SAFE HAVENS FOR PIRATES? — Page 29

ENCO
Radio Show Booth 11 ENCO.com
ADVERTISEMENT

RADIOWORLD

SEPTEMBER 26, 2018 | The News Source for Radio Managers and Engineers | $5.00 | RADIOWORLD.COM

Audi Explores Hybrid Radio

A conversation with the carmaker's Radio Development Engineer Christian Winter

NEWSMAKER

BY RANDY J. STINE

WASHINGTON — When RadioDNS exhibited at the NAB Show last spring, an unexpected participant in its booth was Audi, showcasing its implementation of hybrid radio.

Their partnership is just one development in an ongoing dance between carmakers and radio technology organizations on both sides of the Atlantic as these industries continue to develop strategies for connected — and eventually autonomous — cars.

Radio Development Engineer Christian Winter is at the forefront of Audi's hybrid radio efforts, which center on RadioDNS, a hybrid solution that combines broadcast reception with online capabilities, in this case combining FM, DAB+ and IP functionality.

Audi was the first automotive manufacturer to adopt RadioDNS for its line-fit hybrid radio platform. The hybrid system, called Audi MMI Navigation Touch Response, is available in Europe in the Audi A8, A7, A6, Q8, Q3 and A1 models as well as the new Audi e-tron, the company's first all-electric SUV. The hybrid radio functionality enables a seamless switch between FM and digital worlds and is now capable of web streaming, according to the carmaker.

RadioDNS is an open standards platform that can interface with multiple aggregators. "RadioDNS is the connection between radio broadcasting and online," Winter said. Among other systems being developed in this business space is the DTS Connected Radio system developed by Xperi.

Winter, who has been with Audi since 2014 and is based in Ingolstadt, Germany, spoke to Radio World about efforts by U.S. radio broadcasters to build relationships with the auto sector

(continued on page 4)

Christian Winter explains the hybrid radio's functionality to Audi blog author Andreas Wittke.

#BXMNTQJ **********AUTO**3-DIGIT 857
#0009383 1# RDWA 0009383 E1802
TOM MILLER
ASSISTANT CHIEF ENGINEER
KOHN
2033 S AUGUSTA PL 217-1SDL
TUCSON AZ 85710-7903 P0002 000005407

Fall Broadcast Symposium Digs in Deeply

Meeting features all-digital AM, pirate radio, translators and appearance by Audio Division chief

BY JAMES E. O'NEAL

For more than 60 years, the Institute of Electrical Engineering and its precursor, the Institute of Radio Engineers, have brought top broadcast engineering industry figures together to share information about cutting-edge technologies. The tradition continues this autumn, with the 2018 IEEE Broadcast Technology Society's Fall Broadcast Symposium Oct. 9–11 in Arlington, Va.

