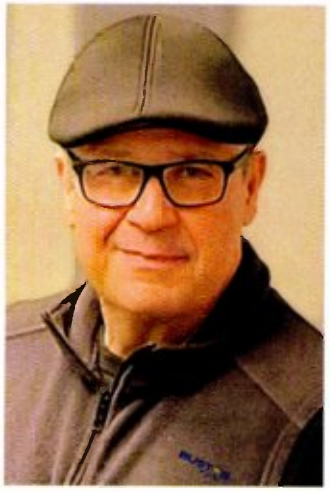

From left: Felipe Chávez, Rhonda Lapharn and Chad Lopez

"The days of high multiples are gone. Correcting the narrative is essential for radio groups and owners. The audio medium may be challenged by the ever-growing number of other media distribution choices and what's going on with AM radio in electric cars. However, when you have station owners and groups that invest in the product, you see positive results in ratings and revenue follows.

"From small businesses to large, when ownership invests in their product, so will Wall Street."

Technologies

Rick Ducey, managing director of BIA Advisory Services, says several technologies are worth watching for their possible impact.

"First, the FCC's recent move to approve over-the-air geotargeting of content, including ads, for several minutes per hour will provide the option for local radio stations to get into the geotargeting business," he said.

"While the NAB and some broadcast groups see downsides, we believe the option to offer broadcast geotargeting is a positive, and this is supported by brand and agency studies, engineering studies and BIA's own revenue forecasts."

He also pointed to the critical role of the in-car environment. "Making more innovative uses of in-dash display technology for both synchronized (to the audio) and non-synchronized (i.e., not related to the audio) ads, displaying other data such as sports, weather, traffic, local interest data in text scrolls and graphics, using QR codes and other innovation applications for HD Radio and RDS analog receivers will add strong value for audiences," Ducey continued.

"And third, the work Xperi is doing with DTS AutoStage to bridge the linear broadcast and connected car experience is a path to future business models for local radio groups as auto OEMs increase their adoption of this tech."

Ducey thinks generative AI is only beginning to deliver on its expectations. "That said, it is a high-value impact for sure. GenAI will be extremely valuable for content creation and editing including news, sports and commercial content. Of course, GenAI is a tool that must be designed and managed well to provide the best outcomes and minimize unintended negative consequences."

Mike McVay agrees that "We've only begun to scratch the surface of AI's abilities — improving commercial content, upgrading radio websites, providing talent with more content, and enabling promotion departments to be more efficient in reaching potential listeners. AI is a tool, but it's not the medium itself."

Said Rhonda Lapham of iHeart, "AI is an important new platform that has and will continue to add great value to our industry in many ways, both for our products and how we operate. This new technology will help us improve and streamline day-to-day activities, from prospecting for new clients to researching and preparing for pitches, scanning and summarizing documents. We'll be rolling out our own iHeart-specific AI solutions to help our internal teams use AI effectively."

Chad Lopez of Red Apple Media takes a cautious view about using generative AI on the air, especially for formats that require active listening such as news, talk and sports.

"The product on all formats, however, suffers. A computer is not going to generate the human element of interaction and intimacy, which is exactly what makes radio a terrific medium for not only reaching but influencing

> **"Anything that would ... make it harder for our communities to easily access free, over-the-air broadcast radio is a concern for me."**

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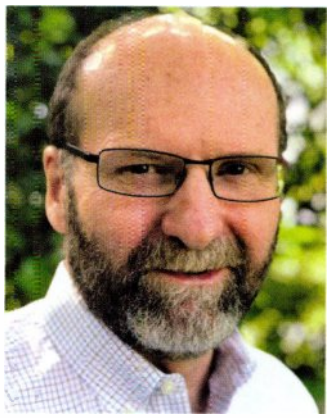
audiences. This is what we need to push, over and over again, in our dialogue with advertisers, agencies and investors.

"In terms of running a station, automation can run a board, but you don't get rid of the people. You move them into content creation. You need the human element to know if what's being said is of interest to the audience. We need to learn how to use automation to our advantage and enhance the product by freeing those employees to focus on creating additional content that our listeners are yearning for."

Lopez said streaming and digital assets can give advertisers more avenues to reach listeners and combat the image of radio as an "old" medium.

Felipe Chávez of Bustos Media says AI has proven useful in some areas such as copywriting and translation, though he would like to see more applications that specialize in Spanish-language radio. Looking beyond AI, he said, "Digital FM asymmetric power operation is another interesting topic to increase the reach of the station's HD channels to new audiences. We are also watching with great interest the FM booster geotargeting capabilities."



Above
Mike McVay, Nicole Ovadia and Rick Ducey

What next?

Over the next several years, what will be the most important change in this business?

"The most successful radio companies will continue to evolve into marketing companies," McVay replied. "In this way it is a regression to when we sold products and services. The purpose of attracting the largest audience is to expose those products and services in order to increase revenue for our advertising clientele."

Rick Ducey's colleague Nicole Ovadia, vice president of forecasting and analysis at BIA Advisory Services, said programmatic advertising — "featuring self-serve on-boarding to tap into the long-tail SMB market, where there are millions of potential accounts" — is critical for both OTA and digital ad inventory.

Also, she said, "Managing and where possible reducing debt leverage and creating more favorable capital structures is critical. And first and foremost, create products and services that audiences and advertisers want."

Chad Lopez hopes the industry will embrace the intimacy that other media cannot replicate.

"There are many ways to get in front of your audience digitally; however there is still an appetite for that connection that only radio provides. Radio needs to get back to grassroots strategies. Whether it comes down to events or doing live remotes, we need to create experiences on radio, inside the station and out."

He wants radio to get smarter about building connections with younger consumers.

"Many subscribe to the notion that people under 30 don't want to work in radio, let alone AM radio. We are building a younger audience [at Red Apple], and that should be an important topic for everyone in radio. Part of building a younger audience is building a younger staff that is invested in the medium."

Said Rhonda Lapham, "I feel that radio will continue to evolve and discover new ways to be where consumers are. Delivering information and entertainment when and where consumers want it and how they want it.

"Not knowing what the future has in store in terms of technology, I do know that our industry can pivot and evolve right along with it, it always has," she concluded. "Look at the role digital has played for us [at iheartMedia]. Digital has substantially added further radio listening, it's additive listening for us. We are agnostic as to which device listeners want to receive our content on."

> **"[AI] will help us improve and streamline day-to-day activities, from prospecting for new clients to researching and preparing for pitches, scanning and summarizing documents."**

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John Bisset
CPBE

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

Send your tips

Workbench submissions are encouraged and qualify for SBE recertification credit. Email *johnpbisset@gmail.com*.

Above
Master Control at WPEN in Philadelphia.

Crash? What crash? Let's fix this!

Doug and his toolbox save a session despite a little adversity

Doug Fearn, K3KW, tells a story about a toolbox.

But first he wanted us to see this throwback photo that he took at WPEN(AM). It shows the old Master Control room, built by RCA in 1947.

Doug started working at the station as a senior in high school. He says that when he got there, the studio had changed little since the 1940s except for the addition of a rack with three cart machines, newer turntables and three Ampex tape machines (note the bank of remote start controls to the operator's left).

Doug notes that this was before the days of "combo" operation; the station's announcers had a cough switch and talkback button, but an engineer ran everything else.

Later Doug would supervise construction of new studios up the road in Bala Cynwyd for WPEN and sister station WMGK(FM), both owned at the time by Greater Media.

But Doug wrote to us to share a memory prompted by our discussion of toolboxes. In 1978 he was driving home from his recording studio with a console power supply in his trunk. The supply was defective, and Doug was taking it home to fix it ahead of an important recording session.

But he never got home that day because his car was struck by a vehicle driven by a drunk driver. Doug woke up in a hospital suffering from multiple injuries.

Yet that console had to be operational for the upcoming session. So once he had his wits back, Doug — from his hospital bed — asked one of his employees to go find his car and bring that power supply to his room, along with a metal toolbox Doug kept in the car.

His employee found the mangled Volvo and brought back the supply and the toolbox, and yes, Doug then proceeded to repair the supply on his hospital bed!

And the recording session went on as scheduled, even though Doug himself wouldn't be discharged for another two weeks.

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Crazy, maybe! Yet I'm sure every engineer reading this will take pride in how Doug handled this experience. Because we always get the job done!

As for the toolbox, Doug did his best to pound it back into shape, though some of its welds and seams were broken in the car crash. The toolbox, along with its dings, now lives under his workbench, holding tools that he doesn't use often. It serves as a reminder both of that awful accident but also how the box and its tools helped him save a recording session.

Bill's "Go Bag"

Bill Moede recently retired from Cumulus, where he took care of a cluster of 11 stations and two translators spread around most of northeastern Wisconsin.

