CONSOLES, MIXERS & ROUTERS — Page 22

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Beach image by Getty Images/Dmitry Fisher, Sound wave image by Getty Images/Dmitry Mayer

Hybrid Radio Making Strides

Melding of broadcast radio and internet involves several works in progress

BY RANDY J. STINE

The promise of "hybrid" radio technology has yet to be realized, with no widespread adoption by carmakers just yet. But while 2019 may not be a breakout year, participants say significant milestones are being met.

The term hybrid radio refers to platforms to provide a seamless combination of broadcast radio and internet technologies. (It is not to be confused with the term "hybrid" that is sometimes used to describe the dual analog/digital format in which most HD Radio stations broadcast.)

A hybrid of broadcast radio and internet connectivity, experts say, will offer radio listeners many benefits. The players in this hybrid radio ecosystem include familiar names like RadioDNS and Xperi, both promoting applications that combine broadcast and IP technologies. Efforts by the National Association of Broadcasters' Pilot initiative are also playing an integral role in development, participants say.

(continued on page 8)

Loose Electrical Connections Spell System Failure

Add some IR tools and cabling know-how to your engineering arsenal

WORKBENCH
by John Bisset

Email Workbench tips to johnpbisset@gmail.com

One of the many maintenance actions we've emphasized over the years is that of creating tight electrical connections.

A contract engineer wrote in to explain how a Crown FM-2K went off the air. The remote control showed that all other readings were OK, and the three-phase backup transmitter in the building was fine.

At least the station was still on the

(continued on page 20)

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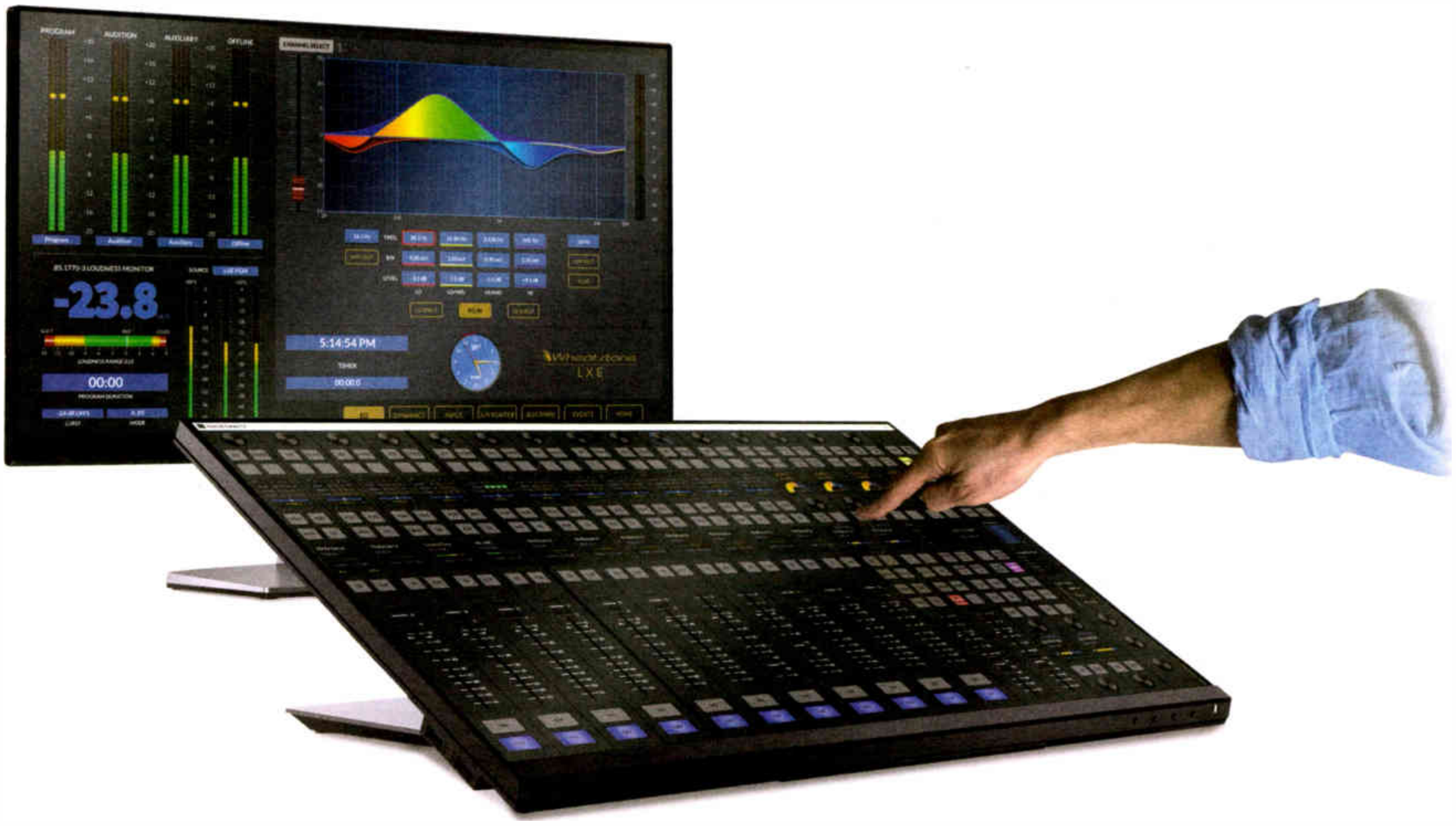
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CONTENT
Managing Director, Content Paul J. McLane, *paul.mclane@futurenet.com*, 845-414-6105
Senior Content Producer — Technology Brett Moss, *brett.moss@futurenet.com*
Content Manager Emily M. Reigart, *emily.reigart@futurenet.com*
Technical Advisors Thomas R. McGinley, Doug Irwin
Technical Editor, RWEE W.C. "Cris" Alexander
Content Director — International Marguerite Clark
Contributors: Susan Ashworth, Dave Beasing, John Bisset, James Careless, Ken Deutsch, Mark Durenberger, Charles Fitch, Travis Gilmour, Donna Halper, Craig Johnston, Alan Jurison, Paul Kaminski, John Kean, Peter King, Larry Langford, Mark Lapidus, Jim Peck, Mark Persons, Stephen M. Poole, James O'Neal, Rich Rarey, Jeremy Ruck, John Schneider, Randy Stine, Tom Vernon, Jennifer Waits, Chris Wygal
Production Manager Nicole Schilling
Managing Design Director Nicole Cobban
Senior Design Director Karen Lee

AOVERTISING SALES
Senior Business Director & Publisher, Radio World
John Casey, *john.casey@futurenet.com*, 845-678-3839
Publisher, Radio World International
Raffaella Calabrese, *raffaella.calabrese@futurenet.com*, +39-320-891-1938

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Nielsen's Kelly Brands Radio as "Original Electronic Media"

Latest "Audio Today" report paints a positive picture but underscores the importance of the car dashboard

AUDIO TODAY 2019
HOW AMERICA LISTENS

Despite increasing media and platform diversification, the numbers are still looking good for radio, according to Nielsen in its report "Audio Today 2019."

Released in June and subtitled "How America Listens," the report presents an optimistic and surprisingly steady picture for broadcasters.

In the introduction, Nielsen Audio Managing Director Brad Kelly calls terrestrial radio "the original electronic media" and "the load-bearing wall in audio's house." However, Kelly highlights radio's dominance in the dashboard as a crucial element of radio's "continued success and resiliency."

Among its findings:

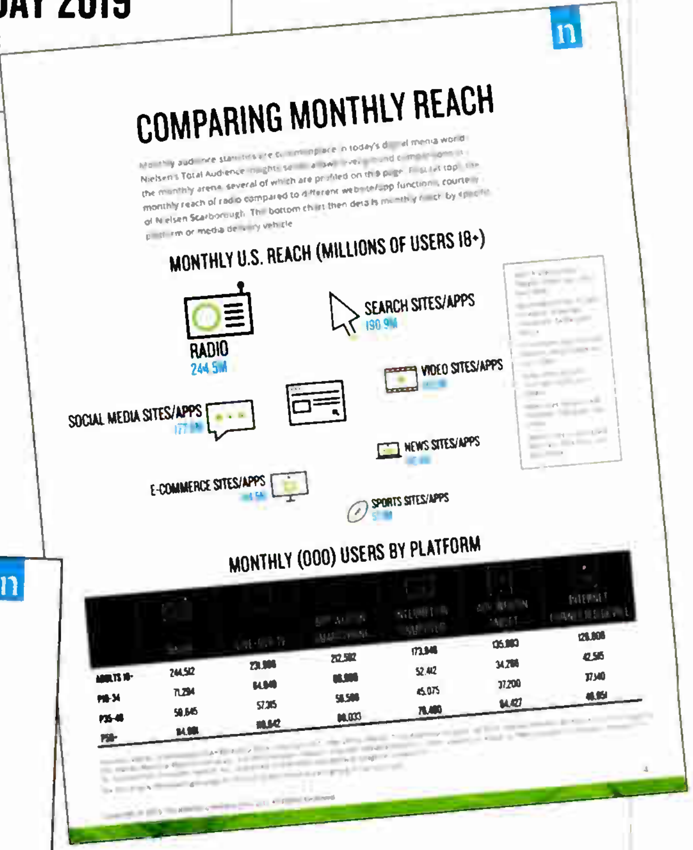
- Commute listening still strongly drives radio use during the week, peaking for adults around the beginning and end of the work day (8 a.m. and 5 p.m.), and for teens and the open and close of school (7 a.m. and 3 p.m.). On weekends, both adults and teenagers tend to listen more in the middle of the day, presumably while running errands or traveling to activities.

- Although the report says only 64% of radio listening on Saturday and Sunday is done while out of the home, 79% of that out-of-home weekend listening is done in the car. Compare that with the nearly three-quarters of listeners who tune in during the workday (35% listen during the day) or weekday commutes (71% listen in the car).

These numbers are a good reminder why OTA radio's future position in the auto is already a source of angst for industry prognosticators, who see the digital dash as a potential threat.

But back to the good news.

Among adults (considered 18 and older by Nielsen), radio still dominates in both monthly and weekly reach. On the monthly end, radio use was followed somewhat closely by live/DVR television, then trailed by smartphone apps/web access. User interactions with computers, tablets and other internet-connected devices offered no real challenge.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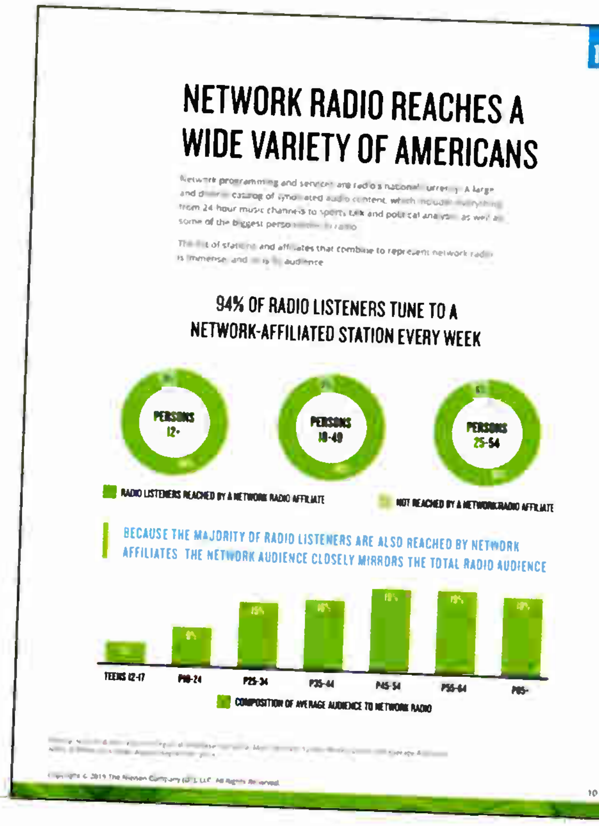

NETWORK RADIO REACHES A WIDE VARIETY OF AMERICANS
94% OF RADIO LISTENERS TUNE TO A NETWORK-AFFILIATED STATION EVERY WEEK
PERSONS 12+
PERSONS 18-49
PERSONS 25-54
RADIO LISTENERS REACHED BY A NETWORK RADIO AFFILIATE
NOT REACHED BY A NETWORK RADIO AFFILIATE
BECAUSE THE MAJORITY OF RADIO LISTENERS ARE ALSO REACHED BY NETWORK AFFILIATES THE NETWORK AUDIENCE CLOSELY MIRRORS THE TOTAL RADIO AUDIENCE
TEENS 12-17
P18-24
P25-34
P35-44
P45-54
P55-64
P65+
COMPOSITION OF AVERAGE AUDIENCE TO NETWORK RADIO

For more granularity, 92% of the adult U.S. population listens to radio on a weekly basis. Only 87% claim the same for television. Interestingly, the 35-49 demographic had the highest percentage of radio listeners at 94%, while the 18-34 age group was the least heavy traditional TV watchers at 75%. Smartphones, TV-connected devices and tablets all appear to be on the upswing, but are no real challenges for radio or television as of 2019.

Read the report online at https://tinyurl.com/audiotoday2019.

Strickland Taught the Industry About RF Safety

With Narda and then his own consultancy, he helped keep the issue in the industry's eye

APPRECIATION

BY TOM VERNON

When it came to teaching engineers about RF safety, few could hold a candle — or an RF monitor — to Richard Strickland. During his long career, first with Narda and later his own company RF Safety Solutions, Strickland instructed thousands of engineers and managers on topics related to RF radiation safety and compliance.

Strickland died in 2018 at age 73, following a long battle with cancer. Friends and family members recalled his personal and professional life for Radio World.

Even as a child, Strickland enjoyed taking things apart to see how they worked. His formal education in electronics began when he was in the Coast Guard. He served as an Electronics Technician I and got additional training in ships' radar. During his tour of duty, he served in the Pacific during the Vietnam war.

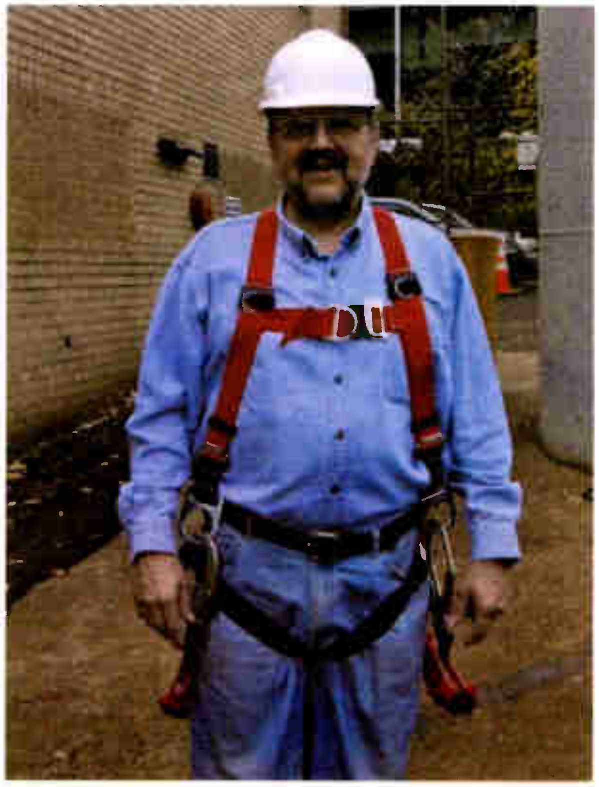
He continued his education when he left the service, earning his bachelor's degree in physics and mathematics from the University of Massachusetts, Bridgewater. He went on to earn his MBA from the University of Massachusetts, Dartmouth.