The annual event, which began in

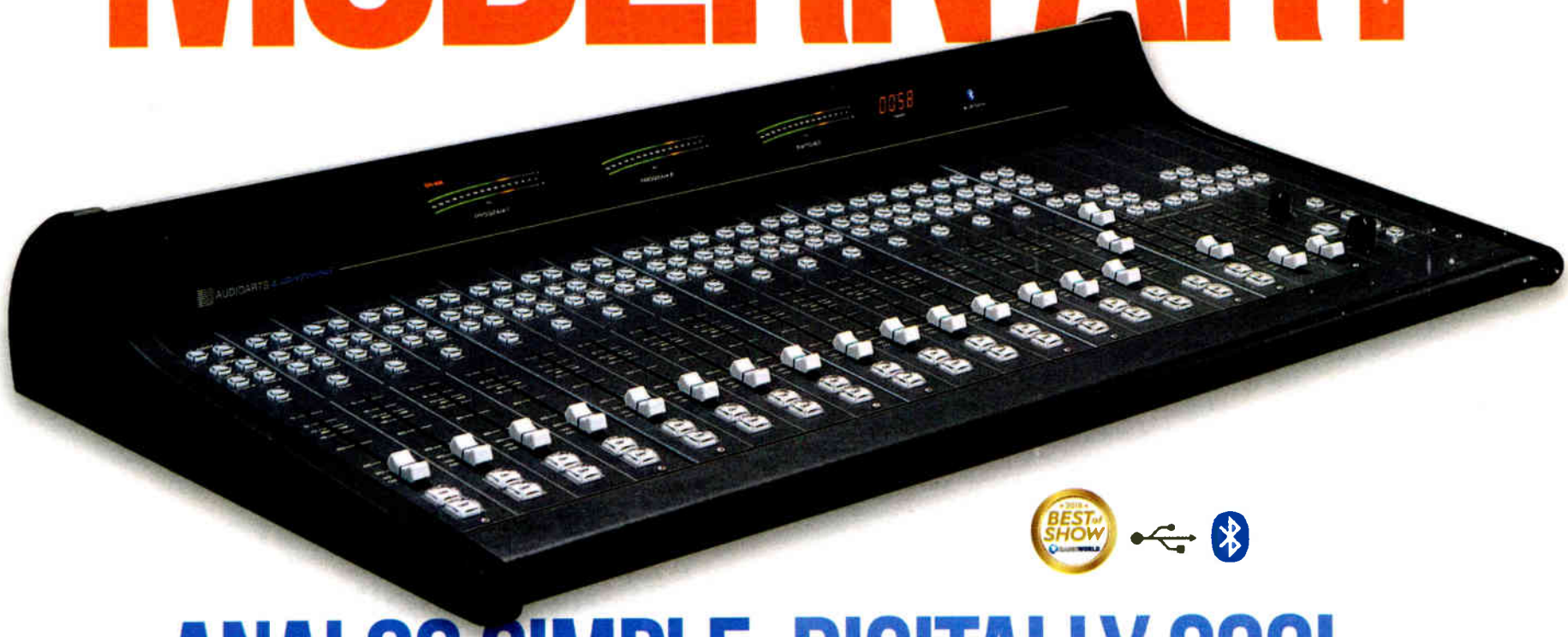
(continued on page 6)

Bionic in every sense.
Bionic STUDIO
Talkshow Social Director Contest
The smartest audience engagement and content production radio has ever seen.
View our complete range of smart broadcast solutions at bionic.radio
Broadcast Bionics

World Radio History

AUDIOARTS

MODERN ART



ANALOG SIMPLE. DIGITALLY COOL.

Audioarts Lightning strikes that perfect balance between analog and digital.

Four stereo buses for easy routing. Simple phone module for trouble-free remotes and call-ins. Bluetooth and dual USB ports for direct access to laptops, tablets, and mobile phones, as well as applications such as editors and automation. Plus, assignable AES input for connecting a digital source to any fader, and built-in A/D conversion for digital or analog program out.

While it looks and feels like its Wheatstone cousins, this digitally controlled analog console operates as a full standalone board. Cue thunderous applause.

Engineered and supported by Wheatstone

LIGHTNING

phone 1.252.638-7000 | audioarts.com/lightning-rw | sales@wheatstone.com

World Radio History

RADIOWORLD

Vol. 42 No. 24 September 26, 2018

www.radioworld.com

FOLLOW US
www.twitter.com/radioworld_news
www.facebook.com/RadioWorldMagazine

CONTENT
Managing Director, Content Paul J. McLane, paul.mclane@futurenet.com, 703-852-4628
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 Jonnston, 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, Jennifer Waits, Tom Vernon
Production Manager Caroline Freeland
Managing Design Director Nicole Cobban
Senior Design Director Karen Lee

ADVERTISING SALES
VP/Media Technology Group
Carmel King, carmel.king@futurenet.com, 703-852-4602
Publisher, Radio World International
Raffaella Calabrese, raffaella.calabrese@futurenet.com, +39-320-891-1938

SUBSCRIBER CUSTOMER SERVICE
To subscribe, change your address, or check on your current account status, go to www.radioworld.com and click on About Us, email futureplc@computerfulfillment.com, call 888-266-5828, or write P.O. Box 282, Lowell, MA 01853.

ARCHIVES
This magazine is available for research and retrieval of select archived articles from leading electronic database and search services, including ProQuest. For microform availability, contact National Archive Publishing Company, 800-521-0600, or search the Serials in Microform listings at napubco.com. Back issues are available. For more information, contact www.proquest.com.

REPRINTS/PERMISSIONS
This magazine may not be reproduced or quoted in whole or in part by printed or electronic means without written permission from Future. To obtain permissions, contact Wright's Media, 877-652-5295.