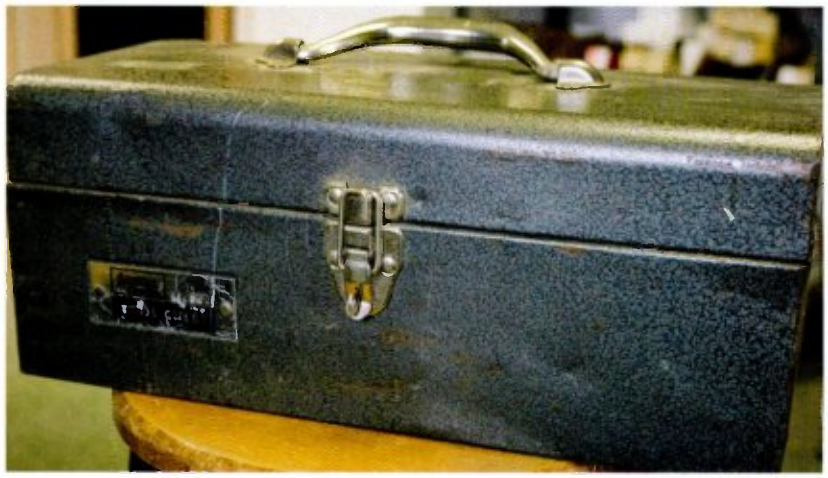
He says that in addition to a toolbox, he kept a "Go Bag" in his truck containing a change of clothes, a backpacker's compact sleeping bag, protein snack bars, a first aid kit and an envelope with emergency cash. He also kept a case of bottled water in the truck.

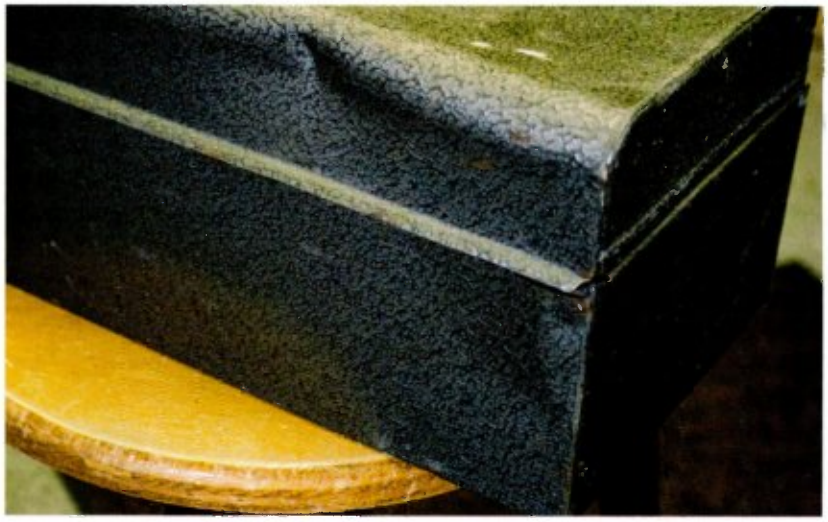
We tend to think first about the tools we plan to use for a given job, but we should also be prepared for the unexpected, especially when we service stations over any considerable distance. Congratulations, Bill, on your retirement, and thanks for reminding us of these important items.

Keep a list

And San Francisco's Bill Ruck wraps up our column with a reminder that's helpful for everyone but especially contract and project engineers who own their tools.

Over the years Bill has had to replace tool bags that had been stolen, so he got in the habit of creating an inventory to help himself in the event he'd have to file an insurance claim later. Bill writes a list for each box describing every tool, its SKU or part number, its manufacturer, the date purchased and the cost.





Top
Doug Fearn's trusty metal toolbox.

Above
Warts and all, the toolbox is still in use.

Let's face it, tools are expensive. Protect yourself by making a list of what you own.

As to size, Bill has used larger boxes, but found that when filled, they get almost too heavy to haul around. Nowadays he limits himself to a smaller bag that is more convenient to carry. He keeps bigger construction tools in drawers in his van. Several large transport cases hold hardware, wiring and soldering supplies.

The U.S. Navy taught Bill the importance of using the proper crimp tool, so he keeps a large selection. In fact, if he is working on something and doesn't have the manufacturer's recommended crimp tool, he will buy it. As far as individual tools, Bill recommends the Klein 32500 Multi-Bit Screwdriver/Nut Driver 11-in-1 set, which includes Phillips, slot, square and Torx bits plus nut drivers. This single, high-quality screwdriver can take apart most anything. Bill also learned to leave Harbor Freight straight slot and Phillips screwdrivers at his various transmitter sites, just to minimize trips back to his van.

Yet no matter how organized you are, Bill adds, there will be times when on the top of the mountain you will find yourself saying: "If I only had that one other tool." RW

> **"Bill Moede's 'Go Bag' contained a change of clothes, a sleeping bag, protein snack bars, a first aid kit and emergency cash."**

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Writer

James Careless

Longtime RW contributor wrote about "Wait Wait ... Don't Tell Me" last month.

In Illinois, a blast from radio's golden past

Old-Time Radio Antioch is an online network celebrating radio's Golden Age

ABN Old Time Radio takes amateur OTR playout to a standard worthy of NBC back in radio's Golden Days.

The show, produced by Antioch Broadcasting Network and found at *https://radio.macinmind.com*, runs on a fully automated 24/7 schedule, with daily blocks dedicated to family comedy, frontier stories, detective stories, science fiction/spy stories, and game shows. There are also dedicated hourly slots for popular programs such as "Suspense" and "The Whistler," which deliver chills even in this jaded Internet Age.

Every show has been processed to reduce hiss and clicks and maximize audio fidelity. In a bid to make the experience as realistic as possible, shows are selected to coincide with their original date, so if you are listening on April 15, shows being played will be from April 15 in previous years.

Above
Jay Lichtenauer

ABN adds license-free music to fill gaps, period commercials and a three-note interval identification reminiscent of the famous NBC Radio signal. It is an immersive blast from radio's golden past.

"Station of the Imagination"

It isn't hard to imagine the station broadcasting from an Art Deco low-rise of the 1930s, with spacious, elegant studios and control rooms, and with legendary stars wandering its halls.

ABN actually is housed in the basement of Jay Lichtenauer, its owner, creator and curator, who lives in Antioch, Ill., a mile from the Wisconsin border.

When he is not acquiring tapes of OTR shows and cleaning them up prior to digitizing for playback, Lichtenauer is running *MacinMind.com*, a software business serving Mac users. His custom-built programs include radio automation software Radiologik, which is used to play the content and to run low-power FM station WFEL in Antioch, licensed to a local Lutheran church.

Birth of ABN

How did Lichtenauer develop this interest?

"I became a ham radio operator," he said. "And some 20 years ago, I went to a hamfest and bought a 1930s-era Stromberg Carlson console radio that worked for an astonishing $20. When I got it home, I was listening to it and thinking, 'Modern radio content on the AM band does not fit this radio.' So I started to collect OTR shows to broadcast."

That was in 2003. Because he worked in software, it only made sense for him to make the content available online. First he did so on his home computer, then he moved ABN streaming to a dedicated distribution service to keep up with demand. Online listenership around the globe can go as high as 2,000, depending on time of day.

You can hear it online via its stream and through aggregation services such as iTunes and TuneIn. If you want to listen on AM radio, you can hear ABN at 1610

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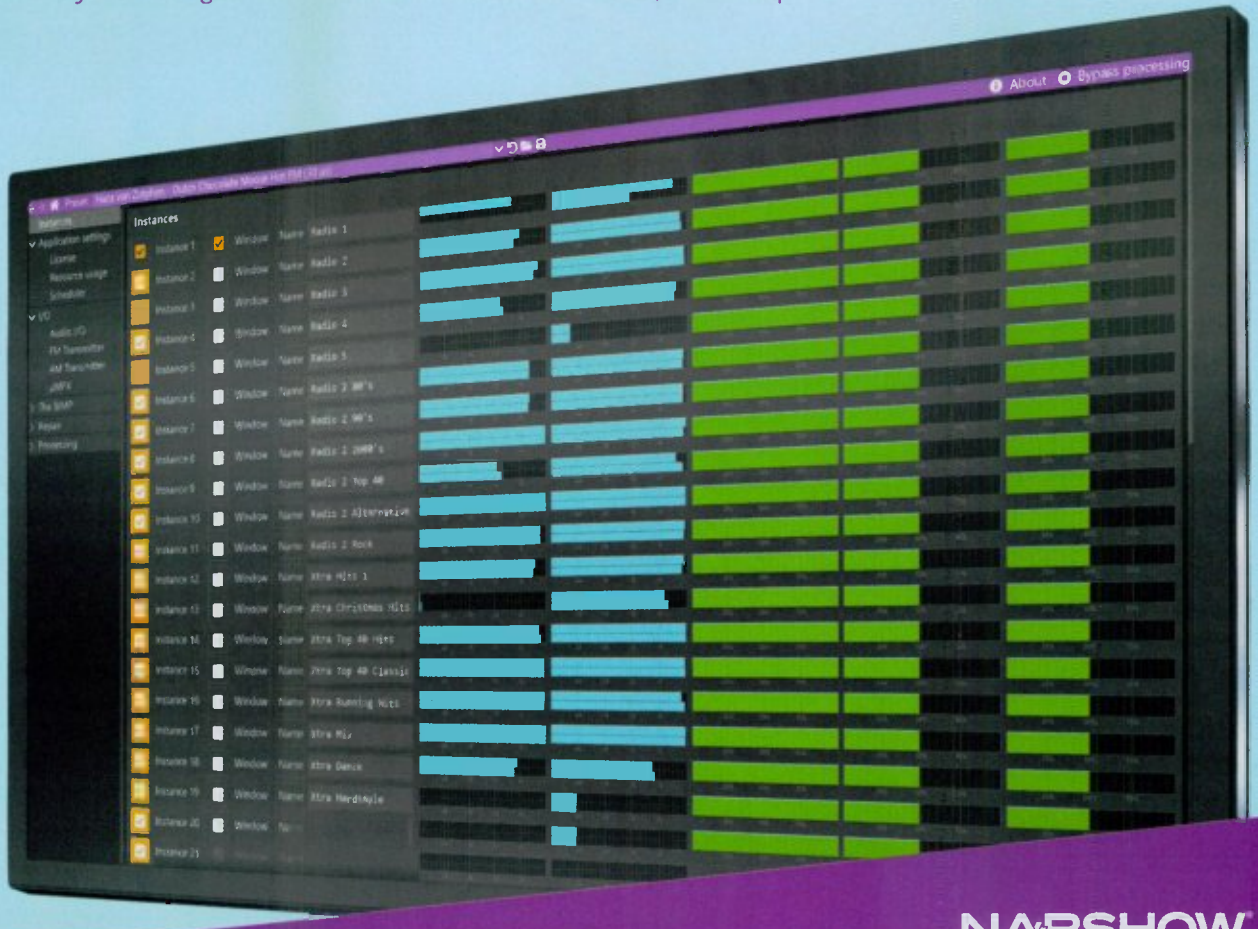