Strickland honed his skills in RF engineering and discovered the parts that he really liked by working for several companies, initially designing radomes for antennas. His last employer was Narda; there, he worked for ten years as director of business development.

In that position, he would determine which products were developed and their performance characteristics. He was program manager for the Nardalert XT RF personal monitor; for his work on that product, he received an R&D 100 Award from a research magazine.

At Narda, he initiated the development of RF radiation safety courses and led them. Topics ranged from basic employee awareness seminars to in-depth application-specific courses. Audiences included environmental health and safety professionals, engineers, technicians, professional consulting engineers (PEs) and senior managers of major organizations. In all, he taught over 400 public and private seminars on RF radiation safety.

Strickland was both a featured speaker and member of radio frequency radiation panels at the National Association of Broadcasters, the Radio Club of America and the International Wireless Conference and Exhibition. He was the author of numerous articles on RF safety practices and measurement issues, including



Suited up, Richard Strickland is shown in an undated photo prepared to climb a tower and take RF measurements.

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Radio World (ISSN: 0274-8541) is published bi-weekly with additional issues in February, April, June, August, October and December by Future US, Inc., 11 West 42nd Street, 15th Floor, New York, NY 10036-8002. Phone: (703) 852-4600, Fax: (703) 852-4583. Periodicals postage rates are paid at New York, NY and additional mailing offices. POSTMASTER: Send address changes to Radio World, P.O. Box 282, Lowell, MA 01853.

an occasional column in Radio World.

Strickland had always wanted to be his own boss, and in 2003 he left Narda and founded his own company. There, he could focus his energies on the things that he liked to do the most. For him, that was sharing his knowledge of RF radiation and safety issues with others, as well as his own hands-on form of consulting.

MANY INTERESTS

Tom Ray, president of Tom Ray Broadcast Consulting, knew Strickland for 10 years. He shared stories from his work with Project Xanadu and SBE Chapter 15 in New York City.

At the time of Project Xanadu, a mall development project, Ray was director of engineering for WOR, New York. “‘The Xanadu project was being built very close to the 50,000 watt WEPN AM 1050 transmitter site, located in North Bergen, N.J. Construction workers were getting shocked by the RF, and the large cranes in use at the site were especially hazardous,” Ray said.

“They hired Strickland, who came in and took measurements to prove it was a safe working environment, as long as precautions were being taken, such as grounding the cranes and avoiding a few RF hot spots. Since the cranes moved around as the construction progressed, he would check back every four weeks to confirm the site was always safe.”

From his days with the SBE chapter, Ray recalls Strickland as both a great storyteller and generous giver of his time.

The late Richard Strickland, shown with wife Claudia.

“A discussion about RF safety compliance and regulations could bore you to tears, but Strickland brought it to life with his case histories. He got people involved with a good story, and knew not only the regulations, but also the science behind them. We would pay him for a three-hour session at our SBE meetings, but he would always stay after the session for Q&A, and not leave until everyone's questions had been answered.”

Carl T. (Tom) Jones Jr., president of Carl T. Jones Corp., worked with Strickland and remembers him as something of a Renaissance man.

“There are others who do RF measurements, consult on RF radiation issues and do the actual measurements. Richard was unique in that he did all of those things. His company was really a one-man shop.” In later years, as his health began to fail, Strickland sub-contracted the measurement part of projects to Jones, which is how they became acquainted.

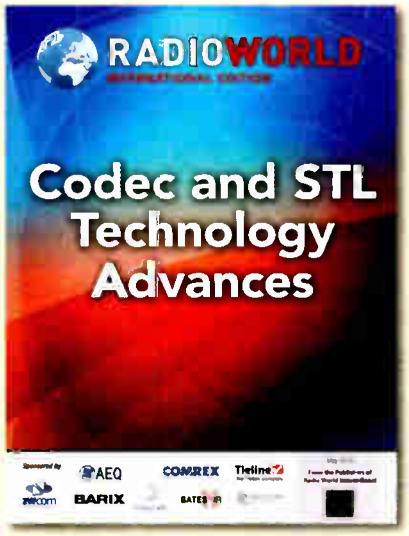
He adds that Strickland was equally well versed in broadcast, radar, cellular and satellite uplink RF measurement as well as safety compliance standards.

“Richard was an amazing person, with an immense knowledge base. He gave a great deal to the industry, and trained thousands of engineers and managers.”

Strickland had several interests outside of work, one of which was world travel. He and his wife were avid travelers through Europe, Alaska, the Caribbean and South America. He looked forward to adding countries to the list of more than 70 he had visited.

He was also a master craftsman and woodworker, building beautiful cabinets and furniture of his own design. Most of the work was done in a well-furnished shop he had set up in his garage. In later years, he was also an amateur photographer, who took numerous landscape and wildlife photos.

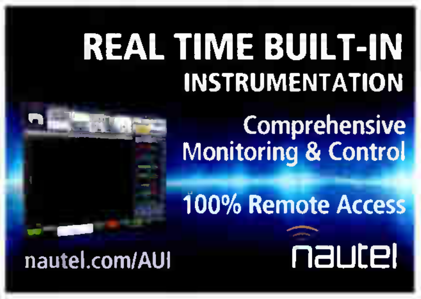
New Ebook Explores Codec Trends



Broadcast facilities and media houses have integrated audio codecs into their daily operations and depend on them heavily. In addition to the more traditional usage of codecs as single boxes to handle point-to-point STLs or remotes, radio broadcasters are beginning to transport multiple audio streams throughout a company or to network across different locations.

A new Radio World ebook, "Codec and STL Technology Advances," examines how operators are implementing high-density codec hardware and/or software to move audio and metadata, as well as the increasing diversification in codec design. We hear from industry experts about cost-effective methods and options for using wideband RF links to facilitate codec transport, best practices when constructing multicodec facilities, how MPX over IP is changing audio delivery, and more.

It is one of five dozen free ebooks that Radio World has published in the past six years. Find this and other recent issues at the Resource Center tab of *radioworld.com*.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Company Hopes to Make "Magic" for Radio

Clip Interactive says radio broadcasters can make money by offering commercial-free option

BY JAMES CARELESS

It's not too late for radio broadcasters to get a piece of the subscription audio pie. So says streaming audio technology company Clip Interactive, which wants to build a business by helping radio do just that.

Bill Freund

"The current combined U.S. subscription revenues of Apple Music, Pandora, SiriusXM and Spotify are worth $11.5 billion annually," said Bill Freund of Clip Interactive this spring. Had U.S. radio developed its own on-demand subscription streaming audio service a decade or more ago, Freund added, they could have grabbed a big slice of that.

"Such a service could include commercial-free content, plus all of the personalities, local information, sports and all the other entertainment that broadcast radio provides," he said. "They could have really leveraged this space and made money from it."

The opportunity to make money from ad-free/on-demand subscription audio is not lost, as far as Clip Interactive is concerned. The Colorado-based company has developed a paid radio streaming app called Magic. What Freund calls a "technology demonstration app" was released to some broadcasters the final week of June.

The company believes at least 10 to 15% of radio listeners are willing to pay $12 each month to hear ad-free local radio. According to Freund, even that is a conservative estimate.

"Actually 32% of 2,000 listeners surveyed in a Harris Poll said they'd be willing to pay $12 a month for commercial-free on-demand broadcast radio streaming," he said. This breaks down as 45% of SiriusXM, 43% of internet radio listeners and 29% of AM/FM listeners.

$12 PER MONTH

It would be expensive for individual broadcasters and even radio groups to develop their own subscription radio services. But using a Magic-style app, Clip says, listeners could replace on-air commercials with favorite songs/talk segments, request local traffic and weather on demand, and yet stay synchronized to a station's on-air transmission, whether listening directly through their smartphones or smart speakers or in the car.

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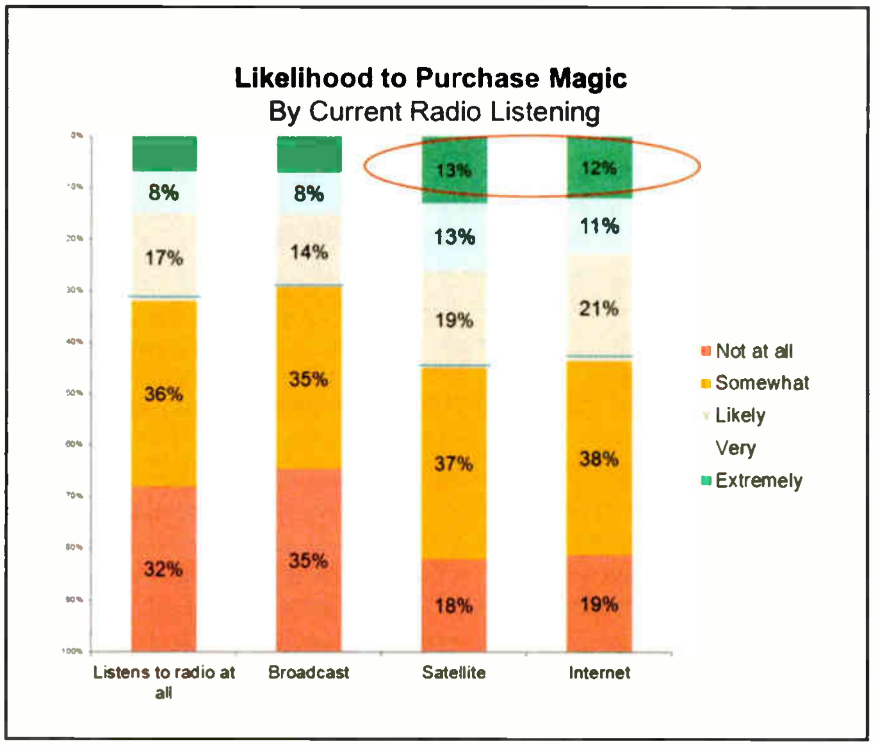
This is why Clip wants to aggregate all U.S. radio streams onto the Magic platform, a significant difference from iHeartRadio's offering that only aggregates iHeartMedia streams and podcasts.

Freund explains, "It is really like the radio dial for all existing stations, only without commercials." Freund also highlighted the simplicity of the Magic user interface, which will utilize voice controls to skip and request content. Finally, Freund says that the commercials will not just be skipped but will be "covered by new content," such as other radio segments, music discovery created by program directors, podcast clips or perhaps even user-generated audio.

The company will handle the heavy lifting involved with ad/song substitution and skipping, on-demand content requests and stream synchronization. The mixing would be handled by Magic's artificial intelligence, which would act as a curator/DJ to ensure smooth transitions. The Magic AI would also keep tabs on each user's content choices, to suggest song/genre choices to them.

"Say the user was listening to their local Cumulus CHR station, and that station went into a commercial set," said Freund. "Our AI could be programmed to switch the user to another Cumulus station in the same genre, seamlessly switching them back to the local station once the commercial set was over."

The bottom line for Magic subscribers would be ad-free broadcast radio that they could let run uninterrupted or control at will using voice commands. Either way, the commercial sets that many listeners find irritating would be a thing of the past, at a cost of $12/month.



Clip Interactive believes a meaningful number of U.S. radio listeners would be willing to pay $12 each month to hear ad-free local on-demand radio.

BUSINESS CASE

The fact that some of radio's listeners would now be tuned into Magic rather than over-the-air broadcasts would not substantially affect radio's OTA advertising revenues, Freund contends, but would give these stations access to subscription revenues that didn't exist before.

How much money each station could make would depend on how many subscribers on the Magic platform select their audio streams, and for how long. This is due to the business structure of the Magic platform: All of the subscriber revenues are combined into a pool, whose net is split between Clip Interactive and its member stations.

For its portion of the take, the company will handle all aspects of the Magic playout platform, including paying royalties and all other fees on the broadcasters' behalf. The Magic platform makes it possible for broadcasters to earn revenues from subscription radio without doing anything beyond providing a stream to the company.

Clip Interactive is promoting its Magic platform to U.S. broadcasters and sponsored a session at the recent NAB Show to spread the word. The message Freund wants to get across to broadcasters: "Magic would allow them to get a share of the subscription audio market, without having to do anything on their part." With $11.5 billion in play annually, is it a business case worth considering? Freund says it's currently working on a Nasdaq initial public offering slated for September, concurrent with the release of an alpha pilot of Magic, during which the company plans to work with its first partner broadcaster. Later in 2019, Magic's beta version will be released, and Freund says the company "hope[s] to expand to any broadcaster who is interested."

ABOUT

According to its website, Clip Interactive develops "technologies that identify, unitize and deliver audio content to consumers so they can listen to what they want, when they want." Among its offerings, Clip coordinates placement of digital ads with on-air ads using machine learning algorithms; and it aims to offer "a comprehensive marketing technology platform that can target and measure like digital."

The firm was founded by Jeff Thramann. Michael Lawless is CEO. In early 2018, Clip Interactive announced it hoped eventually to become a public company.

Bill Freund is EVP and chief business development officer as well as an equity partner. He is perhaps most familiar to the industry as co-founder of Triton Digital. He has also worked at Podcast One, Westwood One, Katz Media Group and AM/FM-Chancellor, and he founded a capital advisory company.