MANAGEMENT
Managing Director/Senior Vice President Christine Shaw
Chief Revenue Officer Diane Giannini
Chief Content Officer Joe Territo
Chief Marketing Officer Wendy Lissau
Head of Production US & UK Mark Constance

FUTURE US, INC.
28 East 28th Street, 12th Floor, New York, NY 10016

Connectiv The Business Information Association, a division of SIIA

All contents ©Future US, Inc. or published under licence. All rights reserved. No part of this magazine may be used, stored, transmitted or reproduced in any way without the prior written permission of the publisher. Future Publishing Limited (company number 2008885) is registered in England and Wales. Registered office: Quay House, The Ambury, Bath BA1 1UA. All information contained in this publication is for information only and is, as far as we are aware, correct at the time of going to press. Future cannot accept any responsibility for errors or inaccuracies in such information. You are advised to contact manufacturers and retailers directly with regard to the price of products/services referred to in this publication. Apps and websites mentioned in this publication are not under our control. We are not responsible for their contents or any other changes or updates to them. This magazine is fully independent and not affiliated in any way with the companies mentioned herein.

If you submit material to us, you warrant that you own the material and/or have the necessary rights/permissions to supply the material and you automatically grant Future and its licensees a licence to publish your submission in whole or in part in any/all issues and/or editions of publications, in any format published worldwide and on associated websites, social media channels and associated products. Any material you submit is sent at your own risk and, although every care is taken, neither Future nor its employees, agents, subcontractors or licensees shall be liable for loss or damage. We assume all unsolicited material is for publication unless otherwise stated, and reserve the right to edit, amend, adapt all submissions.

Future plc is a public company quoted on the London Stock Exchange (symbol: FUTR)
www.futureplc.com
Chief executive Zillah Byng-Thorne
Non-executive chairman Peter Allen
Chief financial officer Penny Ladkin-Brand
Tel +44 (0)1225 442 244

C4 Opposition Is "Nothing New Under the Sun"

Small station operators prevailed in a nearly identical scenario 20 years ago

COMMENTARY

BY MATTHEW WESOLOWSKI

The author is owner and general manager of WYAB 103.9 FM in Flora, Miss., and co-author with MMTC of the MB 18-184 "FM Class C4" proposal.

It's been done before. What's old is new again. History has a way of repeating itself.

All of these clichés, and surely others, apply in the ongoing battle between the National Association of Broadcasters and a quite large, yet mostly obscure bunch of small station licensees all over the nation pushing for the creation of a new station allocation, the proposed FM Class C4 12,000 Watt license type.

The Federal Communications Commission has wrapped up taking formal comments and reply comments in the MB 18-184 proceeding, which if approved, would allow for the creation of a new FM Class C4 allotment option, as well as make certain changes to Section 73.215 of the commission's rules. Full implementation of the proposal would enable hundreds of FM Class A stations all across Zone II of the country to double in power.

Opposition to Class C4," Sept. 12 issue.]

It is a tale plainly reminiscent of David versus Goliath, and one that has played out many times in the past before the commission. A ragtag coalition of small and independent broadcasters commented largely in favor of the MB 18-184 plan, but the highly-influential, well-funded lobbying arm of the gigantic groups came down hard against the idea.

Fortunately for David, however, small station operators prevailed in a nearly identical scenario played out at the FCC 20 years ago. In its 1998 Biennial Regulatory Review, MM Docket Number 98-93, the commission faced a similar dilemma with respect to allocation of previously unused bandwidth and how to best free up

As was the case in 1998, the NAB is insinuating that any technical rule changes that could benefit small broadcasters are bad, because our "industry leaders" have somehow lost their collective competitive edge.

The demand for such changes is certainly evident. Over 100 small broadcasters filed formal letters in favor in the proceeding, and even iHeartMedia and Educational Media Foundation, the parent organization behind the massive "K-Love" broadcast network, did not oppose the creation of a FM Class C4 license type. Leading low-power FM advocacy group REC Networks did not outright dismiss the idea either, and nearly every single comment submitted in the window either partially or fully embraced the proposal ... with one notable exception.

The National Association of Broadcasters, the self-proclaimed "Voice for America's Radio Broadcasters," is apparently not too keen on the idea.

COMPETITIVE THREAT?

The same organization that is currently advocating for the outright abolition of all ownership limitations in media markets with fewer than (about) 850,000 people seemingly feels as if licensees of the smallest commercial FM power class are somehow too great a competitive threat to the core of their organization: the mega-broadcasters. *[See "NAB Sets Out Reasoning for Its* warehoused spectrum. The solution was the formation of a procedure to allow small station licensees to induce (or "trigger") large broadcasters who had not built out their stations fully to reclassify those facilities to a then-new and more appropriate "FM Class C0" allotment type.