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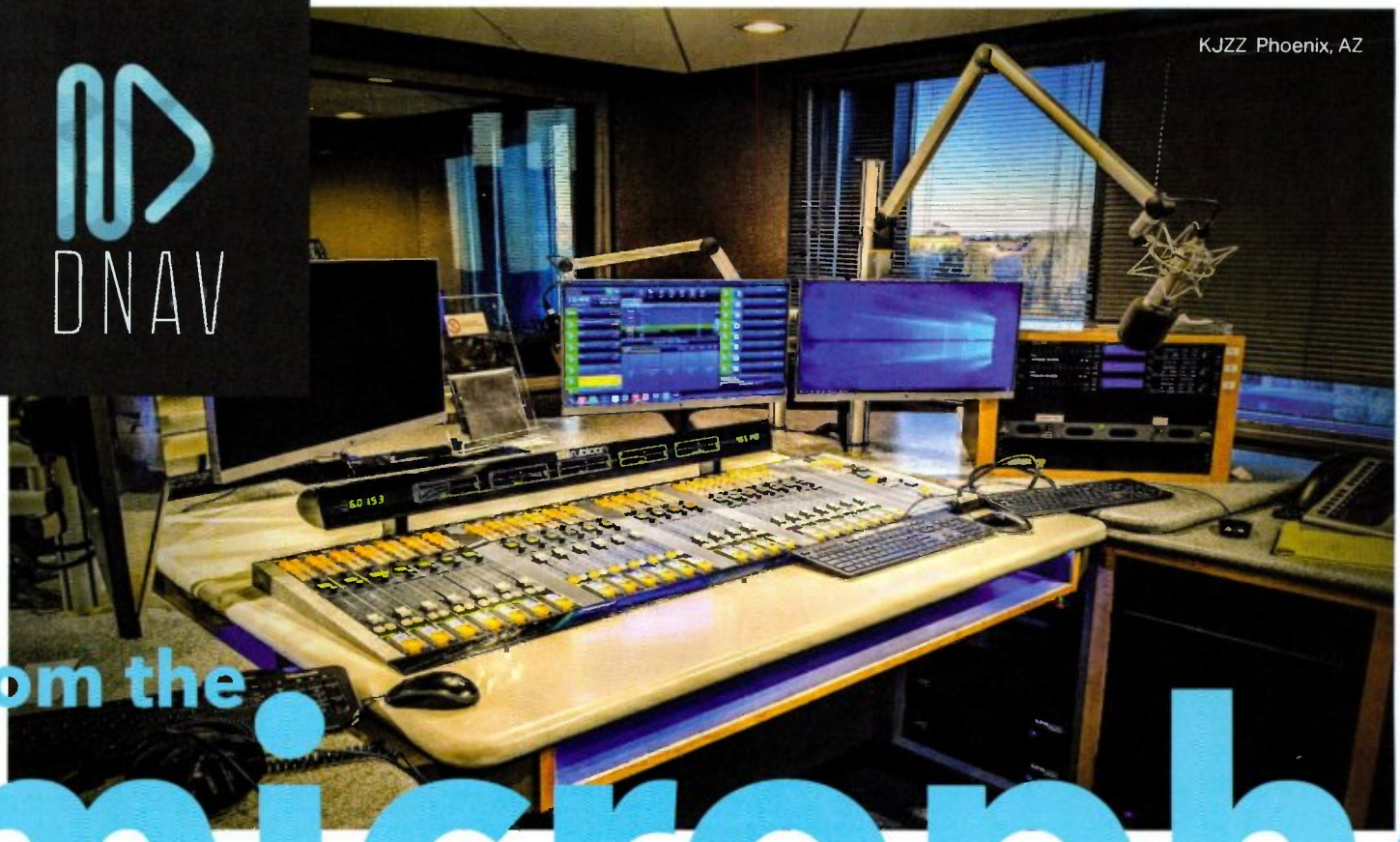

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Good Karma Brands, owner of WTMJ News Talk Radio, WKTI Milwaukee ESPN Radio Affiliate and WGKB "The Truth" was consulted by DNAV for design and integration of their new flagship facility in downtown Milwaukee.
Flagship and syndication studios for the Milwaukee Bucks Radio Network and the Milwaukee Brewers Radio Network are housed alongside cutting edge video, podcast and streaming studios.

Good Karma Brands New Facility Milwaukee, WI

CBS News Radio chose DNAV to team with the well respected CBS News Radio Engineering Department to design a cutting edge news delivery facility at the CBS Broadcast Center in New York City. Through a collaborative design-build project that focused on precise deadlines and critical requirements, DNAV delivered the new facility ahead of schedule, allowing news gathering and broadcasting staff to deliver critical content to millions of listeners each day.

CBS News Radio, New York City

pne

DNAV was chosen as the consultant and technical integrator for the rebuild of KJZZ, KBAQ and Sun Sounds, a public reading service for the blind. The project required extensive planning to streamline removal of thousands of feet of existing cabling, installation of 32,000 feet of new cabling and a balance of upgrading technology without affecting the award-winning quality of on-air broadcasts.

The reimagined broadcast facility includes primary and redundant studios for on-air, alongside production facilities and a dynamic newsroom to streamline broadcast and podcast capabilities.

KJZZ / KBAQ Phoenix, AZ

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kHz — but only if you park outside Lichtenaeur's house. He broadcasts AM using a micro-power Rangemaster 1000 Part 15-compliant transmitter that provides enough power to deliver OTR to the antique and crystal radios in his home.

Production

At the J-shaped desk that is ABN's studio, he has an M1 Mac mini running ABN on Radiologik software. Three other computers help him edit and store content, while a venerable Teac X-300R reel-to-reel tape recorder/player is used to access programs from his tape library. ABN has thousands of tapes in its collection, kept in a separate room.

Beyond the professionalism of its presentation, one of the most striking things is the audio quality of its OTR shows. Unlike vintage shows on many websites, these tend to sound clean, clear and noise-free.

The fidelity is no accident. "I record whole sides of tape from the Teac to Apple Lossless files. I then cut the episodes into new files. Along with other acquired audio, I normalize, speed correct, EQ and reduce noise as needed."

Those files are saved as Apple Lossless or MP3 and copied into the station Mac's library so they are available for the automated programming selection.

"Radiologik DJ then plays those files, while Audio HiJack captures the audio and processes it for EQ, AGC, multiband compression and peak limiting. It then encodes the audio into MP3 to send to the offsite Icecast streaming server for listeners to be able to tune in."

The content — about 16,000 shows — comes from a variety of sources. "I've spent many thousands of hours collecting and working on restoring old-time radio shows I have purchased from different collectors in digital form," Lichtenauer said.

"A lot of the audio quality that was circulating years ago was very poor due to mistakes made at analog stages or poor digital encoding choices. Back in the years 2000 and 2001, there were some really bad encoders being used to digitize OTR shows that left hiccups in the audio."

Lichtenauer also relies on thousands of reel-to-reel tapes he has acquired from other collectors for content. "These guys are getting into their 80s, and many are getting rid of their collections," he said. Amazingly, most audio tapes that are 50 years or older still work on his Teac, even some had been stored in less-than-ideal conditions.

Above
ABN's tape library.

Listener-supported

Lichtenauer does the day-to-day production work that keeps ABN online, along with providing the software and hardware. He asks for donations on ABN's home page. His target is $6,500 a year from loyal listeners. Year after year, they make online donations to cover bills for streaming and internet access.

"It has been fully funded by listeners 100% and more ever since 2005," Lichtenauer said. As of late March, donations for 2024 were almost halfway to the annual goal.

Twenty years on, Jay Lichtenauer sees no reason why ABN can't keep streaming OTR shows for decades — even after his own demise.

"All the work I put into this is cumulative, so there's no real daily activity for me to have to do to keep it up," Lichtenauer said. "If I totally ignored it, it would be fine, except that new content would not be added to the system."

Of course, with 16,000 OTR shows cleaned up, stored and ready for automated playout on the Art Deco Station of the Imagination, this isn't much of a problem.