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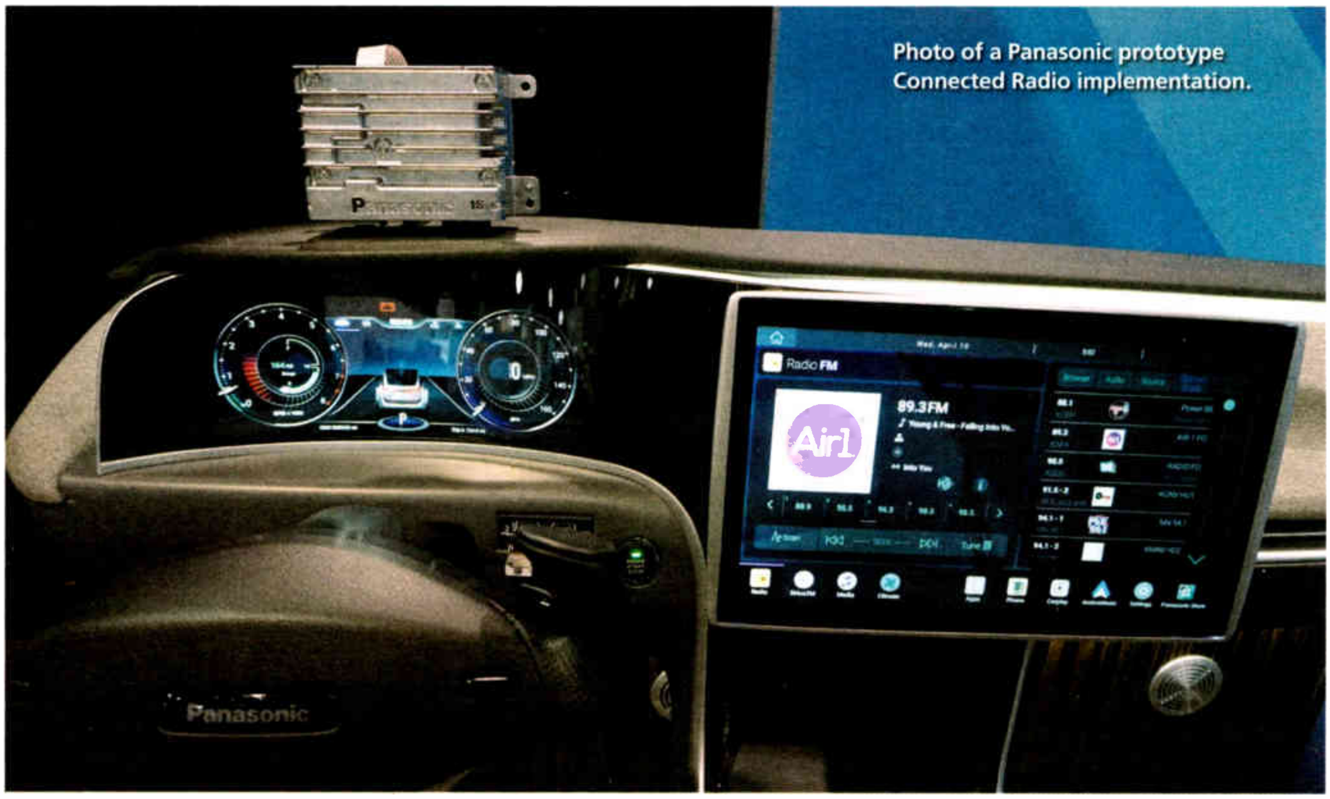

Photo of a Panasonic prototype Connected Radio implementation.

Courtesy David Layer

Their research involves finding ways to link a "fetched" stream address from available broadcast services with over-the-air broadcast hardware, work that coincides with the growth of built-in connectivity in automobiles.

COMPLEMENTARY

Hybrid radio embraces the complementary strengths of broadcast radio and the internet, observers say, and developers are seeking to create a unique distribution system. Backers believe deployment in the auto environment will accelerate soon and that best practices for radio broadcasters will follow. Voice command, already an integral part of the home speaker listening environment, also is expected to play a crucial role in hybrid radio's development.

The presence of built-in internet connectivity in automobiles and the expected impact of the 5G rollout both support introduction of hybrid technologies, backers say.

Nick Piggott, project director for RadioDNS, said hybrid radio recognizes that broadcast radio and the internet have different, complementary strengths.

"Hybrid radio creates two routes to the radio receiver, one via broadcast radio and the other via IP. Broadcast is cost-effective, reliable and robust and is great for time-critical audio. Over the IP channel, we can deliver lots of additional metadata about the audio, high resolution visual information, interactivity.

"There's lots of different ways the two distribution paths can be combined to create a better experience of radio," he said. For instance, once a listener chooses a station or saves it on a preset, it will always play for them as long as either broadcast or IP is available.

RadioDNS is an organization that promotes technical standards for combining broadcast radio and internet technologies that enable interoperability, giving broadcasters and manufacturers freedom of how to implement hybrid radio.

Members of RadioDNS include iHeartMedia, Cumulus, Entercom, Cox, NPR and NAB. Piggott said this participation gives automotive manufacturers confidence to move forward with launch plans in the United States. He predicts that will happen in the next 12 months.

Among automakers, Audi in particular has been aggressive, already offering hybrid radio on its European models as each model is refreshed and apparently eager to launch in the U.S., according to NAB and other observers. Audi conducted a live demo of its hybrid solution at the spring show, using local Las Vegas stations.

David Layer, vice president of advanced engineering at NAB, said, "Audi has developed an amazing hybrid radio, making use of not only RadioDNS standards but using streaming audio support from Radioplayer and Jump2Go, as well as directly from broadcasters." (Radioplayer is a not-for-profit organization providing hybrid radio support around the globe.)

Volkswagen and Porsche also plan to add hybrid radio in Europe, according to RadioDNS.

The NAB, Layer said, continues to reach out to automakers and receiver manufacturers as it pushes ahead with its dashboard initiatives, focused on near-term enhancement of over-the-air radio in vehicles.

CONNECTED

Xperi, owner of HD Radio, is active in this space. Its DTS Connected Radio uses an IP connection installed in a vehicle to deliver analog and digital FM by pairing broadcast programming with IP-delivered content. At the spring show, attendees could see a number of prototype hybrid radio implementations based on the DTS Connected Radio platform.

"And we know that at least three of the most important Tier One automotive suppliers, Harman, Panasonic and LG, are using this technology," Layer said.

Separately Xperi and LG recently announced the development and integration of DTS Connected Radio technology into automobiles sold around the world, with the first implementation arriving at dealerships in 2020. Xperi has said it is working with a major global car brand manufacturer on its rollout but has not identified that company yet.

For its part, NAB is supportive of "both Xperi's DTS Connected Radio and RadioDNS," Layer said. "It's important to know these are not competing interests. To the contrary, they are cooperative interests."

Xperi makes available a Connected Radio Evaluation Unit, or CREU, to potential users and implementers of its DTS Connected Radio platform, such as automakers and Tier One manufacturers, to allow them to develop receivers using that technology.

Layer said that Pilot, a technology and innovation initiative of NAB, obtained a CREU and is working with NAB members to innovate ways to design the radio user interface to take advantage of the capabilities of hybrid radio and then to take those ideas to receiver manufacturers for implementation.

Xperi says it is demonstrating live metadata in 16 markets operating through Connected Radio in real time. It is also developing how the platform will work with Amazon Alexa smart speakers and its voice control capabilities.

ON-DEMAND?

Certain aspects of hybrid radio will be of keen interest to radio stations, Layer said. Basic features include delivery of metadata (text and imagery) over the internet and tied to the over-the-air audio, as well as delivery of simulcast streaming audio.

"This would be things like album art, song title and artist information. It could also include enhanced advertisements," he said. "And specifically how the streaming audio signals get used by the receiver is a topic of great interest among broadcasters."

Layer said that costs involved in streaming, for both broadcasters and listeners, make it imperative that hybrid radio receivers use streaming audio only when the over-the-air signal is unusable.

More advanced hybrid radio features include interactivity between broadcasters and listeners and the availability of analytics about how listeners consume and react to programming.

In addition, Layer said the potential for hybrid radio to deliver audio on demand is being researched. "This is clearly a feature that is desired by listeners. Imagine a radio receiver that can play back a station's most recent traffic or weather report anytime, with the touch of a button, or offer the listener an archived version of today's morning program."

Participants say they expect hybrid radio to create new value for broadcast radio and believe that its use won't be limited to the automotive sector. Samsung mobile phones and some tabletop radios with a Wi-Fi connection have implemented hybrid radio in Europe, according to RadioDNS.

This is the first of a series of occasional articles exploring the hybrid radio ecosystem. Comment on this or any story to radioworld@futurenet.com.

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Cover all Bases with ViA

Bill Eisenhamer, Chief Engineer (Left) with JR Rogers, Technical Director

The Tieline ViA has been the backbone of the San Diego Padres road play-by-play live broadcasts.

"The ViA comes with an SD card slot for recording, so no more worries trying to keep someone at the station focused on recording. The crew on the road takes care of that and records interviews for playback during their live show. Being self-contained makes the device more flexible for the real world."

The ViA is a winner for The Fan, and Entercom San Diego.

Bill Eisenhamer
Chief Engineer, Entercom San Diego

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INPUT 2
INPUT 3
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((ViA))

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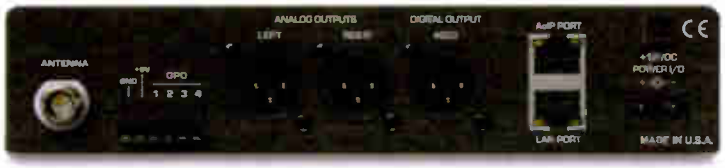
INOVONICS SOFIA AUDIO STREAM MONITOR



A new member of Inovonics' SiteStreaming family of monitoring and streaming products is called Sofia.

The Sofia offers signal monitoring tools such as signal loss, strength and other measurements.

According to the company, Sofia has independently adjustable analog and AES digital audio outputs along with AoIP networking.

It is AES67-compatible. It allows up to 10 people to listen remotely to the same audio stream simultaneously.

Sofia will display Artist Experience logos and art via a web interface.

It comes in a half-rack box. Inovonics says that firmware updates will be free.

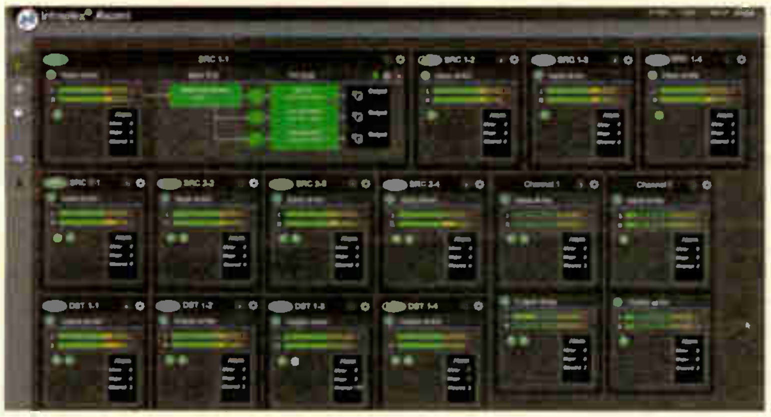
Info: www.inovonicsbroadcast.com

GATESAIR INTRAPLEX ASCENT CODEC MANAGER

The Intraplex Ascent offers a cloud-based, redundant transport platform for multichannel contribution and distribution, while eliminating the need for many separate codecs and auxiliary hardware components.

"GatesAir is taking the next logical step for our customers with direct integration into the IT infrastructure," GatesAir Vice President and Intraplex Product Line General Manager Keyur Parikh said in a press release.

According to an announcement, Ascent is the first Intraplex system to live on a commercial-off-the-shelf x86 server, and it's available as either a 1RU server or a virtualized software solution. Both versions support up to 32 audio channels and are interoperable with most Intraplex AoIP codecs. This solution is also AES67 compliant and compatible with Ravenna, LiveWire+ and Dante AoIP networking solutions, GatesAir says.



Ascent enables users to manage multiple Secure Reliable Transport streams on one platform; SRT is a low-latency, open source streaming protocol that provides packet encryption and retransmission capabilities, GatesAir explains. Also, the platform features Dynamic Stream Splicing, which is a proprietary technology used to diversify SRT data across redundant networks, eliminating some packet losses and network failures.

Info: www.gatesair.com

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It's new equipment season again! Radio World's "Summer of Products" feature is all about new gear that has come onto the market in recent months, especially during spring convention season. Here and in the next several issues we feature equipment that caught our eye.

NEUMANN NDH 20 HEADPHONES

Microphone maker Neumann has finally released a pair of headphones that the company feels are worthy of the Neumann name.

The NDH 20 is a closed-back circumaural design with large memory foam earpads aimed at making long listening sessions comfortable.

The Duofol drivers are 1.5-inch with high-gauss neodymium magnets. The company says that frequency response is 5 Hz–30 kHz.

The adjustable headband is made of flexible steel while the ear cup covers are machined from lightweight aluminum. The headphone is foldable and can be placed into the supplied soft cloth bag for transportation.

It ships with two detachable 10-foot cables (one straight, one coiled) and a 1/8-inch to 1/4-inch adapter is also included.

Info: www.neumann.com

REXTHINK Radio

Welcome to Broadcast 3.0

LAWO

Introducing The Über-Node.

Power Core is designed with flexibility in mind. So you can combine AoIP streaming with device administration on a single Ethernet port… or place them on separate ports. Power Core lets you design your network your way.

Power Core can handle up to 128 MADI channels, standard. 4 front-panel ports (two dual-redundant pairs) with SFP make it easy to bridge your AoIP and baseband digital signals.

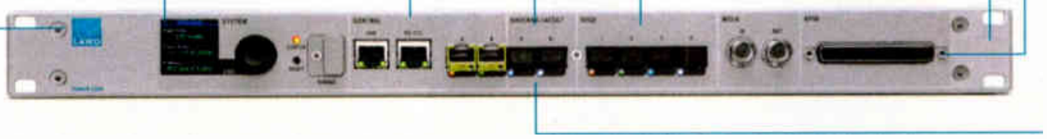
Think Power Core looks awesome outside? That's nothing compared to the sheer processing might inside, with a 1920*1920 routing matrix, 96 DSP channels and 80 summing buses. All your friends will be so envious.

Information please: high-resolution color display with rotary encoder provides easy front-panel access to network information and settings.

Power Core is 100% standards-compliant - because proprietary AoIP is so 2003. Up to 256 channels of true AES67 and RAVENNA streaming, on two front-panel Ethernet ports. Even complies with the ST2110-30 standard. Because you can't be too future-proof.

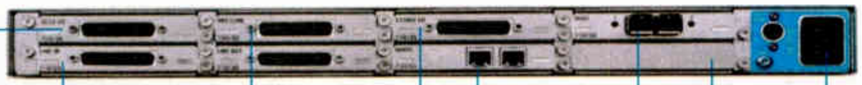
Power Core supplies 64 channels of GPIO via standard RAVENNA and open-source Ember+ protocols. Need physical connections? Use the front-panel interface. Highly logical.

The Lawo logo. Your assurance of meticulous engineering and premium components, uncompromisingly crafted to the highest German standards.



Power Core is the only broadcast AoIP node with ST2022-7 Seamless Protection Switching, giving you dual discrete links to your network core. Completely redundant, with automatic, inaudible switching. Now that's what we call peace of mind.

Connect your AES / EBU devices. Expansion card has 4 digital stereo inputs with broadcast-grade sample rate conversion, and 4 digital outputs.



Everybody's got a few analog sources. Line input & output cards with 4 stereo (8 mono) channels make connections a snap.

Lots of talking to do? 8x Mic/Line card with Phantom power does the trick.

Studio I/O card is perfect for on-air rooms. 2 Mic/Line inputs, 2 Line outs for speakers and 2 headphone feeds.