In its arguments against the FM Class C0 station allocation in the Docket 98-93 proceeding, the NAB concluded that "over-the-air broadcast services are facing increasing competition (from wired and satellite)" and "oppose[d] the creation of a new Class C0 FM station class."

FAMILIAR ARGUMENT

Now, 20 years later, in its 2018 MB 18-184 filing against the FM Class C4 plan, the same organization writes that "protecting FM signal quality has never been more important, given the increasingly competitive audio marketplace" and that the commission "should be wary of [the] proposal."

As was the case in 1998, the NAB is insinuating that any technical rule changes that could benefit small broadcasters are bad, because our "industry leaders"

(continued on page 4)

World Radio History

C4

(continued from page 3)

have somehow lost their collective competitive edge.

The NAB attempts to reinforce its position against the FM Class C4 and 73.215 changes by claiming that the "proposal could be especially problematic for FM translators."

But beyond some simple statements of conjecture to that effect, no hard data, case study or evidence of any type is to be found to support that notion. Indeed, the NAB made similar statements about secondary services in the FM Class C0 proceeding, saying that the FCC "should not revise or redefine any of its rules so that a new low-power FM service blueprint is created," as if MM Docket 98-93's full implementation would have hindered LPFM development.

In reality, the FM Class C0 allotment type has been here for almost two decades, and there are more licensed FM translators and LPFM stations than ever.

What's old is truly new again. Small broadcasters generally supported the FM Class C0 proceeding 20 years ago, and the National Association of Broadcasters came out in fierce opposition then. Similarly, without the NAB's blessing in 2018, creation of the FM Class C4 allotment type received overwhelming and near-universal support, with far more positive comments filed in this window than during the 1998 FM Class C0 proceeding.

Hopefully, history will repeat itself once again and the commission will do the right thing to help small and independent broadcasters everywhere.

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

AUDI

(continued from page 1)

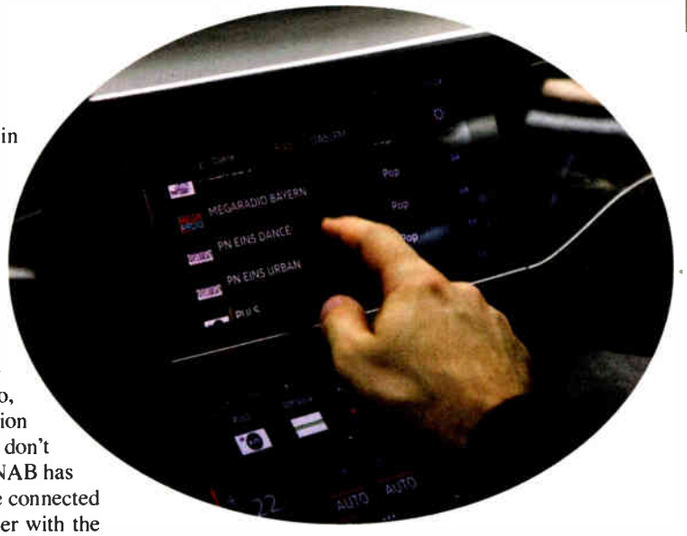
and how they could influence the dash in future connected cars.

Radio World: *What does Audi make of the outreach by broadcasters in the United States, and is radio doing enough?*

Christian Winter: For Audi, the radio has always been a driver for innovation. With multi-tuner and multi-antenna systems, with touch screens and hybrid radio, we set the bar higher [in] every generation of Audi's multimedia system. And we don't want to stop there. We are glad that the NAB has opened this discussion about radio in the connected car and [are] committed to work together with the broadcasting side of the radio industry to bring new features for radio in the connected car.

RW: What do automakers expect from radio broadcasters going forward?

Winter: We want to present radio in a modern and appealing way. To create new features, metadata is a key element. Today radio is not limited anymore to receive metadata only via the small broadcast channel. The IP connection of the car can be used to get detailed data about the station and the running program to the car. Examples are the online station logo, links to podcasts, show descriptions and even phonemes to make the voice recognition better in the car.



A customer selects a station in the station list, which in Europe consists of DAB/FM and Hybrid stations. Multiple tuners scan the area in the background to create an updated list.