> **"When he is not acquiring tapes of OTR shows and cleaning them up prior to digitizing for playback, Lichtenauer is running *MacinMind.com*."**

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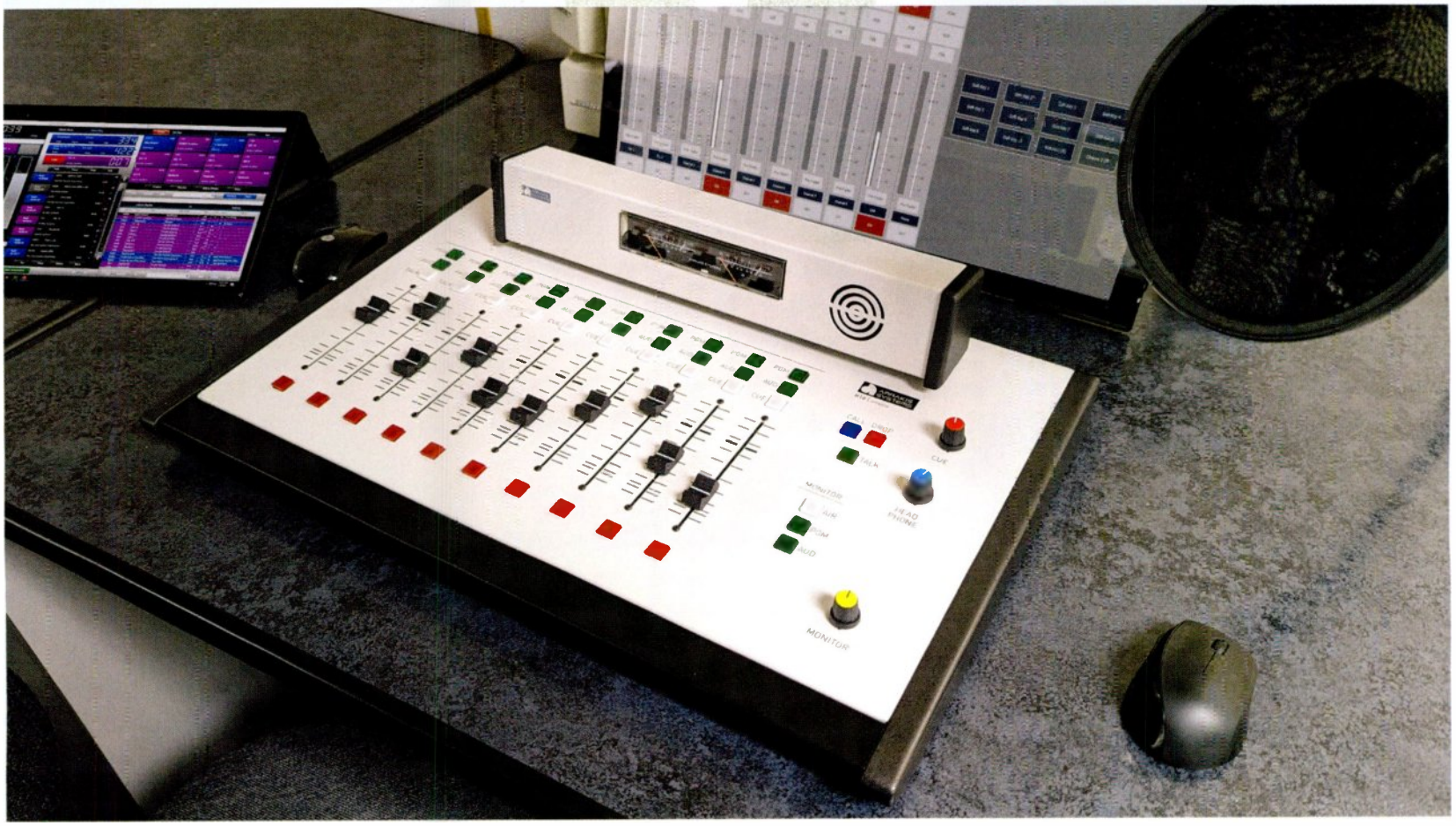

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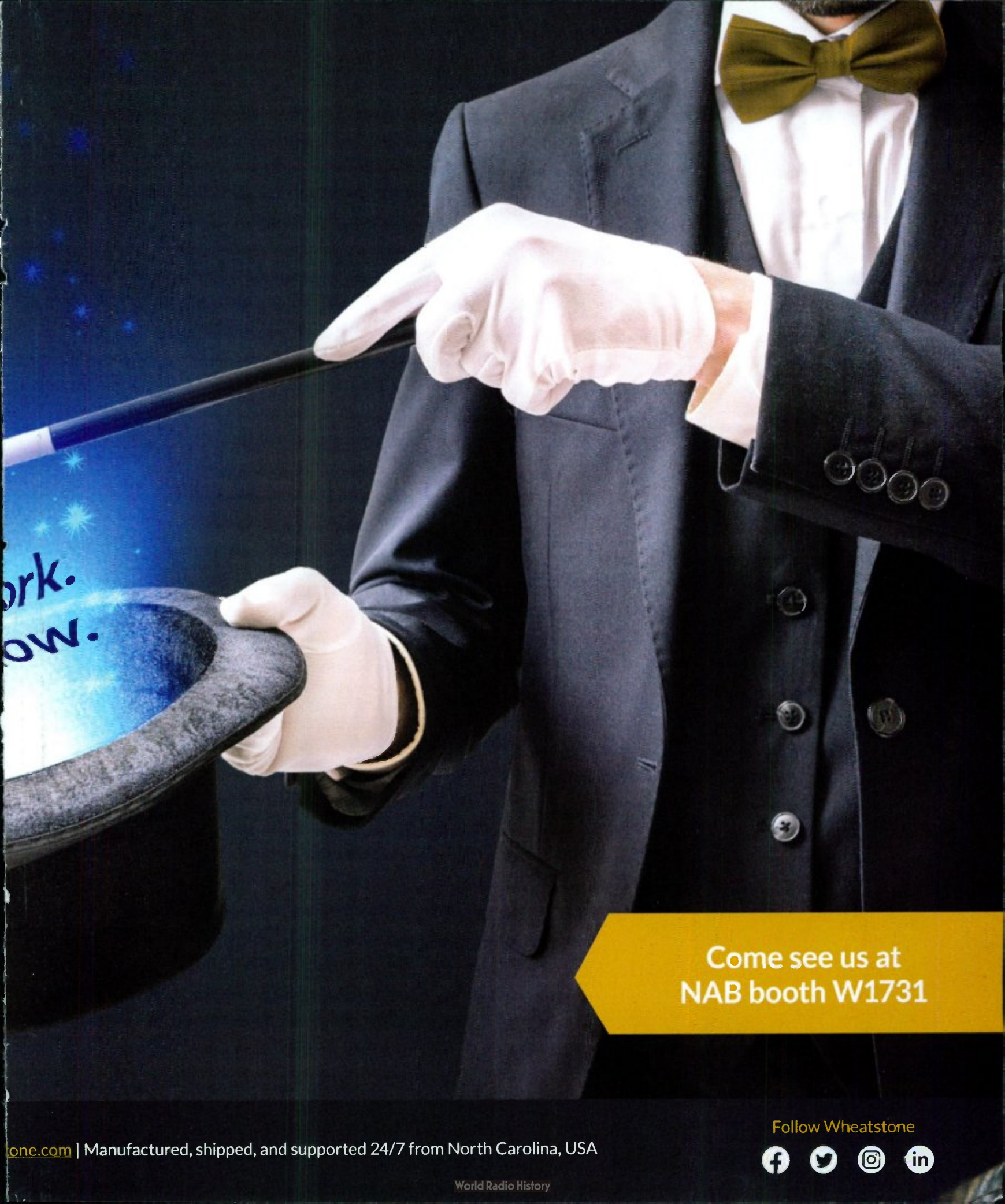

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Writer
Paul McLane
Editor in Chief

Wheatstone sees an industry in transition

Tyler and Davis discuss standardization, streaming and the benefits of RIST

Wheatstone Corp., developer of the WheatNet IP audio network, has expanded into the cloud and server realm with its Layers Software Suite, which includes mixing, streaming and FM software hosted on a local server or running on cloud data centers.

At the NAB Show the company is adding Reliable Internet Stream Transport protocol to its AoIP technology and running its Layers software on Amazon Web Services Global Accelerator.

As part of Radio World's series of manufacturer interviews about technology trends, Wheatstone's Jay Tyler, director of sales, and John Davis, southwest tech engineer, sat down to talk with us ahead of the convention.

Jay what is the most important evolution happening in radio studio technology?

Jay Tyler: Standardization. Radio consolidation meant companies buying stations, then getting everyone into one building and choosing a common traffic billing automation system and console routing system. Companies obviously were looking to leverage their buying power; but today there also are fewer people available to make intelligent decisions in local markets or maintain equipment. Now we're seeing even more integration between the automation, console routing, intercom and telephone systems, bringing another level of complexity.

Below
Jay Tyler

Right
John Davis

We see standardization at big corporate clients like iHeartMedia. Townsquare has been rolling it out; Bonneville has completed it, Hubbard has mostly completed it. All the Entravision sites are WheatNet, the Cox media sites, a good amount of Saga. All of Beasley's and Crawford's stations have been completed.

When you say "rolling it out," you mean they've standardized on a Wheatstone AoIP infrastructure —

Tyler: And an automation system playout system.

How well does this approach scale for a company that's not one of the biggest groups?

Tyler: NRG Media has three dozen stations, for example, and it's working for them.

Meanwhile, because there are fewer qualified engineers, some of these groups have created "tiger" teams who maintain this standardized gear and who travel a lot. Or they have named internal specialists as a resource. Or they've adopted a centralized NOC approach.