Got DANTE®? No problem. Power Core equipped with a DANTE expansion card gives you access to a whole world of pro-audio devices. Two mirrored ports with onboard SRC provide 64 channels of I/O.

If four front-panel MADI ports aren't enough, you can add more. Dual-port MADI expansion cards give you two SFP ports with 64 channels each.

Power Core is already the highest-capacity AoIP node + console engine in the world. 8 rear-channel expansion slots make it capable of even more.

Dual-redundant power, of course. Our hardened internal auto-switching power supply is backed up with an inlet for external power too.

As proof, we present Power Core: the modern, super-compact AoIP audio interface that packs hundreds of stereo channels into just 1RU. Handles AES67, MADI, analog, AES3 – even Dante®. You'd need 24 rack units of old-style nodes to equal all the I/O available in just one Power Core.

Impressive, yes? But audio I/O isn't the end of Power Core's capabilities. There's DSP; a lot of it — 96 channels of EQ, dynamics and mixing. AutoMix, too. Plus routing: 1,920 crosspoints, enough to switch an entire multi-station broadcast facility.

Power Core is flexible, too. Pair it with our award-winning Ruby radio console and it's the most powerful mixing engine ever. Put it in your rack room and presto! it's a high-density audio interface with built-in routing. Remote-control it with our VisTool GUI Builder software, and it's the heart of your TOC.

Power Core. The Über-Node has arrived.

Power Core is the perfect AoIP supernode. But it's also a powerful mixing engine. Pair it with our award-winning Ruby – the beautiful, powerful, intuitive surface your talent will be clamoring to get their hands on. Or control your Power Core with Lawo VisTool for a custom "virtual console" with context-sensitive multitouch controls.

Join us @TAB

www.lawo.com

Join us @IBC

WORLDCAST AUDEMAT RDS ENCODER

AUDEMAT RDS ENCODER
WorldCast
AUDEMAT
RDS ENCODER

The WorldCast Audemat RDS Encoder is built on the company's FMB80.

The RDS Encoder carries the expected RDS/RDBS tools (e.g. artist name, song titles, traffic message, EAS, Radiotext, etc.). But looking forward it adds an MPX-over-AES digital audio function. Furthermore, it can insert the encoding directly into the digital chain. It is also compatible with the latest RDS Edition 2018 standards (IEC- 62106-1 :2018 to IEC 62106-6:2018) and upcoming RDS2 standards. WorldCast notes, "RDS2 will allow broadcasters to send more information (such as pictures) through the FM signal by adding three subcarriers to the MPX/composite signal."

As a WorldCast product, it is conversant with the company's ScriptEasy Apps and Manager for programming, control and management. It is fully networkable and remote controllable.

There's also an onboard tuner for immediate monitoring. WorldCast's Manager software can be used to operate the RDS Encoder remotely.

Info: www.worldcastsystems.com

AXIA AUDIO iQx CONSOLE

The Axia Audio iQx is designed with AoIP in mind, all wrapped in a single package.

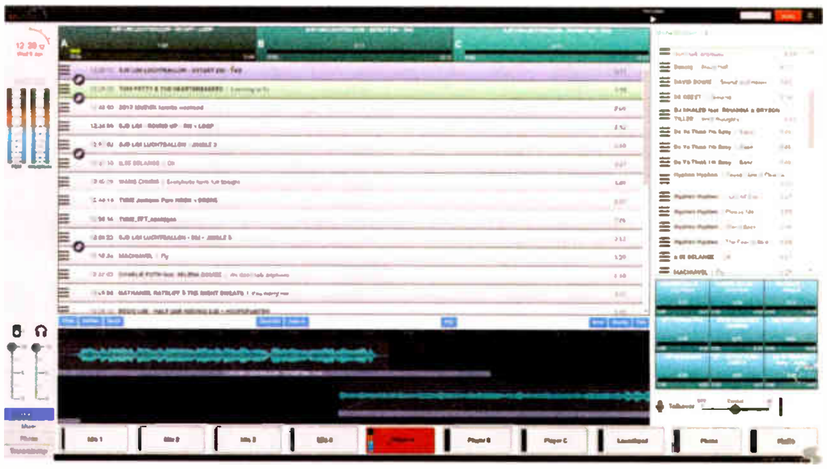
Telos Alliance VP of Sales, Support, and Marketing Marty Sacks said, "Axia iQx suddenly opens up the world of AoIP and Axia capabilities to more people by utilizing existing network resources and eliminating the cost of an outboard mix engine."

It will be available with 8–24 100 mm sealed plastic-conductive faders. It also offers three-band EQ and multifunction soft key per channel. According to the company, the talkback and mix-minus system offers flexible routing for sources. The iQx can be operated remotely via a web interface.

As a Telos Alliance product, there are telco/hybrid options available. In addition, native Livewire+ support makes the iQx compatible with other Telos Alliance equipment on a network. It is also AES67 and SMPTE 2110-30-compatible.

Info: www.telosalliance.com

ON-HERTZ LUMO VIRTUAL RADIO STUDIO



A new name for many, On-Hertz has introduced its virtual radio studio: Lumo.

Running on standard IT infrastructure, offering a web-based UI and optimized for touch interfaces, Lumo integrates a playout solution into one unit. It also comprises a 10-channel mixing console and AoIP features, including a phone hybrid and a transmission codec.

The Lumo radio studio, On-Hertz says, "boosts radio broadcasters' production capabilities with mobility and enhanced workflows at a fraction of the cost of traditional equipment."

The Lumo platform features a scalable pricing structure, a redesigned user interface, a gain-sharing auto-mixer and enhanced DSP. Thanks to its modern APIs and various integration possibilities, Lumo can be integrated within an existing ecosystem of professional broadcasters.

From the show host's couch at home to the basket of a hot-air balloon a thousand feet above the ground, or simply to create a more relaxed atmosphere in the main facility, On-Hertz points out that Lumo lets users focus on producing quality radio content.

Info: www.on-hertz.com

ENCO EVCAPTION CAPTIONING TOOL

ENCO says that its enCaption captioning tool is finding a home at radio stations, "enabling hearing-impaired audiences to consume radio programming online or via over-the-top (OTT) services." Furthermore it could be paired with visual radio programming.

Washington-based noncommercial station WAMU(FM) is testing the concept.

According to ENCO, WAMU Senior Director of Technology Rob Bertrand explained, "Our integration is still in the proof-of-concept stage, but we are happy with what we've been able to demonstrate so far. We look forward to being able to deliver our content to all members of our community, including those who have historically not been able to be reached by audio content."

ENCO points at formats such as talk radio as being especially in need of captioning for deaf and hard-of-hearing potential listeners. In addition, the company says, "Automated captioning also enables immediate creation of searchable transcripts that broadcasters can post alongside recorded audio clips, enhancing SEO for their websites while improving content discovery for site visitors."

enCaption is a software-based system. Captions created by enCaption can be output as files or streams in standard WebVTT format or as a raw text data stream for integration with the station's website media player, mobile or OTT app. enCaption can also turn an audio-only source into a video stream with open captions overlaid on a plain background or graphic, or combined the audio with a separate video stream while embedding closed captions for display in a web-based video player.

Info: www.enco.com

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WHEATSTONE SWITCHBLADE INTERFACE

The multifaceted SwitchBlade IP device "includes audio codecs, SIP messaging and ACI [WheatNet-IP Application Control Interface] control interface. It is the first product of its kind to combine the power of AoIP logic control with SIP connectivity and codec bandwidth optimization to transport both high-quality programming and the control logic critical for full studio operation between sites," according to Wheatstone.

The ACI allows for sending commands such as turning microphones on or adjusting EQ.

Wheatstone
SWITCHBLADE

SwitchBlade has two Ethernet connections, one for connecting to a SIP service provider or SIP-enabled PBX phone system and the other for connecting directly into the WheatNet-IP audio network. SwitchBlade also has codecs, such as including 256 kbps stereo Opus and G.711.

The company says that uses for the SwitchBlade include consolidating program operations for several stations scattered across a region; live remote production, including high-quality programming and console/mic control between home studio and sports or concert venues; sharing program and operating control between sister studios over an IP link; one-to-many STL codecs between one studio and several transmitter sites; a SwitchBlade at the studio feeds two, four, six or more existing SIP-compliant codec units at each transmitter site; and transferring high-quality music between two facilities or from a cloud-based automation system over the common internet.

Wheatstone Sales Director Jay Tyler explained, "SwitchBlade is the missing link for connecting WheatNet-IP facility to WheatNet-IP facility from city to city or across the world. Not only will it carry the audio, it carries the control, which means you can send and receive router commands, automation control, and even fader levels across the two locations." He added, "Switchblade finally makes it possible to monitor each point of the audio chain and switch audio locally from network operation centers around the world."

Info: www.wheatstone.com

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IK MULTIMEDIA IKLIP 3 SERIES DEVICE MOUNTS

Ideal for organizing smart devices around the studio, IK Multimedia is the iKlip 3 series of tablet computer and smartphone mounts.

The iKlip 3, iKlip 3 Video and iKlip 3 Deluxe provide mounting options for keeping smart devices within visual range and at visually useful angles rather than relying on laying the device on the table or trying to prop it up.

The iKlip 3 is designed for microphone stand or boom mounting and includes a newly designed holding bracket with more durable rubber pads and a spring mechanism that allows users to rotate the device up to 360 degrees.

The iKlip 3 Video is like the iKlip 3 but aimed at camera tripod mounting.

The iKlip 3 Deluxe includes both the mic stand mounting bracket and the tripod mount attachment.

According to IK Multimedia all three utilize materials superior to the previous iKlip series along with featuring a simplified mounting grip.

Prices: iKlip 3 and iKip 3 Vide: $49.99; and iKlip 3 Deluxe: $69.99.

Info: www.ikmultimedia.com

NAUTEL NX AM DIGITAL TRANSMITTERS

Nautel has an added a nifty feature to its NX AM transmitter line: digital AM transmission.

Nautel head of Marketing John Whyte said, "Although all-digital AM operation currently requires an experimental license, we and others feel that this is an exciting direction for the AM band and Nautel is ready to support broadcasters as they move ahead with their plans."

Whyte added, "Its digital modes provide the precision needed in the spectral mask as well as the in-band signal quality required for digital features such as User Experience metadata. NX transmitters, combined with our digital-ready importers and exporters such as HD MultiCast+, make it easy for AM stations to adopt digital transmission."

Info: www.nautel.com

DEVA BROADCAST DB4005 FM RADIO MODULATION MONITOR

POWER FM 91.10
FM RADIO MONITORING RECEIVER
DEVA BROADCAST
MODEL DB4005

DEVA Broadcast's new DB4005 is a third-generation digital FM radio modulation analyzer and monitoring receiver.

The company explains that the system features software-defined radio FM tuner-based signal processing, achieved through "sophisticated" DSP algorithms and that its digital filter precision enables the FM signal to be accurately and repeatedly analyzed with each device.

In addition, says DEVA, the MPX input allows users to monitor external baseband signals, regardless of whether they are from a composite STL receiver/stereo FM encoder, or from an off-air source. "With its incredible processing power, it provides detailed readings of all the multiplex FM signal components, while all measurements are refreshed simultaneously and synchronously," the company says.

What's more, the DB4005's loudness meter can display measurements as defined by both ITU BS.1770-4 and EBU R128 recommendations, thanks to the product's support of both standards.

This tool, which DEVA says allows operators to monitor up to 50 FM radio stations, supports USB and LAN communication interfaces for remote connection and control. It also provides features such as TCP/IP connectivity, audio streaming, and automatic alerts for operation outside of predefined ITU-R ranges.

Info: www.devabroadcast.com

Shively Labs

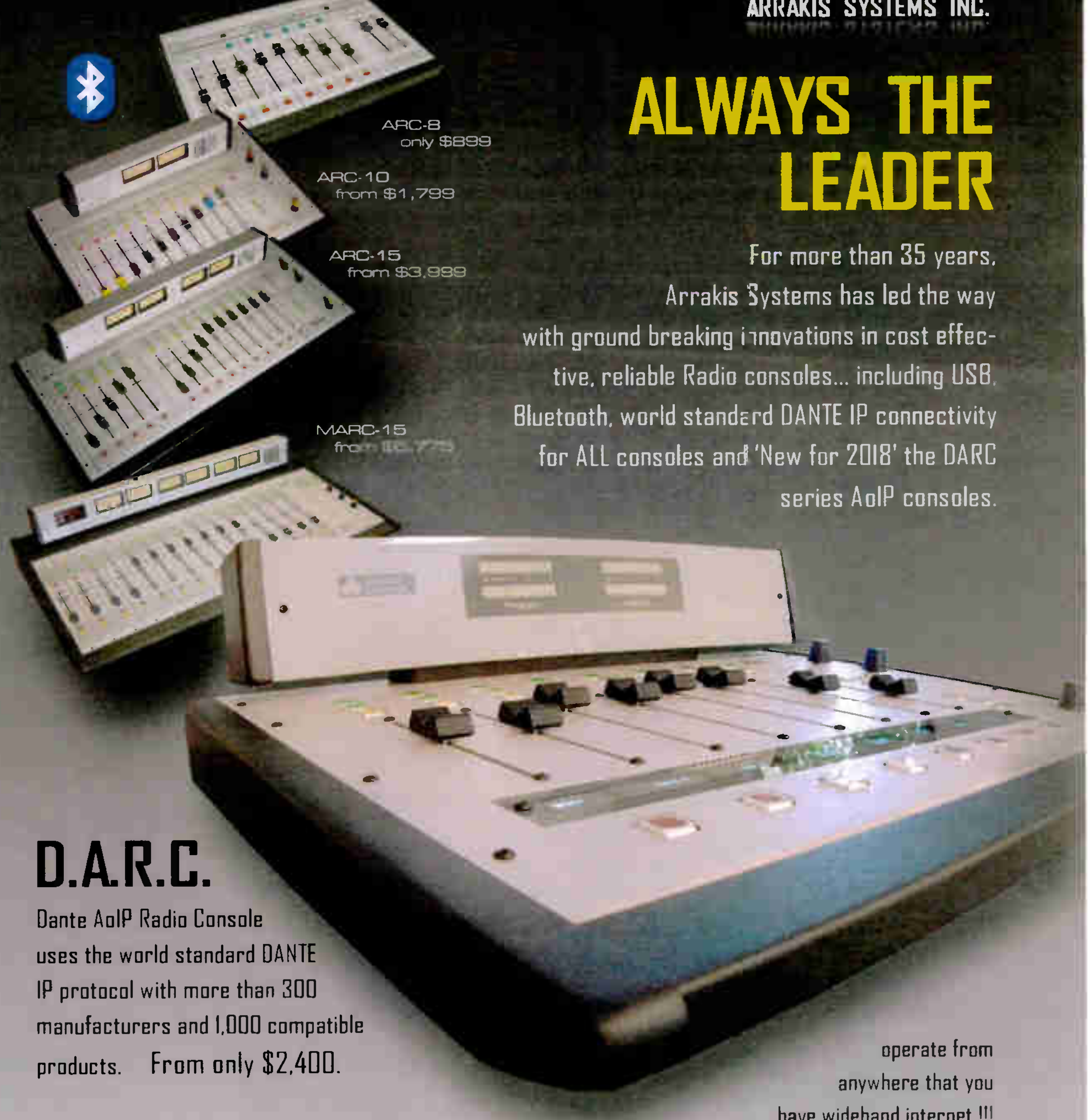
SHIVELY LABS 2930 BRANCHED COMBINER

Shively Labs says that its 2930 low-power branched combiner is the best solution for multiple stations.