RW: How important is it for radio to offer a uniform dashboard experience for all users? What needs to be accomplished for it to happen?

Winter: We at Audi spend enormous effort on user

(continued on page 5)

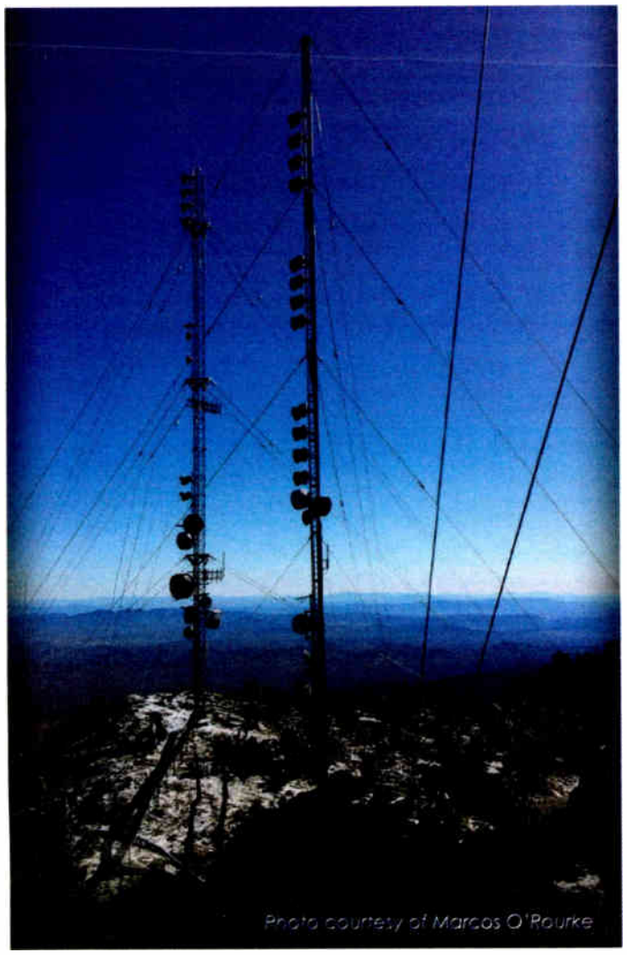


Photo courtesy of Marcos O'Rourke

THE FASTEST WAY TO THE TOP

"A lot of our sites are at remote mountain top locations. It can take a couple hours of off-roading to reach them."

K-Wave Radio chief engineer, Marcos O'Rourke, uses AutoPilot® at his studio in Orange County to consolidate alarms and log data from ARC Plus systems at eleven sites in southern California and Nevada. *"Unplanned site visits are expensive and time consuming. My Burk equipment helps me keep those trips to a minimum."*

Log in from your smartphone, tablet, PC or telephone or use Jet™ Active Flowcharts for automatic failure recovery.

Get to the top fast with Burk Technology. No climbing required. Call us today for a free system consultation.

GET THREE FREE!

Buy an ARC Plus Touch with RSI and get SNMP Plus, Jet™ Active Flowcharts and AutoPilot® free, a $1485 value.

Offer valid through October 31, 2018.

www.burk.com | sales@burk.com | 978-486-0086 x700

BURK TECHNOLOGY

World Radio History

THIS ISSUE

SEPTEMBER 26, 2018

NEWS
Audi Explores Hybrid Radio 1
Fall Broadcast Symposium Digs in Deeply 1
C4 Opposition Is "Nothing New Under the Sun" 3
Rachel Torres: Impressions on the Job 8
Fall Brings Bumper Tech Crop to Clinic 10

FEATURES
Repurposed Gear Adds Missing Console Features 12
High School Radio Network Broadcasts Teen Voices 14

iStockphoto/serkorkin

BUYER'S GUIDE
ENCO Presenter Amplifies On-Air Operations for All Classical Portland 18
Gap's WLSD Is High on Apex 20
Olesa Radio Relies on AEQ AudioPlus Automation 22
Tech Updates 22, 24, 26, 27

OPINION
What Will Take Down Radio Pirates — And What Won't 29
Reader's Forum 30

Radio World (ISSN: 0274-8541) is published bi-weekly with additional issues in February, April, June, August, October and December by Future US, Inc., 28 East 28th Street, 12th Floor, New York, NY 10016. 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.