John Davis: Often, even if a group doesn't have a team that travels and manages everything centrally, they've set up subject matter experts, one or two engineers in each market who know WheatNet, who know their chosen automation system or transmitter — an internal resource, someone you can reach out to who's familiar with the way your company does things.

Tyler: Some have become quite self-supportive, almost independent of the manufacturers. For instance we rarely get service calls from Bonneville. In fact these groups will ask their engineers to turn first to their company's internal resources when they need help.

During and after COVID, we heard that buildouts would become more streamlined, with smaller footprints and more virtualization. A company might build one studio where they'd have built four in the past. Is that happening?

Tyler: Not on a grand scale. We still need multiple microphones. We have guests. We need a performance space.

Yes, bigger companies are doing some of this, an iHeart or a Cumulus. But for mid to large markets at companies such as Hubbard, Cox or Beasley, we're still building

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a dedicated studio for every air signal; then there's a backup air studio, and an adjacent production room for each studio. In a market like Tampa they might have five brands, and they'll still build five studios, including one as a backup or production. Whereas for iHeart, a market with five brands needs three control rooms — and a good schedule.

Davis: In smaller markets, a company might have four stations served by a main studio and a couple of auxiliaries. Sometimes the room is live only for four hours, at other times it serves as the production room. Instead of a dedicated studio plus production plus news, you end up with only as many studios as you have concurrent live dayparts; the rest of the time you're in automation and using the space for production or recording commercials.

To what extent has virtualization moved important infrastructure off-site?

Davis: It depends on the group. Some are starting to do a lot of remote tracking, especially where you have nationalized dayparts. One person will lay down a show for all the country stations in the company, then go back to the major stations and drop in two or three liners per daypart per hour that might be localized; the rest is network content.

Tyler: But with today's technology, a group doing a "build in place" can streamline everything. We can drop one talk studio into a facility, surround it by four adjacent air rooms, and on any day at any time, one of those rooms can take control, with sight lines between them all.

Davis: I just worked on an installation for a public station that used a combination of Glass LXE and physical LXE panels in the same room. They had six or eight physical faders, then we put a big touchscreen in the middle for 20 or so more faders, and then another eight on the other side of the touch panel.

About RIST

Read "What's RIST and Why Do You Need It?" at *https://tinyurl.com/rw-rist*.

The first eight faders are for mics in the talk booth. The Glass LXE controls sources they don't use every day, and the faders off to the side are what they need for the "Morning Edition" and "All Things Considered" dayparts. They streamlined that room for talk programming but can do simple production in the middle, and their tentpole dayparts are supported, all in one space. They'll build their other rooms that way and have flexibility across the facility.

To what extent do virtualization and the software-based air chain affect what you do?

Davis: It's a lot easier to virtualize the back end of the air chain than the front, just because of latency. Our Layers Stream and Layers FM products handle processing and streaming in AWS after it's left the studio, so I'm not worried about being able to put on a pair of headphones and hear myself with that delay. But until the latency issue gets resolved, you'll see it more on the back end.

Tyler: It affects our design and development. Most engineers I've spoken with prefer the idea of virtualization with a local server — they still like being able to touch that server.

"The convergence of IT and audio will continue. But you'll still need to take a microphone and wire it to something; there still needs to be mixing and acquisition and distribution."

Our Layers FM, Layers Stream and Layers Mix are based on new technology that is easily ported over from a local server to containerization virtualization in a cloud, like AWS. We've just received a really nice order for Rogers Communications in Canada, which is creating a national streaming center using Layers Streaming. But again, these are local — an engineer can go put his hands on that equipment. I think engineers are winning that fight on the local level. They want to distribute their losses, they want multiple, on-premise servers.

But there are customers using cloud-based air chains. That's what we designed Layers FM for. At the NAB Show we'll demonstrate local mixing on the exhibit floor, sending it up to AWS, being processed in the cloud and then returned via AWS to the show floor so you can listen to an air chain that's being virtualized.

You mentioned the endpoint. When we talk about low-latency linear streaming, we're talking about well-

World Radio History

connected sites, usually with multiple networks, main and backup, using big IP links. But a lot of transmitters in the field still have low-level connectivity. This is where boxes for MPX over IP come into play. Our SystemLink MPX over IP Transporter is for that endpoint. It's an MPX over IP transporter that uses Reliable Internet Stream Transport, or RIST, so it can transport FM MPX over IP links of any capacity, whether as uncompressed or compressed.

Davis: With RIST you've got serial numbers on every packet. So we know if a packet is missing and can ask for a new transmission. You're not just spitting out a bunch of UDP and hope that it gets to the end. With RIST, you know it got there. And it's encrypted, so it's secure. We also use RIST in our Blade-4 because it is such a robust transport protocol.

Tyler: Transmitter sites are getting smarter. There is a big movement for people to get off satellites and find different ways to deliver content over IP. If you can take syndicated shows along with programming from one station and programming from another station and consolidate it all in the cloud to distribute to transmitter sites over IP, then that becomes much more useful. This is the concept behind our Layers FM software, which puts the AGC, limiting and FM subcarriers in the cloud. To complete the air chain in the cloud, you need one more critical piece: an MPX transporter like SystemLink for moving all that from the cloud directly to the transmitter site over any variety of IP links available to you. What's really neat about SystemLink is that we align the FM and HD at the beginning, in the packets, so there's no way for it ever to become unaligned.

Where do you see it all going?

Tyler: As connectivity gets better, all of these transmitter sites are going to get more intelligent. Every Blade 4, our AoIP I/O unit, has the ability to stream; we have audio codecs in the Blade 4 so we can get audio from any site over the public internet directly to a transmitter site. That's what our customers are asking for because they realize that they can bypass the studios in some cases, and they are fortifying these sites.

Is this still a good time to be an audio equipment manufacturer?

Tyler: Yes. The convergence of IT and audio will continue. But you'll still need to take a microphone and wire it to something; there still needs to be mixing and acquisition and distribution. It's like any other business, with ups and downs. But radio isn't going to go away.

World Radio History

Writer

Cris Alexander
Director of Engineering, Crawford Broadcasting

I audited our metadata and here's what I found

Would your station earn a green rating — or a red flag?

David Layer of the National Association of Broadcasters recently gave a presentation to Denver SBE Chapter 48. I had the opportunity to interact with him in some detail about the topic du jour, which was metadata.

David introduced the concept of the "Radio Dashboard Audit" to us. He described the process and shared the results of several audits he had done.

To do an audit, David would fly into a city or market, rent a car with a connected dashboard and then drive to a parking lot where he could sit and play with the car's entertainment system for a while. He would observe what he saw on the screen.

Some stations would show up only as a frequency on the entertainment system's display. Others would show up with callsign or station name. And still others displayed their station logo prominently.

Obviously, the stations with logo would be the most attractive to a listener tapping his or her way through the channels, with the others relegated to also-ran status.

All that is just the first phase of the dashboard audit. The next looks at the metadata. Is the station sending its slogan? Is it providing title/artist information (and is it correct/timely)? How about album art or Artist Experience?

David put all of those factors into a spreadsheet, and depending on the outcome, assigned a color code. Green is for full functionality of the system audited (RDS or HD Radio). Yellow is for under-utilization, indicating it is using some but not all the available features. Orange is for wrong/bad execution, meaning that the station is using

Right
A portion of our DTS Autostage dashboard where we provide station information and logos.

World Radio History

functions improperly. And finally, red indicates no functionality — the station isn't using any functions.

The idea of the audit is to provide an idea of how well a station is represented on the dashboard of a vehicle with a connected entertainment system. Radio World's Paul McLane wrote about this NAB effort in his column in the March 1 issue.

Putting it into practice

After the presentation and discussion with David, I spent some time thinking through how our stations at Crawford Broadcasting would likely do in such an audit.

Other than our two analog-only AMs, I was pleased to note that none would have scored red or orange. We transmit title/artist metadata and station slogan on all our HD and RDS stations, and we do Artist Experience on a couple of stations (and are looking at adding to that number).

I got to thinking about those stations displaying their logos on car radio screens. How did those get there? They are not, to my knowledge, transmitted with station metadata. David cleared that up for me: They are transmitted over the internet using DTS AutoStage or another connected car platform.

Above
In my unconnected car's entertainment system display, RT is displayed in the center. DPS info is displayed at the top right above the frequency and it scrolls, and it is also displayed on an aux screen in the instrument cluster.

Shortly after that presentation, I signed us up for DTS AutoStage and linked all our station logos, so those with AutoStage-equipped vehicles should be seeing our logos. We may also join up with RadioDNS at some point, which would provide an improved dashboard presence on still more vehicles.

For most of my life, there was no such thing as metadata on radio. The title and artist were provided by the DJ in the intro or back-sell, and if you missed it, you'd have to wait for the next time that song came up and listen for it again.

But over the past couple of decades, RDS has become common, almost ubiquitous, and it's no big chore for a broadcaster to export song title and artist or even advertiser information over the RDS.

The problem with RDS is that there appears to be no industry standard for the way that automobile radio displays use the data.

There are basically two fields available to broadcasters for metadata: Radio Text (RT) and Dynamic Program Service (DPS). Radio Text is apparently the field designed to display title/artist information, but some radios display the DPS field instead of or in addition to the RT field. My Ford Explorer displays RT in one place and DPS in another. In talking with David, I concluded that the only safe thing to do

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is to stuff both fields with metadata, and that's what we are doing across the company.