The company can custom-engineer a client's system using either 2914 or 2916 bandpass filtering that will provide higher spectral purity, flat in-band frequency response and typical isolation values of 50 dB or higher — even for frequencies 0.8 MHz apart.

Each combined system is designed to provide high performance in the smallest space possible and are fully IBOC compliant, Shively says.

Info: www.shively.com



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Ignore the Sound of Streaming at Your Own Peril

Getty Images/RichVintage

A straight "lift and shift" may not be the right approach to your station's online presence

NEXT-GEN AUDIO

BY KEVIN CURRAN

How many times does your radio station run a liner that says, "Find us on the app," or "Listen on your computer at work"? Now, how often have you put yourself in the position of an online listener?

It is true that, even in this connected age, most radio listeners are pulling their signals off the tower and into a radio. But a look at the ratings books tells us that a growing number of listeners are online. In New York, WFAN's stream has maintained a 0.3 share 6+ over the last four months. KFI in Los Angeles saw its online stream rise to a 0.8 in May, topping 14 over-the-air signals. Add KFI's OTA and streaming numbers together, and that AM news-talker is number four in the number two market. Chicago has one stream in the book, San Francisco-Oakland-San Jose has two, and Dallas-Fort Worth has five.

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This is a sign of the future. I often ask my college students to track a week of media consumption. When I started, the replies were the multiplatform mix you would expect. No more. This spring's class was almost universally consuming media through their smartphones, and that was at one of the nation's leading schools of journalism and mass communication.

Listeners expect what they hear on the stream to match what they hear on the radio. But for a variety of technical and sales reasons, there can be a major difference between the two. Some of those differences result in programming that would sound unacceptable, but it may seem no one in authority is listening.

Several years ago, I was introduced to the internet radio: a unit that looks like a tabletop radio but has a Reciva or similar chip that acts like a web browser for audio streams. I also have three radio apps on my smartphone. I spend many hours listening to streams from anywhere English is spoken. Too often, what I hear makes me cringe.

As an insider, I am patient and willing to put up with the occasional problem. But to a regular listener, some of what I hear would send me elsewhere. I would challenge a general manager, sales manager or program director to spend a week listening only to the streaming side of their stations. What they hear may be surprising (and not in a good way).

STREAMING: FIRST IMPRESSIONS

Any real estate agent will tell you about the importance of curb appeal, the first-glance look at a property that can make or break a sale. Your online stream may open with pre-roll message. Its length matters, especially since it is something listeners do not get when turning on their radio.

There are two ways stations can stream: just putting the entire program online as it appears off the tower. Or with a separate set of commercials for online listeners.

That second category can be further broken down to listeners who get spots for local advertisers while listening to an out-of-market station. (It can be a bit disorienting to hear an ad for a Phoenix furniture store on the stream of a Cleveland radio station.)

That first option is the easiest to do and the one with the least obstacles. However, it is obvious that some stations send the programming to the stream early in the audio chain. If the stream is not split after the processing, the station may sound different.

CHALLENGES

There are several challenges when the online and on-air commercials are separate:

- **Timing:** Sometimes a :30 is not a :30 and a :60 is not a :60. The online stopset plays out, then returns to the on-air program with the last few seconds of another commercial playing.

- **Fill:** When the CBS stations (prior to the Entercom acquisition) did not have an online commercial to run, listeners were treated to 30- to 120-seconds of a music bed and an announcer saying programming would return shortly. There is another group that covers with PSAs, but I have heard the same spot run back-to-back, or twice in the same break.

- **Clash:** This is what happens when the online automation and the on-air automation are not in sync. The on-air listeners hear a network newscast followed by a local update, a spot, and then traffic. The online listeners get the network newscast, a spot, the local update joined-in-progress, then the spot and traffic.

- **Replacement:** Some news-talk stations that have local newscasts and traffic reports replace them with spots in the online stream. Local listeners will notice the missing elements. Out-of-market listeners may be seeking to hear news from home or get an update on a breaking story directly from people in the market.

- **Repetition:** If a station has a dearth of online sponsors, that means fewer spots to schedule. If the advertiser has a rotation of one or two commercials, how often those ads repeat can quickly become obvious.

- **Traffic:** Your traffic team likely plays close attention to when on-air commercial runs are supposed to start and stop. Do they give the same attention to online scheduling? I was hearing the same ad for a Mother's Day event well into June.

As more listeners live their lives online, there are potentially millions of reasons to consider the online stream equally as important as the OTA signal. Program directors give a lot of thought to ways to increase TSL. Any of these six problems could be a tune-out factor for online listeners. That is something no station can afford.

Kevin Curran holds a Ph.D. from the University of Oklahoma's Gaylord College. His research interests include broadcast history and media management. He teaches at Arizona State University's Walter Cronkite School and College of Integrative Sciences and Arts, Grand Canyon University and Paradise Valley Community College.

Comment on this or any article. Write to radioworld@futurenet.com.

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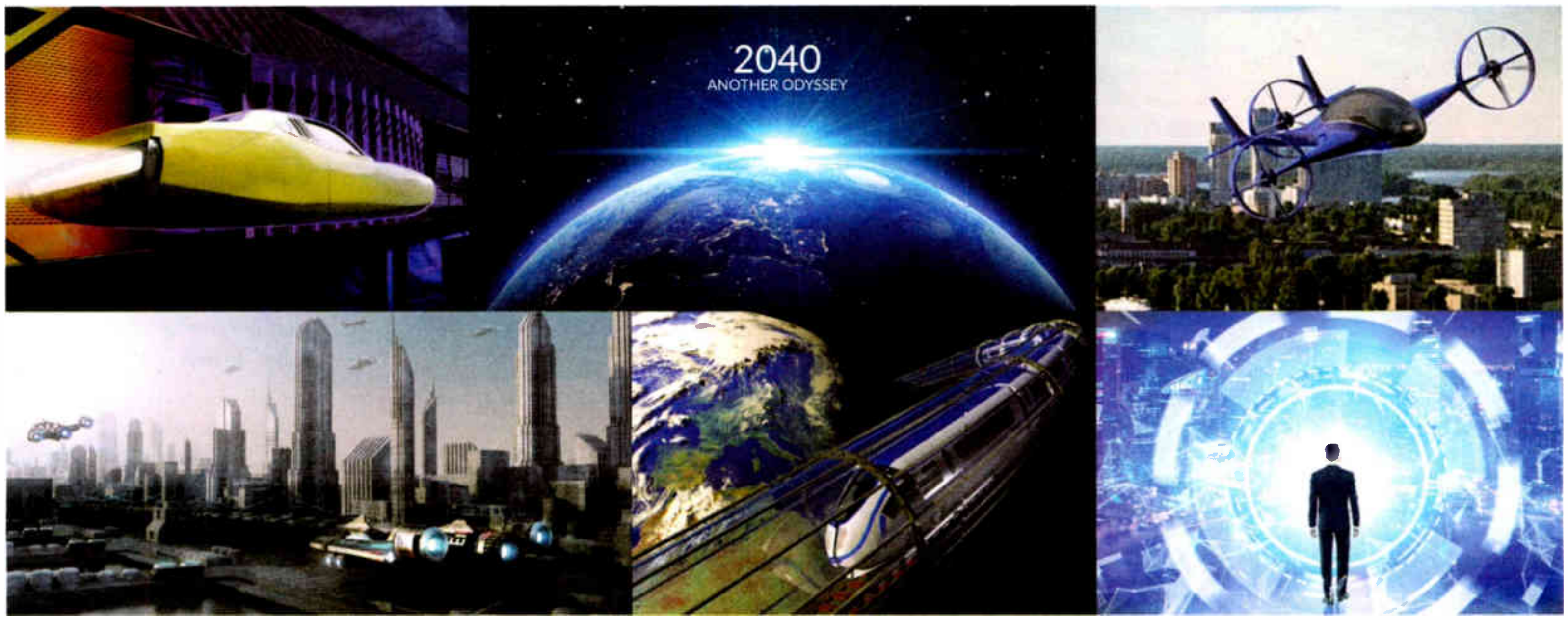

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World Radio History

Radio Events: Bigger (and More Important) Than Ever

But success comes from sponsors who act like partners, not advertisers

21ST CENTURY PD

by Dave Beasing

As radio companies look to develop new ideas, one original source of "nontraditional revenue" faces challenges but is going strong. Concerts and events are often vital to radio's bottom line, sometimes referred to as a station's "13th month."

Von Freeman has created profitable — and legendary — events for radio throughout his career, including at KIIS(FM) Los Angeles and now as director of marketing, new business and events for Entercom of south Florida.

"They are all like my children," he says. "Some grow up and move on to other parents, but still each has a place in my heart." One of his new events for Entercom, the Riptide Music Festival, has quickly made a name for itself in south Florida.

In Freeman's opinion, the bigger the brand, the bigger the party. At KIIS, a monster-sized station known for huge personalities like Rick Dees and then Ryan Seacrest, Freeman brought their existing outdoor festival to even larger venues — more seats, bigger stars and lots of sponsorship integrations. But it needed an exciting new name, too.

So Freeman thought back to the first concert festival he attended as a kid. Rebellious rock star Ted Nugent shot a double-barreled shotgun guitar on stage and screamed, "All right, you mother f'ers, Wango Tango!" Years later, "KIIS FM's Wango Tango" was born.

Von Freeman, Matt Schultz of Cage the Elephant and Zach Carothers of Portugal. The Man

In the years since, concert festivals — some produced by radio stations, some not — have become big business. Tickets to the most famous of them all, the Coachella Music and Arts Festival near Palm Springs, Calif., start at a whopping $429 each. But even more revenue can be generated by the food and beverage sales, merchandise, sideshow experiences and of course, sponsorships.

Finding sponsors that do more than just plaster logos everywhere, actually contributing to the event-goer's experience, is the goal.

FINGER LICKIN' DJ?

iHeartMedia SVP of Programming Alex Tear happened to be in attendance at Miami's Ultra Music Festival recently when KFC's "Colonel Sanders" mascot ascended on stage to perform as a DJ.

"Almost instantly, the crowd became confused. It was as if their bodies went from being fully energized to unplugged," says Tear. In their attempt to integrate the brand into the festival in a tongue-in-cheek way, Tear reports that KFC created "anger and resentment" instead.

Alex Tear

Tear wonders if the Colonel's stage appearance would have been better received by answering the age-old question, "What's in it for me?!" He suggests KFC might have offered attendees free samples, a texting contest and coupons, or VIP seat upgrades.

Many also experienced the stunt via social media. One Twitter photo of The Colonel generated 1.59 million views. "KFC is the only sponsor from Ultra that I've heard anyone talk about," points out Freeman. "Getting people to mention fried chicken in the same sentence as one of the coolest festivals on earth isn't easy."

Working with sponsors that fit the audience and vibe of the festival is key, according to Gary Spivack, EVP of Danny Wimmer Presents. "We want them to be strategically engaged in every aspect of the event, from the initial announcement until the last attendee leaves — and in the social media afterward. We look for true partners as sponsors."

Spivack warns radio stations that — with so many competing music festivals — they must treat music acts like partners also. "Radio stations have to pay an artist what they're worth," rather than expect to book them cheap in appreciation for adding a single to the playlist. "Artist managers are seeking promoters who can offer true investment for the long haul."

Of course, concerts aren't the only revenue-producing events that radio stations produce. Despite heavy rain, 22,000 recently attended the 34th Annual KISS Country Chili Cookoff in Pembroke Pines, Fla. "If you have an AC, country or CHR format, the kids and family expos can be fun for everybody and highly profitable," says Freeman. "Also, fantasy football camps give sports radio listeners an opportunity to come meet our personalities and get their advice on which players to 'draft.'"

Danny Wimmer, Michael Lang and Gary Spivack

Whatever the event, Tear says to "do it with purpose. Devise a plan that is a win for your entire team — generating ratings, revenue and strengthening your brand."

In 2019 and beyond, event-goers have plenty of choices for their entertainment dollar. That's why Spivack predicts a thinning of the herd. "The days of just plopping up a couple of stages and selling stale beer and corn dogs are well behind us. Only the best events will survive."

As a radio programmer and consultant, Dave Beasing found innovative ways to integrate brands into station content. Now he's CEO of Sound That Brands, a podcast studio that produces content for national brands.

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IT'S ALL IN WHEATNET-IP THE INTELLIGENT NETWORK

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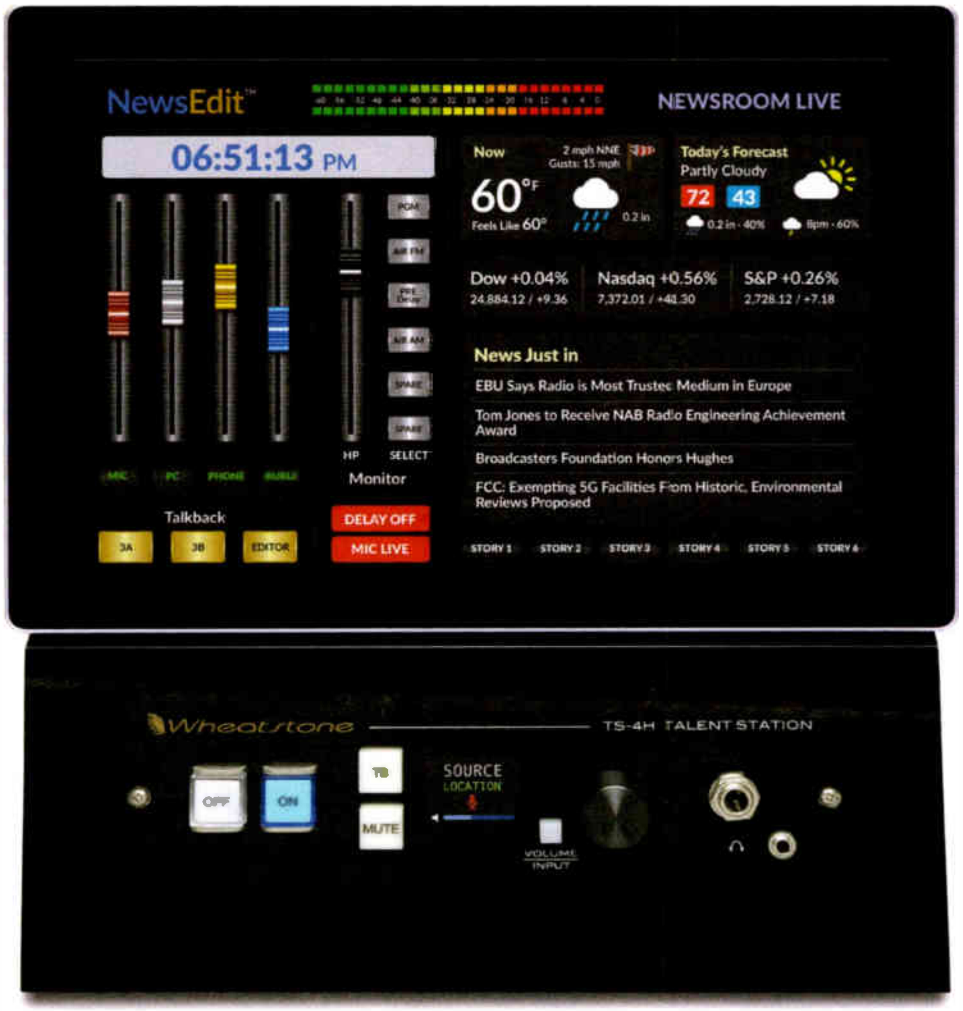
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WORKBENCH

(continued from page 1)

air! But an 85-mile trip to the transmitter site was necessary.