(continued from page 4)

interface and interaction design. For us it is important that all the multimedia features — radio, USB, Bluetooth — have a similar and consistent user interface. Customers are not using one source 100 percent of the time, and when they switch for example from listening to songs on their smartphone via Bluetooth to radio, they expect that radio look and feel similar. They would not accept that a song on the radio does not have an album cover.

Broadcasters can help by offering metadata in a standardized and non-proprietary way. We launched the first hybrid radio with the new Audi A8 in Europe last year and used data provided directly from the stations in a format standardized by RadioDNS.

RW: Tell us about RadioDNS. Is it coming to the US?

Winter: RadioDNS is the not-for-profit membership organization that promotes hybrid radio globally, and creates open technical standards for using IP (internet protocol) technology alongside broadcast radio. There are already selected stations in the US supporting logo distribution in the way described in the RadioDNS standards; but we need more stations to participate.

They have clear benefits, for example that listeners will stay longer on their station because of the usage of IP-streaming in areas where there is no broadcast reception.

RW: Do automakers prefer to see radio become a more interactive medium for its customers in the connected car?

Winter: Radio is valuable because of its great content. But people miss major parts of it because they aren't on the radio all the time. That's why we want to give them easy access to on-demand content so that they can listen to their favorite show even when they weren't in the car when it was initially broadcast.

RW: How does radio fit into the future of the autonomous vehicle and what attributes does broadcasting have to make it an attractive option in the dash?

Winter: There is already a lot of competition for traditional broadcast radio in the connected car with entertainment options like USB, Bluetooth or Apple CarPlay. Radio needs to be attractive for the customer in both content and appearance. Hybrid radio is the key for that, and then people will continue to listen to radio in an autonomous vehicle.

NAB PURSUES CONNECTED CAR STRATEGIES

Officials with the National Association of Broadcasters spent at least part of the summer talking to auto industry execs about the best fit for radio in future connected-car dashboards.

The association's automotive initiative committee, led by Sam Matheny and Steve Newberry, continues to meet and forge relationships with automotive OEMs to further technical collaborations, according to John Ellis, managing director of Ellis and Associates.

Ellis consults to NAB on automotive issues; he said the group is intent on developing the best content experience for listeners by working with the automotive sector.

"The automotive collaboration is gaining traction. The OEMs are beginning to recognize the radio industry in a way that they are seeing the potential business opportunities, especially with autonomous vehicles. So movement is happening," Ellis said.

Ellis, who has been global technologist for Ford's connected car business as well as an executive with Motorola, said NAB partnered with GenIVI, a consortium of auto experts devoted to open software for infotainment systems in the automotive space, to host a private networking event at the TU-Automotive show in June near Detroit.

"The show is dedicated to the head unit in automotive. That's the in-car dash and navigation systems; and radio is included in that ecosystem. All the OEMs and Tier 1 manufacturers, like Harman Kardon and Samsung, were invited. Our goal has been to get NAB in front of those types of people and to allow for NAB to come to the table when it comes time for technical discussions."

Ellis said NAB plans to update members on automotive initiative developments at the Radio Show in Orlando this month.

— *Randy Stine*

World Radio History

IEEE BTS

(continued from page 1)

the early 1950s, features presentations from some of the most knowledgeable engineers in the broadcast sector, including consulting firms, station groups, academia, regulatory bodies and equipment manufacturers who share their knowledge on cutting-edge technologies, industry trends, policies affecting broadcasting and more.

In the years following its inception, symposium attendees have been kept up to date on such emerging trends and issues as NTSC color, FM and AM stereo broadcasting, the arrival of solid-state technology, UHF broadcasting, satellite communications, the advent of digital technologies in the broadcasting plant, digital transmission of signals, spectrum conservation, safety in the broadcast plant, the "repacking" of television channels, antenna technology, energy conservation and other relevant topics.

Historically, the BTS conference has emphasized the RF side of broadcasting, but in recent years, has broadened its scope to include broadcasting workflows, sonic watermarking of content for ratings purposes, hybrid broadcasting via the internet, cybersecurity, emergency alerting, audio coding and distribution protocols, IP-technology in the broadcasting plant, and even the safe and legal use of drones in broadcasting.