The engineer's responsibility

So, is metadata important? I don't think so — I know so.

Listeners, myself included, have become accustomed to seeing metadata displayed on their radio screens, and when it is absent, frozen or wrong, it is at best an irritation and at worst a tune-out factor.

By way of example, there are two classic rock format stations in the Denver market, both owned by big groups whose names you would recognize. Chief Engineer Amanda Hopp and I often listen to one or the other when in the car together. For a good while, the metadata of one of the stations was not working. The default, which amounted to the station slogan, was scrolling continually. We both found that to be a tune-out factor. The other classic rock station's metadata was working.

If that was our reaction to bad or missing metadata, my assumption is that others would react the same way.

The point is that we have got to make sure our metadata is being transmitted and that it is correct. This applies to FM/RDS and both AM and FM PSD for our digital stations.

How do we know it's being transmitted and that it's right? That's our engineers' job. Sure, we would expect program directors, hosts, managers, AEs and other staffers to speak up if they see something wrong; but it's primarily the job of the engineers to spot check the metadata daily if not more often.

Going forward, we may well develop commercial uses for Crawford metadata, and when that happens there will be revenue tied to metadata, so it will be even more important to monitor it closely.

This article appeared in the Local Oscillator, the corporate engineering newsletter of Crawford Media Group. Find past issues at https://crawfordmediagroup.net/crawford-engineering/.

> **When metadata is absent, frozen or wrong, it is at best an irritation and at worst a tune-out factor.**

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A Move to Honor Chris Noel

Courtesy HonorChrisNoel.com

Chris Noel's voice on the radio not only brought hope to U.S. troops serving in Vietnam, but her nightly program "A Date With Chris" served as testament to the strength of AM during times of crisis.

Now three radio professionals, moved by her story, have launched a petition to honor Noel with the Presidential Medal of Freedom.

She was said to have inspired thousands of soldiers with her broadcasts, leading numerous visits to Vietnam amidst her rising Hollywood career. "If you were a veteran and you served in Southeast Asia, you knew who she was," said Harry Simons, a radio engineer and Marine Corps veteran. "She was the most famous broadcaster in the world at the time."

Noel's acting career began in 1963, leading to roles in 20 movies with MGM and Paramount. Her visit to severely wounded troops in a San Francisco hospital at Christmastime in 1965 inspired her to audition for an AFRTS show, leading to her becoming the first female broadcaster on Armed Forces Radio since World War II.

She initially recorded "A Date With Chris" from Hollywood but when the Pentagon noted the impact her show was having on the troops, they asked her to visit Vietnam between Christmas and New Year's in 1966. She would go on to make many visits to the troops, volunteering to entertain them with song or dance performances.

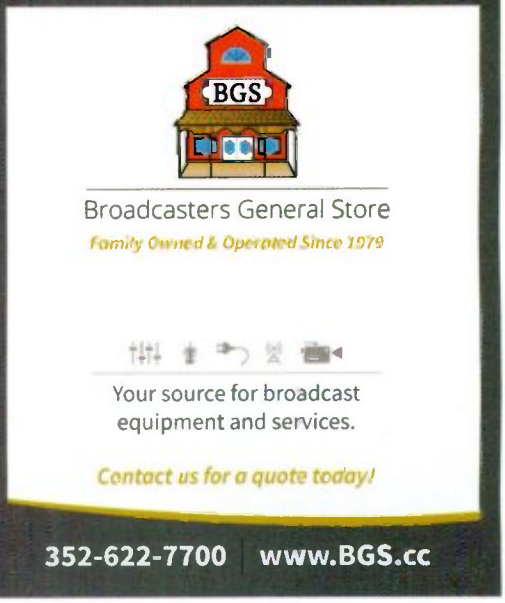
Noel helicoptered into combat zones, once crash-landing near an enemy village. The Viet Cong, recognizing her influence on U.S. troop morale, placed a $10,000 bounty on her life.

Service to veterans continued to be one of the driving forces in her life and, in 1993, she founded the Vetsville Cease Fire House, a shelter for homeless veterans in Boynton Beach, Fla.

Today, Noel, 82, suffers from PTSD as a result of her wartime trips during the Vietnam War but remains dedicated to supporting veterans with mental and physical disabilities.

The website *HonorChrisNoel.com* launched in February.

You can read Nick Langan's Radio World story about this effort at *https://tinyurl.com/rw-noel*.



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About Buyer's Guide
This section appears in every other issue, focusing on a particular category of equipment and services. It is intended to help buyers know what's on the market and gain insight into how their peers are using such products.

The LiON brings big-market sound to FM translators

Leighton Broadcasting is running two, with more to come

FM broadcasters often consider translators to be orphans living under the staircase. Not Leighton Broadcasting, which has 13 FM translators in addition to its 32 main FM and AM stations throughout the state of Minnesota and parts of North Dakota.

"All of our translators are treated as if they are full 100 kW FMs, which is to say we want that big-market sound on our translators too," said Tony Abfalter, DOE/IT for Leighton Broadcasting, headquartered in St. Cloud, Minn.

Above
Two LiON processors occupy one rack space.

Right
The LiON user interface.

Leighton is now running Wheatstone's new Audioarts LiON FM/HD audio processor on two of those translators, with more to come.

Introduced last year, LiON has the features of a big-box audio processor like stereo enhance and multipath mitigation, but in a small, half-rack footprint.

"When it comes to our translators, we want results first and we're not willing to sacrifice quality. What the LiON does is allow us to get that big-market sound at an extremely reasonable cost and keeps that budgetary spending in line," said Abfalter.

He likes that LiON has AES67 and RDS built in, reducing the number of units he needs to rack up or add to the budget. He appreciates that LiON can be controlled remotely or accessed from any Leighton studio as a WheatNet IP audio networked audio processor. Leighton is standardized on WheatNet IP console surfaces, routing and control in seven markets in the Midwest.

Abfalter likes the sound that comes out of Wheatstone processors and has installed various models on Leighton air chains, including the X5 HD/FM, X1 FM/HD and the MP-532 multipurpose audio processors.

In fact, Leighton's FM translator for its Z-Rock 103.3 station in St. Cloud is running an X5 FM/HD processor, Wheatstone's premier audio processor. "I think we're probably the first to put a top-of-the-line audio processor on a translator," Abfalter said.

"A lot of our markets have very strong P1 stations, and we have to think about the product we're putting out. The large number of P1 listeners that are tuned in and locked into our stations, and the different formats we carry ... we can get the big-market sound from all of those formats with this processing."

He said the LiON is a sensible buy to begin with, but it becomes extremely so for translator applications or anyone who wants to bring their audio up a notch without spending a lot.

More Info
www.wheatstone.com

World Radio History

Tech Update

Angry Audio Offers a Shure Companion

The Chameleon SMooth from Angry Audio is a microphone processor designed for the iconic Shure SM7.

Its DSP algorithms enhance the SM7's characteristics, with defined adjustments designed to give only the range needed to tailor the sound of the mic to the user's voice.

While noise gates are useful for eliminating background noise, Angry notes, they can clip off the beginning or end of words, while dialing them back lets in background.

"Corny Gould, our resident processing genius, decided to invent a new approach: the Room control. It acts like a mixer; turn it clockwise to add more room tone (environment) to the signal, counterclockwise for room suppression."

The compressor is adjustable from "natural" to "massive" but is clear and silky. "We've created the optimal frequency-shaping contours, so again, just plug in your SM7 and it sounds amazing."

The de-esser reduces sibilance "without giving you a lithp" and a setting called Sparkle emulates the sound of the original SM7 or the legendary SM5.

Angry Audio promises: "Everything you love about the SM7 is right there — but warmer, punchier, more articulate and consistent. And yes — bigger."

For users of Electro-Voice RE series mics, Angry Audio also offers the REbel.

Info: *https://angryaudio.com/smooth*

World Radio History

Optimod 5950 drives home the sound of WCKC

Processor helps "101.7 The Drive" step on the gas

Dom Theodore is president of consulting firm RadioAnimal, program director of Glenn Beck's radio program and VP of programming for The Blaze Radio Network. He and his wife also own three radio stations, among them WCKC(FM) in Cadillac, Mich., "107.1 The Drive," which plays classic rock.

"The station didn't have a processor when we acquired it in 2016, so we picked a unit that was comparable to the other processors in our market," Theodore said.

"Now, eight years later, many of our competitors have stepped up their game. Our direct competitor moved their chess piece in 2022 and, while we tried to keep up, we found we were doing, at best, 55 in a 70. We needed to upgrade."

After demoing a box from its earlier vendor, Theodore pivoted. "We were familiar with Orban as we have a 5500 on our classic hits station. We needed firepower, so we decided to demo the top-of-the-line box." The 5950 was their choice.

Theodore said he was surprised to open the shipping box and pull out a piece of hardware that only occupies one rack unit. "This just shows how much DSP power can be used in such a small space," he said.

He racked it up and used the front panel to put the box on the network.