Once at the site, the engineer needed to do a little bit of sleuthing to find the problem. He began by tracing the AC power feed. The breaker was OK and measured voltage. It was not until he removed the power plug that he noticed the problem (Fig. 1).

Disassembling the junction box made it apparent that the screw terminal connections had been only marginally tightened. In the few years that the station had been on the air, the connection heated and oxidized until the resistance became high enough to finish it off.

Once the junction box (seen in Fig. 2) was opened, it was apparent that the electrician who installed the outlet wasn't accustomed to working with stranded wire. Fig. 3 shows how the connections heated and eventually failed.

Another licensed electrician subsequently showed our engineer that when working with stranded wire, you should first tighten the connection, but then loosen it and re-tighten it. This process allows all the strands of the wire to deform and settle in a more compact manner.

Over the years, this tip has served him well.

The problem of overheating and the failures it can cause can be diagnosed using a relatively inexpensive infrared detector/camera. There are a number of expensive standalone IR models, but if you're shopping in the $200-$300 price range, you may want to consider a smartphone solution.

Manufactured by FLIR or SEEK Thermal, these smartphone accessories are available from Amazon.

They display temperature on the smartphone screen using a color gradient. Blue images are cool; yellow, orange or red indicate increased heat.

Imagine being able not only to spot loose outlet wiring or circuit breakers about ready to fail, but also to identify loose coil clips or overheated capacitors in an AM array or loose elbow connections or junctions inside rigid transmission line.

Contract engineers may want to consider this addition to their arsenal of test equipment, offering analysis to clients for a fee. An annual thermal inspection would be good practice for all stations. And for liability protection, it would be prudent to use a licensed electrician to affect repairs uncovered by your inspection.

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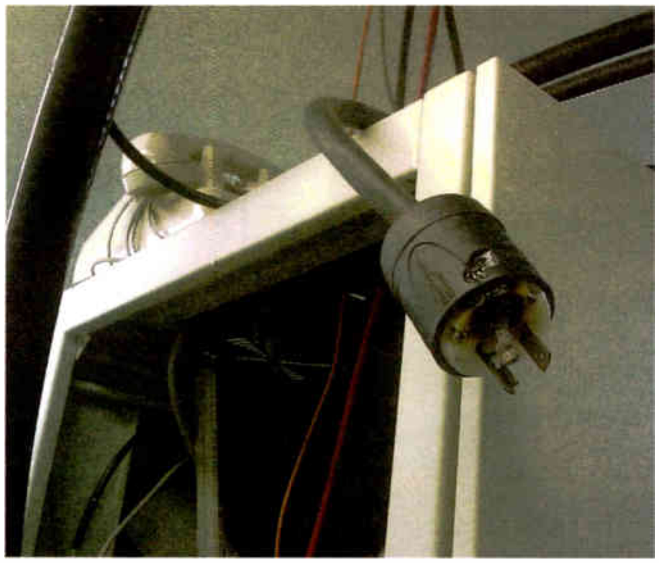
Fig. 1: Heat from loose wiring connections points to the source of the failure. The blackened plug is a clue.

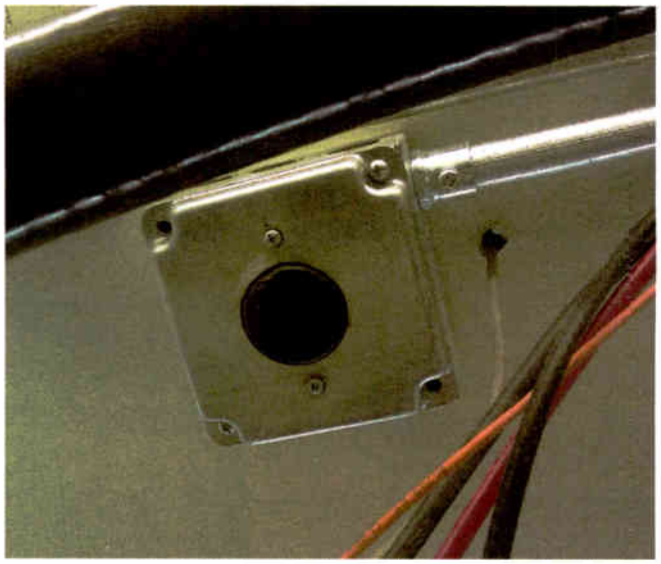
Fig. 2: The outside of the electrical junction box looks fine.

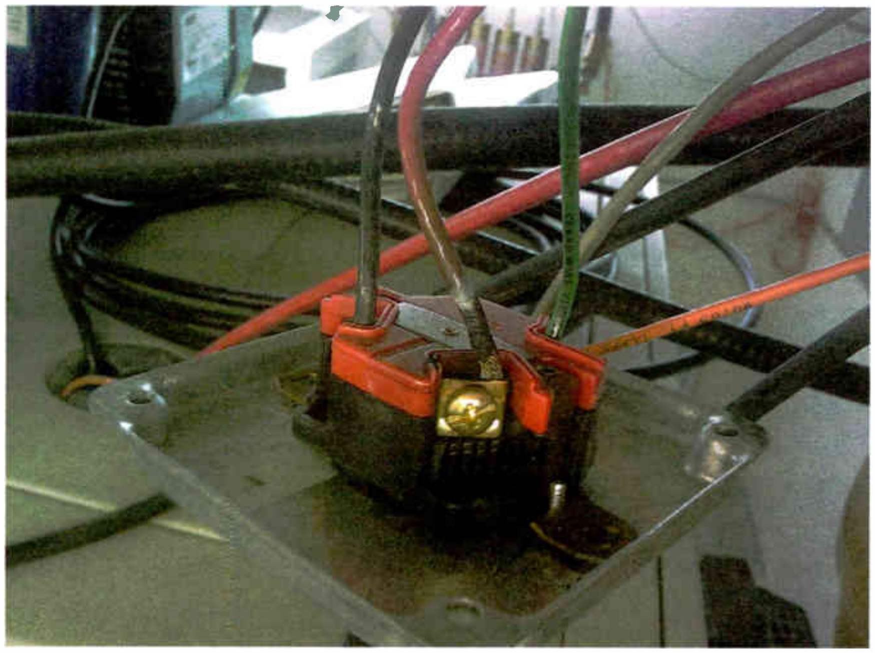
Fig. 3: But when screw terminals aren't tightened firmly, heat and oxidation can cause an off-air failure.

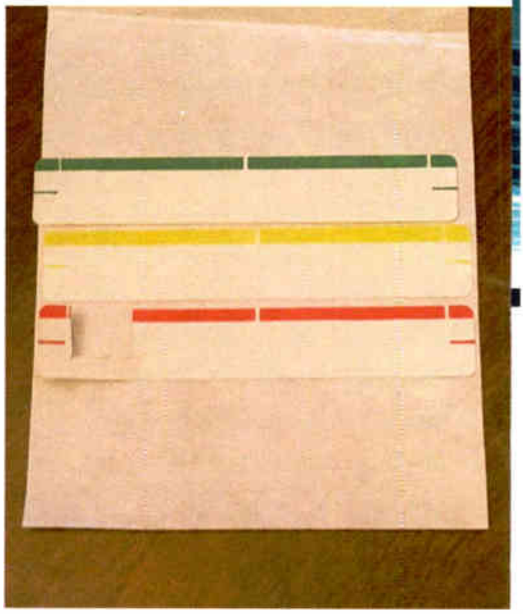
Fig. 4: Do you know what these are, and how they were used in both radio and TV stations?

Spotting potential heat-related failures before they occur can save thousands of dollars — not only in repairs but in air time lost when a failure occurs in a critical equipment.

Every so often we get a neat tip from the folks at Platinum Tools. This company is well known for its Ethernet cabling and testing products. Their most recent release is a compact and handy RJ45 connector tester.

Ethernet cables, especially the eight-pin variety terminating in RJ45-style connectors, can come in enough varieties to make their termination particularly confusing. The VDV MapMaster 3.0 is ideal for anyone doing a lot of Ethernet cable work.

In reviewing their website (*www.platinumtools.com*), I discovered it is a wealth of cabling know-how. In addition to a blog and white papers, you'll find how-to videos on cable prep and wiring subjects.

One of the neatest finds, however, was information on a free wiring tool. This tool comes with every piece of Cat5/6 cable and can be used to separate the individual wire pairs. What is it? It's the piece of twisted pair cable jacket that you remove to expose the four pairs prior to terminating!

Using the "tool" is simple: Just slip it over each individual wire pair, one pair at a time; then as you slide the jacket over the pair, twist it in the opposite direction of the pair's twist. Keep turning as you pass the sleeve over the pair, all the way down to the cable jacket.

To improve the performance, the folks at Platinum Tools suggest that you take your scissors and cut the end of the tool's jacket at a 30-45 degree angle. The angled end makes inserting the wire pair easier.

OK young'uns! Take a look at Fig. 4 and let me know if you can identify what these are. There was a time when they were commonplace at nearly all radio and TV stations. (It's not fair asking anyone over 30!) My email address is below.

Contribute to Workbench. You'll help fellow engineers and qualify for SBE recertification credit. Send Workbench tips and high-resolution photos to johnpbisset@gmail.com.

Author John Bisset has spent 50 years in the broadcasting industry and is still learning. He handles western U.S. radio sales for the Telos Alliance.

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Free FM Makes AoIP Leap With Wheatstone's IP-12

New IP-based equipment provides leg up for current and future needs

USERREPORT

BY MIKE WILLIAMS
Program Director and
PHIL GREY, Station Manager
Free FM

HAMILTON, NEW ZEALAND — Free FM, a community access radio station, is part of the Community Access Media Alliance, a network of 12 stations around New Zealand. We have been operating for 28 years, for many as AM-only, but on FM for seven years and are making strong inroads in trans-media delivery.

We are a not-for-profit entity, governed by a charitable trust and we operate as a non-commercial broadcaster. We have a small staff and content is created by approximately 80 volunteers, representing a very diverse range of communities, individuals and interest groups in our broadcast area (the greater Waikato region of the North Island — population almost 470,000).

Free FM is partly funded by New Zealand On Air (a government agency) to provide access to broadcasting facilities for individuals or groups with ideas, opinions or cultural needs which may not have the opportunity for expression through the mainstream commercial broadcast industry. The purpose of stations like ours is specifically described in the New Zealand Broadcasting Act.

Access radio is, in essence, radio "by the people, for the people," where the freedom of expression of ideas, values and beliefs is valued and protected. Many of those who come to make content with us have English as their second (or even third or fourth) language and we frequently have people involved who have physical or intellectual challenges. Much of the content created at our studios nowadays is in the form of prerecorded 30-minute or one-hour programs.

Our philosophy at Free FM is also to stay ahead of the game, by adopting emerging technology where it is clear there are new opportunities to enhance what we do. While radio broadcasting is still our major activity, we have over the last 10 years become our sector's leader when it comes to digital content delivery and embracing new developments (such as smart speakers). We are always keen to see and evaluate what is coming over the horizon in terms of how listeners are accessing content and what they want to do with it.

It had become painfully obvious that our analog studios were barely fit-for-purpose. There's a limit to how far you can push things and much of what we had was well used before it came to us back in the 1990s. It became obvious that a complete refit was necessary, replacing decades of add-ons, patches and mis-matched equipment.

Naturally, we wanted to find a technically advanced solution, but budget was also a major consideration. In doing our homework, we looked at all the available digital consoles and audio delivery systems available and considered how they might work for us. One of the big factors to consider was robustness and ease of use for nonprofessional people. And because of language considerations, we were also keen to find products that were intuitive and easy to understand.

In our search, Wheatstone kept coming up as a front runner. Marcus Bekker from Southern Broadcast was already known to us as someone who completely understands our sector. He became an invaluable advisor when talking about our specific needs and wants.

We did comparisons at every level, and everything we saw reinforced the view that adopting Wheatstone's WheatNet-IP Blade technology would provide us with not only what we need right now, but also form the foundation to support whatever future direction we may take.

We locked onto Wheatstone's IP-12 console as an affordable way to get us into the IP audio world. It had the ideal number of channels (12), and it was easy to navigate. We liked that each input module has an LED source display that we could name and that the meter bridge has easy-to-read bargraph meters and a prominent onboard timer. Because the IP-12 is a WheatNet-IP audio networked console, it gives us an in to an entire ecosystem for controlling, automating, processing and routing audio. It's a very powerful system, and we now we have the capacity to develop other options if we wish, such as video, real-time social media content, or other input sources, with relative ease.

What is important to the future of Free FM, and stations like ours, is that we remain relevant and responsive to our changing environment. Digital delivery options are perfect for what we do, and it makes great sense to be at the sharp end of that platform as it grows and changes.

We are very pleased with the bang-for-buck we get from our new infrastructure as it is, and we look forward to the coming years with confidence that we have made the right choice.

For information, contact Jay Tyler at Wheatstone in North Carolina at 1-252-638-7000 or visit www.wheatstone.com.

TECHUPDATE

LOGITEK LAUNCHES MIXIT

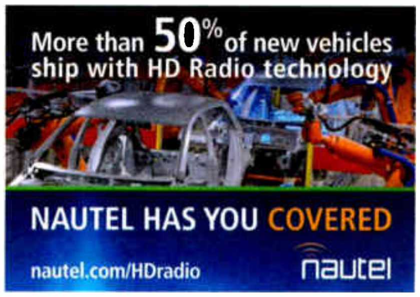
Logitek says its new mixIT is a compact, affordable AoIP audio console with the convenience and versatility of touchscreen control.

It adds that mixIT brings the controls critical for smooth radio operation into a compact desktop form-factor with two 7-inch touchscreens for metering, source selection, routing, and scene selects for custom console layouts. As with all other Logitek consoles, mixIT provides selection of any source to any fader and provides talkback and cue buttons for all faders. It is designed for use with the new JET-67 AES67 AoIP engine or with Logitek's JetStream Plus or JetStream Mini AoIP engines.

Twelve faders are provided with color-coded on and off buttons; rotary controls manage monitor, studio and headphone levels along with mixIT's built-in cue speaker. All other functions of the console are accessed via the touchscreens. Quick-access buttons are available for scene selection on one touchscreen while the other provides three utility router buttons along with master talkback selection and monitor, headphone and studio source selection. At-a-glance metering includes operator prompts indicating levels that are "too low" or "too high."

A combination of the mixIT console and a JET-67 engine will retail at $5,800; mixIT consoles may also be purchased separately for pairing with existing or new JetStream engines.

For information, contact Logitek Electronic Systems in Texas at 1-713-664-4470 or visit www.logitekaudio.com.



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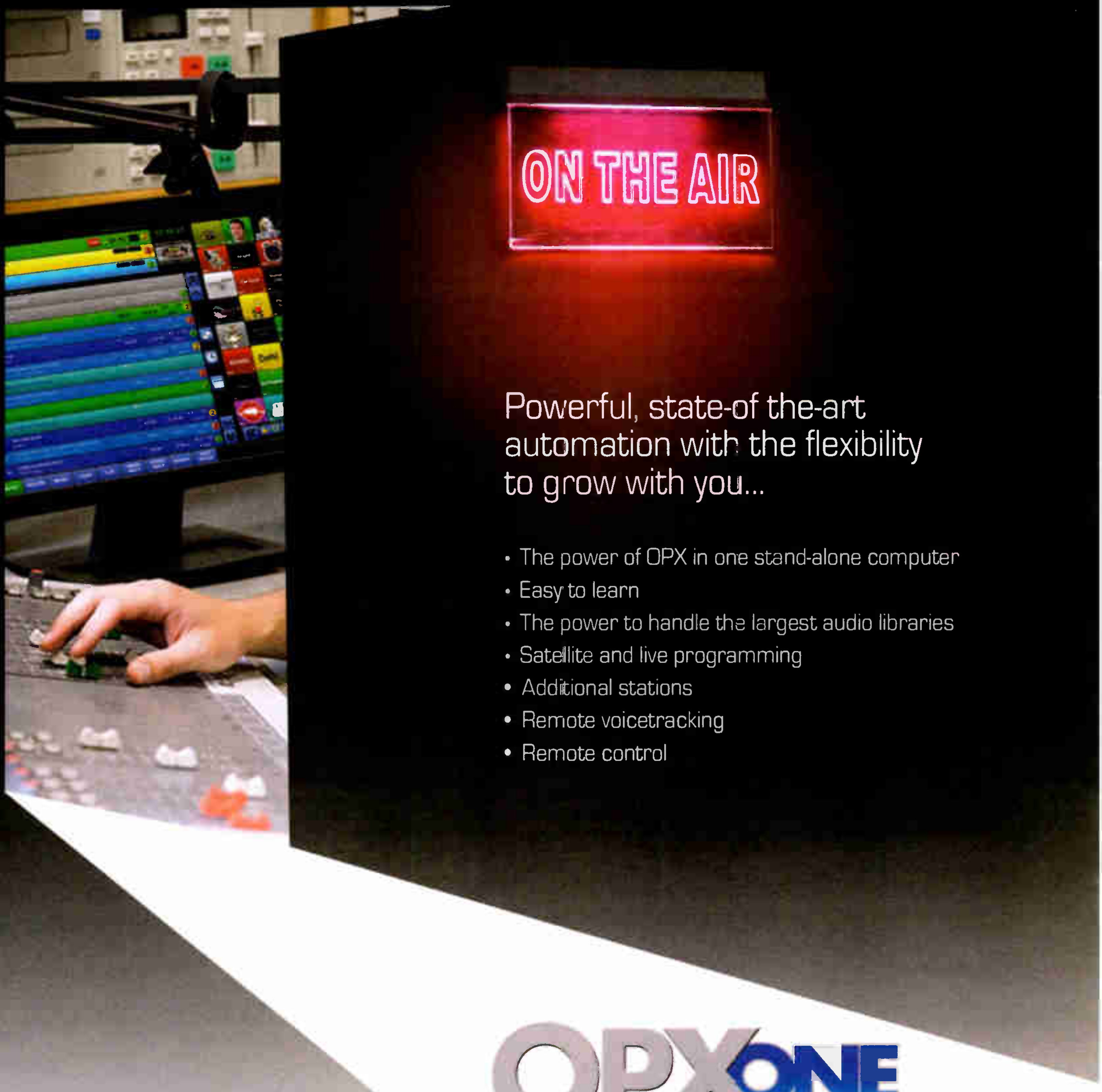

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USERREPORT

BY JORIS SCHIETTECATTE
Head of Technical Department
TVV Sound Project BVBA

NAZARETH, BELGIUM — I have been passionate about music, video and IT from an early age, and in the last three years working at TVV Sound Project, I have been fortunate enough to be able to use this passion in my work. What I love most about working in the broadcast industry is being part of a company that can deliver a total package to our clients.

A customer comes to us with a dream, a vision about how their radio station should look and function and we have the ability to work everything out for them and bring it to life. This can range from designing their radio studio in a 3D model, designing custom HTML pages for controlling the studio, to designing logos and website with integration of the studio (metadata, visual radio, request, social media, etc.) The possibilities are almost unlimited with the resources we already have today.

Recently, we had the opportunity to work on such a project for Qmusic and Joe from the DPG media group. TVV has a longstanding relationship with Medialaan, and they had been using the Omnia.11 for audio processing for several years. They came to us looking to upgrade their facility by installing 11 new Omnia.9s, complete with all the trimmings of an AoIP environment. These Omnia.9s now handle all the audio processing of Joe FM and Qmusic (as well as all other channels on DAB+). We also installed five Telos Alliance Z/IPStream R/2s to handle all the station's streams and a lot of xNodes to convert analog/digital I/O to AES67 or to be able to route and control other AES67 sources with Pathfinder. In addition, they also installed two Telos VX Engines as part of a brand new VX phone system.

All of these upgrades are monitored and controlled by two Axia Pathfinder Core PRO units. Pathfinder is being used in this facility for level detection for all FM and DAB+ channels through an HTML5 page with an overview of all channels with metering and status. If there are any errors or problems, there is a clear indication as well as instant notification through mailing. In addition they are also using an HTML5 page with maintenance buttons to adjust the Omnia.9 source (secondary source or internal player).

We always choose Telos Alliance products because we know from experience that these are the highest performance products on the market. We have replacements for all our units that are in service, but we've noted in practice that these must be used very rarely.

During the project, it was noted that an aspect of the Omnia.9 did not fully meet customer requirements. If the internal player of the Omnia.9 was activated, it started to play from the last position in the song. We reported this to Telos Support and immediately received an answer as to what they needed to add/change to meet these customer requirements. After a few days there was already an update with the solution. Now you can have the choice to have the emergency player play a song from the beginning of a track, just like the customer requested.

Broadcast is a sector that does not stand still. The evolution from analog to digital is inevitable and cloud-based systems are just around the corner. Innovative devices such as Pathfinder that can also be run as a server application are just one of the many examples of why I'm excited to see what tomorrow can bring, and what the future of broadcast will be.

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

AEQ Netboxes Provide Access to IP

Netbox DSP routes and process audio channels from Dante network

USERREPORT

BY ALBERTO SANTOS
Technical Manager
TSF Radio News

LISBON, PORTUGAL — Last May, AEQ provided training sessions on Dante AoIP networks in Lisbon, Portugal. Since 2016 TSF Radio News has been users of many AEQ Dante-based devices, including a BC2000D router, audio mixing consoles, intercom systems, Netbox 32, Netbox 8 and Netbox 4 AoIP interfaces, etc.

I dropped by to say hello and take the chance to refresh my skills in Audinate's Dante technology. My curiosity was drawn to a new device called Netbox DSP. The representatives from AEQ explained to me what it does, and I committed to evaluate it in a real test environment. I am happy to work with AEQ; they are always open to my contributions and try to adapt their products to our needs whenever possible.

Netbox DSP is a mixing, distributing and processing audio router. Its most innovative feature is the absence of direct audio inputs and outputs. It is able to receive audio from the Dante or AES67 network and then return it, mixed and processed, to be used in other devices or subsystems.

It has a basic front panel since control is entirely performed from a software application. The only features are two power indicators for the redundant power supplies, activity LEDs for the primary and secondary Dante networks and, lastly, a red error indicator.

At the back there are AC power supply sockets, Dante AoIP primary and secondary connectors, a fan and four GPIO connectors. When I asked about this fan, AEQ answered that it only starts when the unit is at risk of overheating and that its speed depends on the temperature inside the device.

The utility of GPIO signals in AEQ Dante devices offers the possibility of transporting them across the network. For example, I can close a contact in the mixing console (GPIO) and this triggers a macro in the audio matrix in order to perform the required crosspoints to put the studio on-air, for instance. At the same time, I can turn on an indicator that informs the operator in the central control which studio is on air.

The unit that I tested was able to mix and route 96 audio channels, but AEQ has versions managing between 64 and 160 input/output audio channels.

It is all controlled from Netbox RTC software, which allows the user to open different work window instances in order to customize the viewing of the different router devices and which lines to control.

The NetBox DSP has great processing capabilities, which can apply to up to 64 audio channels. These include high-pass filters, low-pass filters, band-pass filters, four-band parametric equalizers, compressors, expanders, limiters, noise gate, delay (up to 10 seconds), audio silence alarm or level metering and test signal generation.

The AEQ Netbox DSP is a unique product in the Dante universe, it offers excellent features with a very limited price. We especially like the high processing capabilities that are included with the unit, and how easy it is to integrate GPIO commands in our IP network using Dante or AES67.

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

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TECHUPDATE

LAWO RUBY ADDS ST2110 INTEROPERABILITY, DANTE I/O CAPABILITY

Lawo's Ruby mixing console has introduced two features that significantly increase operational flexibility, the company says.

Power Core (the Ruby console's AES67 mixing engine) now supports the SMPTE 2110-30 standard, ensuring seamless interoperability of audio and video equipment in combined radio/TV broadcast plants. And a new Dante plug-in I/O card, now available, adds more interoperability, making it easy to bring signals from Dante devices into AES67 AoIP networks.

Ruby's mix engine comes with standard interfaces for up to 128 dual-redundant AES67/Ravenna streams and 128 dual-redundant MADI channels; eight rear-panel expansion slots allow a la carte addition of analog, AES3, MADI and Dante interfaces. A Studio I/O card provides mic inputs, headphone outputs and studio monitor feeds. The ability to connect and convert between AES3, AES67, MADI, Dante and ST2110-30 makes Ruby a flexible radio consoles.

Lawo says that Ruby also includes SMPTE 2022-7 Seamless Protection Switching, aka "hitless merge," to help ensure continuous uptime. Using SPS, Ruby's mix engine connects to the AoIP network via two independent, redundant network paths, instantly switching between primary and secondary connections to keep audio flowing in the event of a link interruption.

Other highlights include AutoMix hands-free mixing of up to 32 inputs, Autogain one-touch mic gain calibration, and motorized faders linked to console snapshots.

DSP capabilities provide sweetening for up to 96 input channels; tools include EQ with three fully-parametric bands plus semiparametric bands configurable as shelf, high-pass or low-pass filters, and gating, expansion, compression and limiting.

Ruby is available in desktop or flush-mount version, in four, eight, 12 and 16 fader frame sizes that may be combined to build consoles of up to 60 faders in single- or split-frame configurations.

For information, contact Lawo in New York at 1-416-292-0078 or visit www.lawo.com.

Arrakis Is at the Beginning for Humana

DARC digital console is cornerstone for company radio station

USERREPORT

BY MATTHEW LANGSTON
AV Technology Technician
AV Services, Humana

LOUISVILLE, KY. — On May 6, the Humana Audio Visual Services team launched Humana Radio, an internally streamed radio station, featuring music, podcasts and wellness breaks, in Louisville, Ky. Humana Radio is broadcast to the nationwide employee population of Humana Inc., composed of almost 50,000 employees.

In 2017, AV Services began an overhaul of space and technology within their headquarters, which gave birth to the Video Enterprise Collaboration Suite, a location where any and every employee was invited to bring their talent, passion and creativity to work on video and audio projects with their teams. The suite included a green screen studio, edit bays featuring Adobe products and an audio booth, all available for checkout and training.

As employees poured in to use the available services, many teams began creating podcasts to share internally with their teams at Humana. AV Services Manager Trey Pennington along with Kellie Stephens, myself and other members of the team began to brainstorm a solution and spark a vision for how these informative podcasts, many containing information which could be beneficial to Humana as a whole, not just specific silos, could be shared company-wide. We wanted to deliver interconnectivity to our company, regardless of location, and we wanted to inform, encourage and empower each member of our Humana family. From there, Humana Radio was born, and the podcasts on a plethora of different topics began to flow in greater numbers than they ever had before.

PGM
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CUE

Along with finding the correct personnel to help man the station, our equipment had to meet the needs of broadcasting 24/7 as well. We began looking for a great solution that would be powerful yet graceful, and are proud to say that we arrived on the DARC console from Arrakis Systems.

We love this product because it was easy to learn for both novices as well as experienced radio professionals. We didn't have to be absolute experts on the situation, as we learned the ins and outs of the DARC. We were able to set it up according to our own personal needs, inputs and styles to help us accomplish the task of generating a new form of communication within Humana.

Everything from having routing control of specific channels, along with having the physical board working in collaboration with a digital setup to how seamlessly it matched up with Arrakis' Apex automation made our installation a breeze. We were excited to learn and to take our project to the next level, and

(continued on page 27)

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TECHUPDATE

HENRY SPORTSCASTER SIMPLIFIES PLAY-BY-PLAY

Henry Engineering now offers the SportsCaster, a product designed to simplify the audio portion of a sporting event broadcast or telecast.

SportsCaster is the "missing link" that manages all aspects of play-by-play audio, the company says. It mixes the announcers' mics, controls and distributes headphone audio for announcers, producer and camera operators, and provides an intercom for essential communication between everyone.

SportsCaster works with Henry Engineering's Sports Pod announcer stations, and integrates all these audio functions in one unit. SportsCaster has inputs for three announcers, a field reporter, crowd mic and other sources. In addition to the main program output (for "air" or streaming) there are separate, dedicated headphone outputs for the announcers (using Sports Pods), the field reporter, camera operators and the producer. Each headphone output can be custom-mixed to suit the listener and minimize confusion.