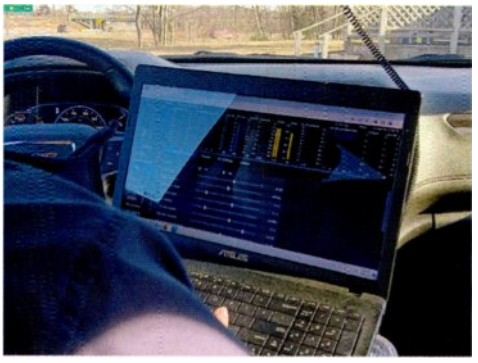
"The front panel was so intuitive that I don't think we even had to reference any documentation to adjust it. A quick start guide is included for those who need it, but if you just step through the menus, it gets you there." He fired it up and went with the default preset. The 5950 has dual power supplies, and Theodore feeds it from two different UPS power conditioners.

Unlike previous Optimods, the 5950 comes with an internal web interface, which means Theodore can log in from his Mac in the car and tweak, something he couldn't do with the previous processor unless he used Parallels remote access.

"The web interface is very well laid out, and one or two clicks gets you to exactly where you need to be. Everything is easy to understand, and the contrast of the black background and the lighter colors of the controls makes it easy on the eyes to see and make adjustments."

Theodore describes the audio of his competitor as "almost too sanitary, for lack of a better term." He's delighted with his new sound.

"The Orban brought life to the music, almost like touching the loudness button on the stereo. It was effortless yet impactful. Vocals just come to the front and the soundstage is dramatic. Bob Orban's MX processing turned a page for everybody in the processing world."



Top
Dom Theodore

Above
The internal web interface allows Theodore to log in from his Mac in the car and tweak.

The station plays music ranging from Zeppelin to Green Day; Theodore said the 5950 handles the differences in decades with ease and never sounds fatiguing.

His audio path is a BMX III — recently rebuilt by Scotty Rice — a Sage EAS box, the 5950 and a composite STL to the transmitter site. No composite processing is deployed at the transmitter.

"Our next step is to begin using dynamic RDS. Up until now, we had an external RDS generator that wasn't dynamic. The 5950 has a built-in dynamic RDS generator as well as a ratings encoder, options to ingest streaming audio as a backup source and, of course separate HD processing for HD radio stations with delay to match the FM and HD paths," he said.

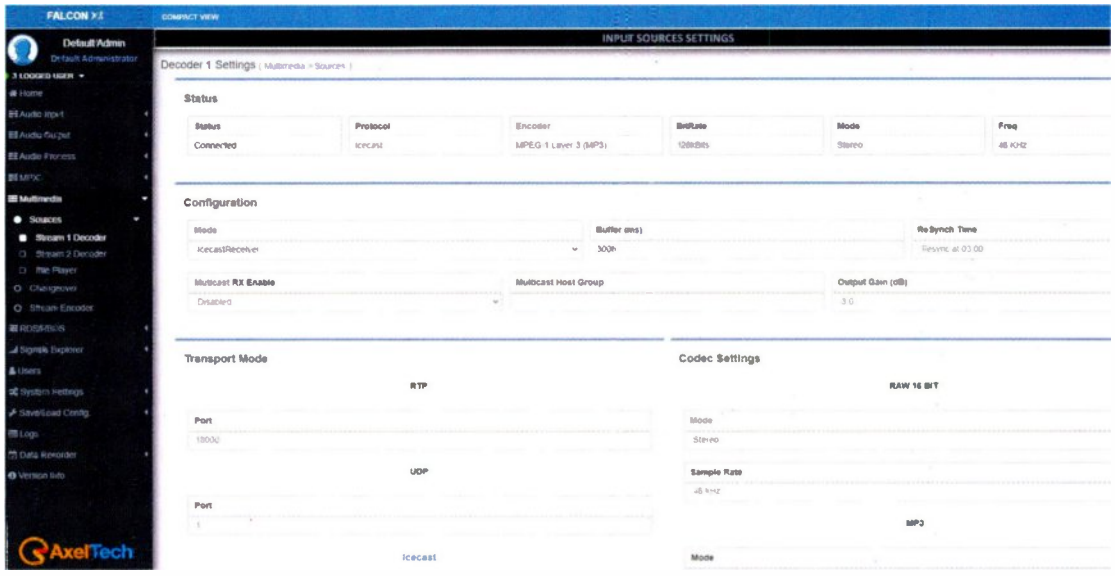
"With the 5950, we are now up to speed and, to quote the Eagles, are spending life in the fast lane."

More Info
www.orban.com

World Radio History

Tech Update

Axel's Falcon X7 Is for FM and HD Radio



The Falcon X7 broadcast audio processor from AxelTech incorporates five-band processing, MPX generator, RDS encoder, loudness control and change-over function.

Its Parallel Dual Processing structure allows Falcon simultaneously to feed an FM signal (15 kHz) as well as digital broadcasting (20 kHz) such as DAB, HD Radio, satellite and web radio.

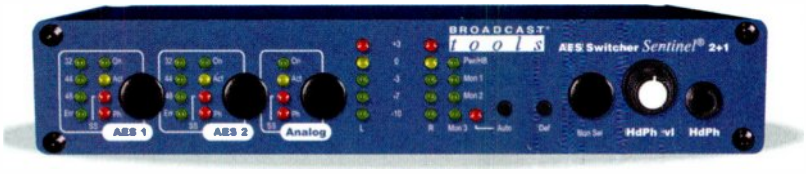
Processing tools include compression control, adjustable drive and threshold, dual AGC, three-band EQ, stereo enhancer, voice detector and brightness control.

Mono Sound Phase Control gives a more natural and pleasant sound to human voices while the final limiter enhances presence. The X7 comes with more than 240 factory presets plus 20 customizable user presets.

Falcon X7 is the high-end model of the line, while Falcon X6 omits front-panel controls and is suitable to be managed remotely via its web interface. Falcon X5 is an entry-level unit with simplified I/O and changeover sections.

Info: www.axeltechnology.com/falcon-x7

Digital Audio Solutions



AES Switcher Sentinel® 2+1

Web-based AES Silence Detector

The AES Switcher Sentinel 2+1 is a three channel AES/EBU silence monitor with an integrated 3×1 AES switcher, with a browser-based HTML5 web interface. It monitors two AES sources and one analog to digital (ADC) source. When silence and/or phase error is detected on the primary AES input it can automatically switch to a back-up input via mechanical latching relays. Other features include: SSL/TLS email (Gmail, etc.), SMS-email, and SNMP.

AES DA 1x6

XLR AES Distribution Amplifier

The AES DA 1x6, six output, one input AES/EBU digital audio distribution amplifier is ideal for distributing AES signals or wordclock. Features include: AES activity detector with alarm LED and relay output, signal bypass on loss of power: Input to Output 1, and dual power supply inputs for redundant power with an optional second power supply.

World Radio History

Tech Update

New Firmware for **Inovonics** David IV

Inovonics has rolled out a firmware upgrade for its David IV 719N FM/HD Audio Processor. It adds a customized audio preset that "provides a big sound with a loudness that dynamically projects the audio without exhausting listeners' ears."

According to the company, "The new Indian Punch preset is a case where Inovonics has listened to requests of its customers in international markets with unique musical styles and tastes. In addition to South Asian music, Indian Punch can be used for varied musical formats such as Latin reggaeton, Cumbria and rap."

Firmware Rev 1.0.0.3 is free to download and can be found at the Inovonics website.

The 719N David IV is a DSP-based audio processor with five bands of dynamic range compression and graphic EQ. It includes an FM stereo generator with dual outputs; internal metering of RDS/RDBS subcarrier; IP connectivity for SNMP monitor and control; and optional HD Radio delay. The processor provides 25 factory presets and 20 customizable presets so users can fine-tune their settings and then save them.

Info: *www.inovnicsbroadcast.com*

Tech Update

Forza Brings Power to Audio Processing

Forza is the latest software processor from Omnia, which highlights its fresh approach to five-band processor design.

Noting that "forza" is Italian for power, Omnia says the processor is intended for use with streaming and digital broadcast applications that need a consistent, polished audio signature.

"Forza boasts all-new AGCs and multiband limiters, renowned Omnia Sensus codec conditioning for low-bitrate streams, and an integrated LUFS target-driven ITU-R BS.1770 loudness controller for platforms with specific loudness requirements, and new algorithms that yield a compelling 'signature sound' that never sounds overly processed," the company states.

The processor can be hosted on-premises on a commercial off-the-shelf server, in the cloud, or pre-installed on the new Telos Alliance AP-3000 audio platform, shown, which can host up to four simultaneous instances of Forza processing.

A one-page UI guides the user to adjusting multiple parameters with smart controls that don't require technical expertise.

Info: *https://tls.al/forza*

World Radio History

Tech Update

Thimeo Introduces New Compressors and Clippers

Thimeo Audio Technology recently introduced a new compressor design across its suite of audio processing products including STXtreme, ST-Enterprise, and Stereo Tool.

The "Adaptive" multiband compressor dynamically tailors its response to the input signal. This integrates typically separate processing stages — such as an AGC, multiple compressor stages and limiting — into a single, cohesive stage.

"Even at infinite ratios, the resulting audio sounds natural and very consistent," the company states.

"For dense content, the compressor does very little; for dynamic content, it works as hard as you let it. It can modify its response speed by more than a factor of 1000, ensuring smooth transitions that are imperceptible to the listener. Where one might expect that the adaptive behavior makes it harder to achieve a specific sound, the opposite is true: The 'adaptive' nature of this compressor actually helps to create a consistent sound regardless of the input, while giving users more control over the end result."

Thus, Thimeo says, there's no need for compromise settings to sound good for both dynamic and very dense content, to handle sudden loud sounds or drops in levels well, while preventing separate stages from "fighting" each other.