Because play-by-play sporting event coverage requires real-time off-the-air communication between talent and tech, SportsCaster includes a comprehensive intercom system that allows back-channel communication between the producer, announcers, field reporter and camera operators. The intercom system provides selective communication to any or all members of the broadcast team.

The producer can give cues to the announcers and/or field reporter while simultaneously "calling the shots" to the camera operators. The producer controls the intercom audio paths, so that each broadcast team member hears only what is necessary without hearing comms intended for someone else. This minimizes confusion, especially when dealing with inexperienced announcers and techs.

SportsCaster is a compact 1 RU unit, and can be installed in a few minutes using standard cabling. It eliminates the need for multiple mixers, headphone amps, distribution systems and complicated wiring.

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

(continued from page 26)

for the questions we did find ourselves wondering about, the customer support at Arrakis made us feel like family. They were there to make sure we had all the tools we needed to be successful for our launch and into the future.

As we look to the next phase and coming months and years of Humana Radio, we have no doubt in our minds that we made a smart choice by choosing the DARC system along with Apex, to help us facilitate discussion, real talk, diversity of thought and creativity, from, with, and for all employees.

For information, contact Ben Palmer at Arrakis Systems in Colorado at 1-970-461-0730 or visit www.arrakis-systems.com.

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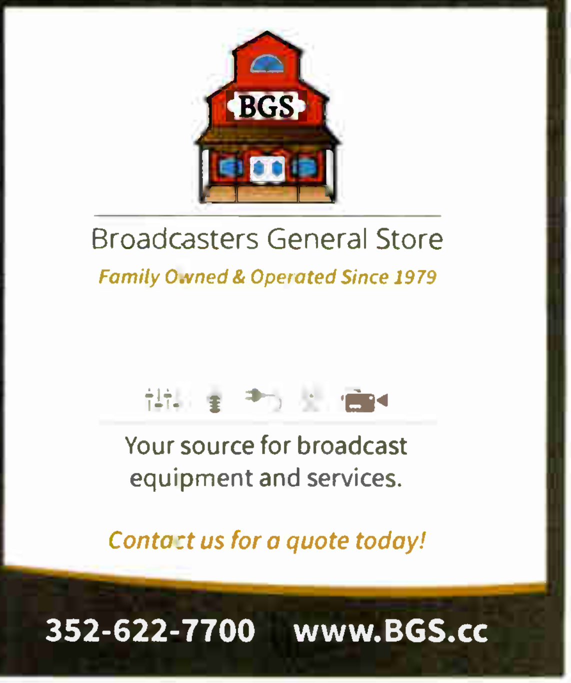
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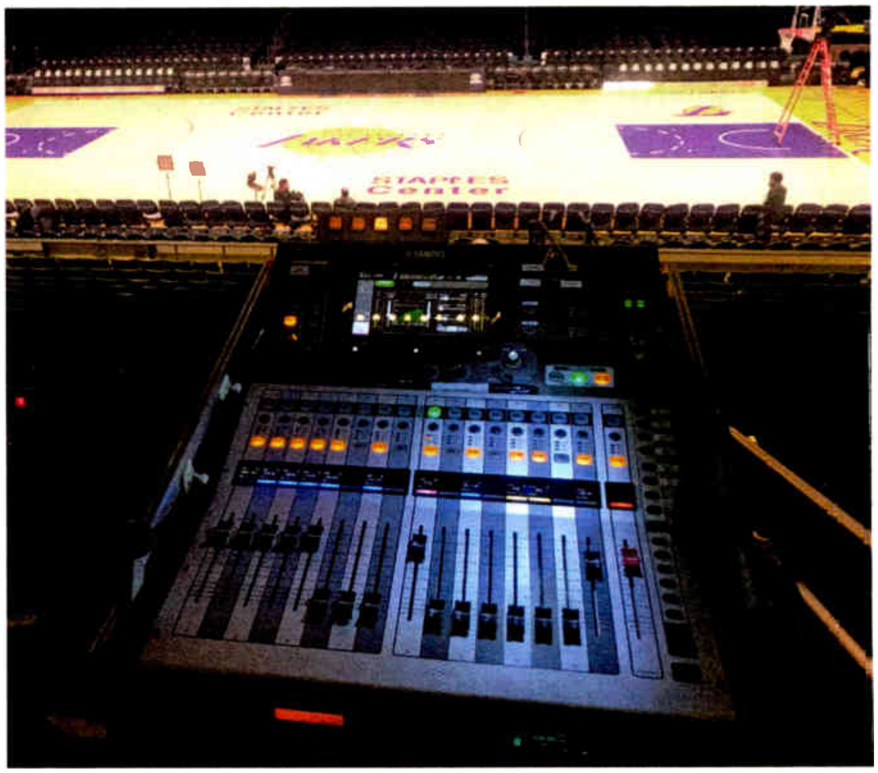
Big Sound, Small Package

L.A. Lakers' radio engineer turns cramped space into powerhouse with Yamaha TF1 console



SPECIAL REPORT

BY TOM DI NOME

LOS ANGELES — An eight-foot table isn't the most elegant studio, but Mike Dooley knows how to get a lot out of a little — in terms of his workspace and his audio equipment.

Dooley is the lead engineer for the NBA's Los Angeles Lakers' home radio broadcasts, covering more than 40 regular and preseason games, and possibly post-season. For each game, he shares that table in the Staples Center with five audio positions for hosts and guests. To make his broadcast set-up easier, faster and more compact, Dooley uses the Yamaha TF1 digital mixing console.

"A challenging element of sports broadcasts, especially basketball where you're always on-site in the arena, is space is extremely limited," Dooley said. "The less space I take up, without sacrificing any audio quality, means there's more space for the other guys to prepare notes and conduct interviews."

FOOTPRINT

The compact and portable TF1 gives Dooley that balance of performance and footprint. The Lakers' home radio broadcasts, including pre- and post-game shows, originate onsite in the arena and air on KSPN(AM) 710 ESPN in Los Angeles and on the Lakers' broadcast network of 11 radio stations from New Mexico to Hawaii.

"Throughout each game broadcast, I'm responsible for play-by-play, color commentator, producer, stats and guests, so I need to be ready for anything. Plus, I have to manage wireless and have compression limiter control, along with the mixing."

Dooley started using the Yamaha TF1 console in January and has since cut his preproduction time in half while streamlining his audio workflow. The TF1 console's multiple aux outputs give him enough flexibility for each broadcast.

"I have five announcer positions that like personalized mixes and the analog board I was using had run out of room," Dooley said. "With the TF1, I can customize mixes, giving each person their own mix and levels. Being able to EQ everything separately with total control over compression on every channel and outputs and inputs has been wonderful."

He continued, "I've been a Yamaha user for more than a decade on other projects, and I recently converted my audio infrastructure to newer Yamaha products, including CL3 and CL5 series mixers. The Dante connectivity between each makes set-up and operation simple. Now everything is in the Yamaha world, familiar, easy to use and with the expandability needed."

He added that the console's Dante interface lets him connect to the announcer boxes using a single CAT-5 cable to each, another factor contributing to reduced set-up time. "The sound is superb without having to use the standard microphone cable involved with an analog board."

Dooley also takes advantage of the Dugan Automixer for his announcer's microphone channels.

"Our broadcast position is right in the middle of the crowd, about 15 rows up from the floor. The Dugan software that shipped with Firmware Update 3.5 for the TF1 console is extremely helpful in keeping the crowd noise bleeding in the microphones down to a minimum, allowing me to add what I need via crowd mics instead of fighting with it during the play-by-play. It also helps make our post-game interviews with players on the court sound fantastic."

The mixer's all-in-one design makes transporting his equipment easier.

"I previously had an outboard compression limiter that was heavy and took up a lot of space," he said. "The TF1 console's onboard compression was appealing, packing all the functions I need into one unit and letting me do more than I could before, easily and with higher quality results."

For information, contact John Schauer at Yamaha Corp. of America in California at 1-714-522-9011 or visit https://usa.yamaha.com.

TECHUPDATE

CALREC TYPE R EMBRACES AOIP WITH CONNECT SERVER

Calrec notes that radio has embraced IP quicker than other broadcast sectors. It says this shifting technological landscape is very exciting, and the widespread acceptance of open AoIP standards provides the opportunity to create very flexible networking infrastructures.

Calrec says this industry shift was instrumental in the design of Type R, which is based on this ethos, with AES67-compatible audio transport. Type R is equipped to meet future demands of the AoIP environment.

Out of the box, the Type R has a Connect server running on its processing core. Any PC or tablet that can connect to the AoIP network can access Connect via a web browser. It can identify any media streams and devices on the network regardless of their registration/discovery protocol and presents the devices on the network in a visual, familiar and user-friendly way that allows them to be interconnected without getting bogged down in networking detail.

Connect provides access to in-depth configuration and the necessary information in a simplistic way to provide fast workflows for day-to-day management by production staff. Redundancy is provided by allowing multiple servers to sit on a network, all synchronizing their data. Each server can be accessed by multiple users, each with varying privilege levels. Devices can be given labels and can be grouped by type or physical location. Access by each user can be limited on a stream-by-stream, device-by-device and group-by-group basis. Users can search by stream, device or group name and can maintain their own favorites list.

Connect provides network diagnostics such as bandwidth utilization and dropped packets, along with warnings. Connect can also be used to create GPIO style logic connections between devices and provides control for things like mic preamp gain and power.

For information, contact Calrec in California at 1-661-877-9775 or visit www.calrec.com.

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WYBG 1050, Messina, NY, now off the air is selling: 250' tower w/building on 4 acres; 12' satellite dish on concrete base; prices drastically slashed or make offer. 315-287-1753 or 315-528-6040

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TERRESTRIAL RADIO'S FUTURE

I just read the column by Jon Yinger on the future of terrestrial radio ("Where Is Terrestrial Radio Going?", *radioworld.com*, keyword "Yinger").

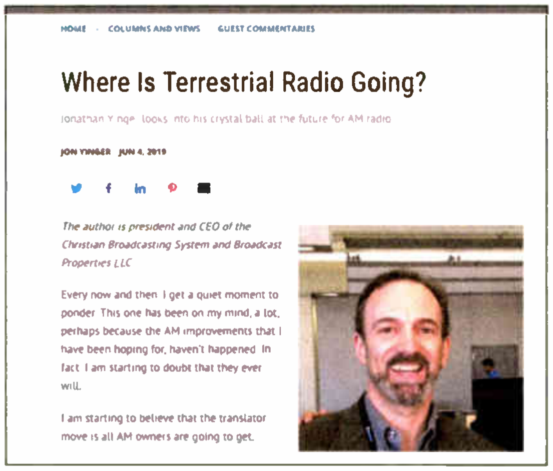
I would venture that AM broadcasting is on its last legs and will be sunset by the FCC in 10 years. Most AM stations will be moved to a new band or offered a new opportunity for an HD FM channel, as stated by Mr. Yinger. Most of the AM band will be given over to amateur radio operators, with some channels left for broadcasters who want to stay on the band. The idea of digital broadcasting on AM is a good idea, but I think its time has come and gone. It should have been done a long time ago.

I am not sure about FM analog broadcasting, as there are a huge number of listeners who find nothing wrong with the medium. It is a good workhorse — it sounds good and is reliable. I can't see why analog needs to be eliminated. However, there should be opportunities for FM broadcasters to go fully digital, if they want to and the listener market calls for it.

There is a place for OTA radio broadcasting, as the internet can be fickle at times and is not quite reliable. Witness the recent outage at Google, during which many services were taken off-line suddenly and with no explanation.

With all the changes proposed by Mr. Yinger, the only thing needed is a well thought-out media campaign explaining to the public the changes that are to occur and why it will be beneficial to all listeners. Without buy-in from the listeners, all the wonderful changes talked about might not happened and even be fought against.

Dan Ramos
Joshua Tree, Calif.



HOME · COLUMNS AND VIEWS · GUEST COMMENTARIES

Where Is Terrestrial Radio Going?

Jonathan Yinger looks into his crystal ball at the future for AM radio

JON YINGER JUN 4, 2019

The author is president and CEO of the Christian Broadcasting System and Broadcast Properties LLC

Every now and then I get a quiet moment to ponder. This one has been on my mind, a lot, perhaps because the AM improvements that I have been hoping for, haven't happened. In fact I am starting to doubt that they ever will.

I am starting to believe that the translator move is all AM owners are going to get.

The article from Jonathan Yinger was a quick, easy, sensible read. The future of broadcast radio may appear murky but should "shake itself out" over the next 20 years.

The recent downsizing in several markets by at least one major company due to financial (or other) reasons has shown that the great consolidation experiment needs to be reworked a little. Radio has always been a business where the "most creative" seem to win.

But technically there needs to be more work, too. As Yinger pointed out, FM digital should treat HD2, HD3 channels as equals to the HD1 channel, but in more ways than one.

I was asked in the early planning stages of HD how the stations should be displayed. When told about the HD1, etc., I protested. It was a silly protest, as we can see today, but if radios were seeking out separate "ands" for the new signals, it might make more sense.

The other issue is the power levels of HD1, HD2 and HD3 etc. It's very frustrating to travel down the road and either have the receiver quality change — or the HD2 signal disappear when you know you're still in range of the main analog signal.

A lot more research can be done to help fix broadcasting — but the question remains as to whether the commission is really interested. Yinger's fear that the issues may never be resolved are all too evident and this aspect of his look into the future might be the most accurate.

Dave Mason
Programmer/Air Talent
San Diego, Calif.

RADIO FOCUS GROUPS

Pexels/rawpixel

I read with great interest "Community Broadcaster: Do You Matter?" (*radioworld.com*), including mention of the use of focus groups.

Focus groups, when done well, are useful. It is essential for all to remember that focus group research for non-commercial radio does *not* have to follow the methodology used by commercial broadcasters or corporations trying to sell products.

If you go the focus group route for non-commercial radio (usually designed to serve a wide array of local interests), those operating their local community station must have access/input into the focus group methods or process to assure that a wide variety of people in the station's service area are factored into the research. Station managers should not let people from an outside group come in, with assuring words, and allow them to dictate *how* the focus group sampling numbers are set up.

For community-based stations with an array of programming interests, it stands to reason that people making up focus groups should include people living in all Zip codes (with all ethnic and racial backgrounds) of the station's coverage area. If this is not done, how much is the research diminished? If only a portion of the listener base is sampled, is this segregating essential parts of the station's base?

Sadly, this happens on a regular basis in commercial radio but has also taken place in non-commercial radio too, when researchers only picked classical music listeners who lived in the most affluent ZIP codes of the station's service area.

It all comes down to a question of mission and why community-based, non-commercial radio exists at all. If needed changes are to be made in a station's programming, it must be done with accurate information, which hopefully bolsters the need for more inclusion of more types of people, not less.

Pete Simon
Arvada, Colo.

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