"The new design takes all those issues out of the user's hands," it says.

The consistent output of the new compressors makes the input going into the clippers more predictable, which Thimeo says paved the way for significant improvements in the clipper design. The new FM clippers deliver a louder, punchier and cleaner sound.

Current STXtreme and ST-Enterprise users and Stereo Tool users with an Advanced Dynamics license can use the new features for free. Stereo Tool users without an Advanced Dynamics license need to add that to their existing license to use the new compressor.

Info: *www.thimeo.com*

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World Radio History

They helped WUVT in its time of need

Although I'm very happy to hear about WUVT's recent install of a new Nautel transmitter, I feel that much was left out of Steve Floyd's piece ("Virginia Tech's WUVT Celebrates 75 Years," RW Feb. 14 issue). It was not just "several broadcast manufacturers" who helped the station after the tragedy in 2007.

I remember that sad day of April 16 like it was yesterday. I was eating lunch in my truck alongside I-81 in Roanoke, Va. and began to see many state troopers racing south towards Virginia Tech and knew something was bad. Turning on the news channel confirmed the worst: Many lives had been lost.

I had to sit there for the next 30 minutes trying to control my emotions and continue my workday.

I was in the 12th of almost 30 years with Clear Channel and iHeartMedia as chief engineer of all of our stations in the Roanoke-Lynchburg area. I was contacted by Steve Davis, the company's senior vice president of real estate, facilities and capital management, to see what we could do to help.

Steve and I, along with Gary Kline of Cumulus Media, met with administrators on the Virginia Tech campus to discuss a game plan to replace the station's failing BE FM 3.5 and make the move to Price Mountain. Gary kindly donated the tower space.

I had just pulled a Harris Z5 out of service from 104.9 Roanoke. We donated that to WUVT and found them a prefab concrete building from the state department of transportation. Jeff Shepard of Lynchburg Crane Service moved the building from Bedford, Va., and placed it atop Price Mountain — no easy task for a 35,000-pound load. He donated that work. I found a used generator from Willie Bennett at a Clear Channel station in Charleston, S.C.

Also of note were RF studies done by Ben Dawson of Hatfield & Dawson to get the station its ERP increase and Orban's donation of a new audio processor. Longtime iHeart/Clear Channel engineer Paul Jellison found an ERI Rototiller antenna that had been pulled from service, and the company donated that. Carl Davis and others at ERI then rebuilt and retuned that antenna to 90.7. There were probably others behind the scenes who also helped.

I was very proud to be a part of that project, which proves how important it is for everyone to work together towards a common goal in times of need.

Jeff Parker
RF Contract Engineer

Read more about this project in a Radio World story published in 2009. Find it at https://tinyurl.com/rw-wuvt.

Correction

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

Pirates aren't only on FM

Randy Stine's article "FCC Finds Collecting Pirate Radio Fines a Challenge" at *radioworld.com* was excellent and necessary reporting.

It should be expanded to cover all FCC fines. How many FCC fines are collected, or never collected? Does Congress take no interest in this question? Are uncollected fines in the millions, or billions? Without transparency the public can't evaluate FCC enforcement.

His article also states, "Pirate radio is an unauthorized transmission of radio signals on the frequencies in or adjacent to the FM and AM radio bands." That is not strictly correct, in the words of the Preventing Illegal Radio Abuse Through Enforcement (PIRATE) Act, on which the FCC relies for its authority to perform "sweeps" of pirate stations and impose the heavy penalties it is announcing.

He accurately quoted an FCC news release. What the commission wishes to say and what the law actually says are different.

Congress took up the issue of exactly what defines pirate radio. At 47 U.S. Code § 511(h), the PIRATE Act specifically limits "pirate radio" to "spectrum frequencies between 535 and 1705 kilohertz, inclusive, or 87.7 and 108 megahertz, inclusive." Frequencies adjacent to those bands are excluded from the scope of this law.

Unlicensed broadcast stations are prevalent in the high-frequency spectrum, especially between 5 and 10 MHz. Not a single sweep, interdiction or fine has occurred with these stations under PIRATE Act authority. At this writing, the FCC database "Pirate Radio Enforcement Actions by State" contains 90 records of enforcement actions against pirates since January 2020. None of these involved the HF band or the 535–1705 kHz band either.

Are unlicensed HF broadcasters legal? No. But Congress made clear where in the spectrum it wants the FCC to focus its attention.

Bennett Kobb, Editor
Experimental Radio News
Arlington, Va.

World Radio History

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

Celebrate the MacGyvers

As usual, Mark Persons expresses his love for our craft by sharing useful information.

His recent article "What to Know About Three-Terminal Voltage Regulators" highlighted an inexpensive "cure" for unwanted regulator oscillations. It reminded me of three experiences from my earlier days:

We had a nice audio console in our production control that started to show odd distortion on peaks. I checked its main program module with a 'scope, and saw that one three-terminal regulator would break into oscillation when I raised the audio level near full-scale. Replacing a simple electrolytic fixed that.

The second example was in another device that its manufacturer had returned to me as "unrepairable." I unexpectedly was able to fix it by replacing a little disc capacitor in the regulator circuit.

A third involved one of the modules in our STL transmitter. The "normal" method was to buy a complete replacement module, which would be costly. I investigated and found that it contained a small switching power supply, which we were able to buy from a third-party source, saving at least some money.

But still curious, I took the baddie module apart and found ONE easily replaceable electrolytic cap. After that, I was able to repair future "baddie" modules very cheaply and quickly (except for one whose switcher failed for other reasons ... good thing we'd bought TWO of them).

While we've transitioned to newer technologies that are more compact and efficient, the ability to fix "stuff" on our own and save money in the process is sadly slipping away. Let us celebrate our "MacGyvers" who can keep things going ... and folks like Mark who generously share their knowledge.

Michael Shovan, WB2KHE, CBTE
fd&t technical services

Any digital conversion should be mandated

I love how large group stations with a lot of money suggest that all AM stations should move to MA3 digital mode.

I would like to convert our AM to digital but we don't have the money to chase standards that the FCC changes every year or two, and we certainly can't justify the cost when receivers aren't universally available.

If the commission wants stations to change over, Congress, in its continuing attempt to keep AM in cars, should also require the standard for AM. This chicken-and-egg, market-driven way of letting things change on their own doesn't work.

It needs to be required by the FCC or Congress, or both. We small-market stations don't have the capital to experiment with digital AM.

Jim Talbott
Katahdin Communications
Millinocket, Maine

Why not both?

I couldn't help but write a response to Kim Andrew Elliott's commentary "Why We Need Shortwave 2.0" and Ruxandra Obreja's followup letter. (At *radioworld.com*, type Shortwave 2.0 into the search field.)

I'm a longtime user of DRM broadcasting and of Shortwave Radiogram.

My question is "Why can't we have both?" DRM has proven itself as a format for multimedia broadcasting since its inception, some 20 years ago. Shortwave Radiogram has also proven itself, being carried on shortwave since Dr. Elliott's flagship broadcast on VOA, during the final years of his career there.

What we need now: Additional shortwave broadcasts in both formats would prove to be an excellent test for these "2.0" technologies. The Woofferton site can be used to broadcast both DRM and Shortwave Radiogram to North America. The VOA Greenville site can be used to broadcast both modes to Europe. Testing could be done with little or no modifications to transmitters in both instances.

Christopher D. Rumbaugh

World Radio History

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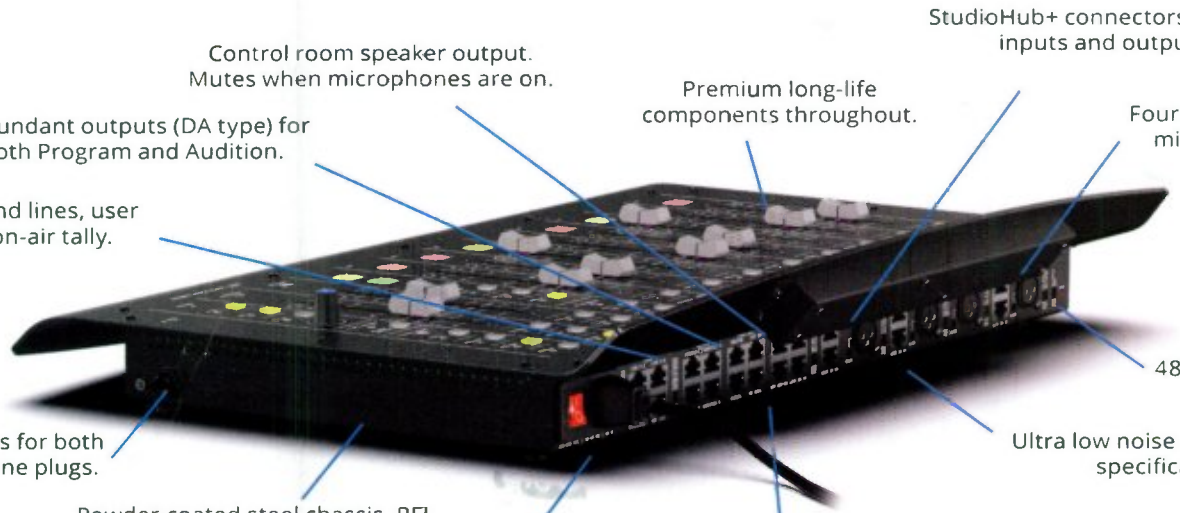

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