"THINGS DISRUPTIVE"

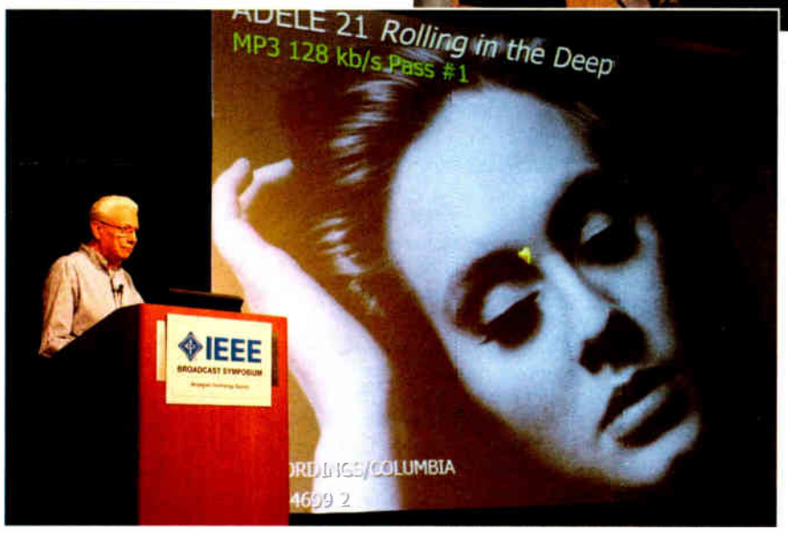
The 2018 conference program will be no different, according to Co-chair Robert Weller, vice president for spectrum policy for the National Association of Broadcasters.

"This year, we're dedicating an entire day to 'disruptive technologies,'" said Weller. "These are new and emerging technologies that could impact on the traditional radio and television broadcasting model.

"We have speakers — experts in their fields — lined up to discuss 5G, big data, trends in consumer electronics, pirate radio and the FCC enforcement, smart speakers and broadcasting, implementation of a multi-sensorial television experience; you name it, if it has the potential to disrupt the broadcasters' status quo it's probably going to be covered in this all-day session."

More conventional technical areas are on the conference agenda, including reports on all-digital AM and FM broadcasting, updates on the ATSC 3.0 market deployments, new service modes for HD Radio, the design of a high-power multi-station FM master antenna system, 4K UHD television workflows, planning for the NextGen DTV standard, radio in the connected car, field testing of layered-division multiplex (LDM) and time domain multiples (TDM) transmissions, "hacking" ATSC 3.0, reliable transport of FM and HD signals via IP-based studio-to-transmitter linkage, innovations in remote control and monitoring of transmission facilities, and more.

"In all, there are more than 30 presentations on this year's program," said broadcast consultant Glynn Walden, the other co-chair. "And this doesn't include the luncheon keynote presentations. This year, we're going to get to hear addresses from the FCC's new Media Bureau chief, Al Shuldiner; Intel's virtual reality program director, Uma Jayaram; and Dolby's chief scientist, Poppy Crum."



Industry figures provide cutting-edge information on trends in producing and transmitting content. Herb Squire is shown at a past symposium.

TECH CON LIKE NO OTHER

Asked what sets the IEEE BTS Symposium apart from other engineering conferences, Weller credited its size.

"You've got all of the presentations and events in a single venue with nothing to distract attendees as is often the case with larger technical conferences and conventions, where the main focus is on exhibits, and there are multiple presentation tracks running which make it difficult to organize one's time as an attendee," he said.

"All of the broadcast engineering thought leaders are here, and the event is small and informal enough to lend itself to lots of interaction between speakers and attendees. I've been attending these symposia for 25 years now, and due to its relatively small size and the various social events that are part of the symposium, I've noticed bonding among the participants — a sort of camaraderie that develops. You always learn something new and invariably make new friends with other folks in the business. Actually, I've made some of my closest business relationships through the symposium."

Walden added that anyone involved in the engineering side of broadcasting should find the content relevant.

"The world of technology is changing faster than anyone can keep up with it on their own," said Walden. "The symposium offers broadcast engineers the opportunity to learn about these changes first-hand. It provides continuing education as to what these changes are all about. This is really important to function well in one's job and to keeping yourself employable."

(continued on page 8)

Each symposium offers a cross-section of presentations on timely topics. Here, ERI's Tom Silliman demonstrated the gear involved in safe work on broadcast towers.

Joe Dimaggio

Historically, the conference has emphasized the RF side of broadcasting but in recent years has broadened its scope to include topics from sonic watermarking to AoIP and the use of drones.

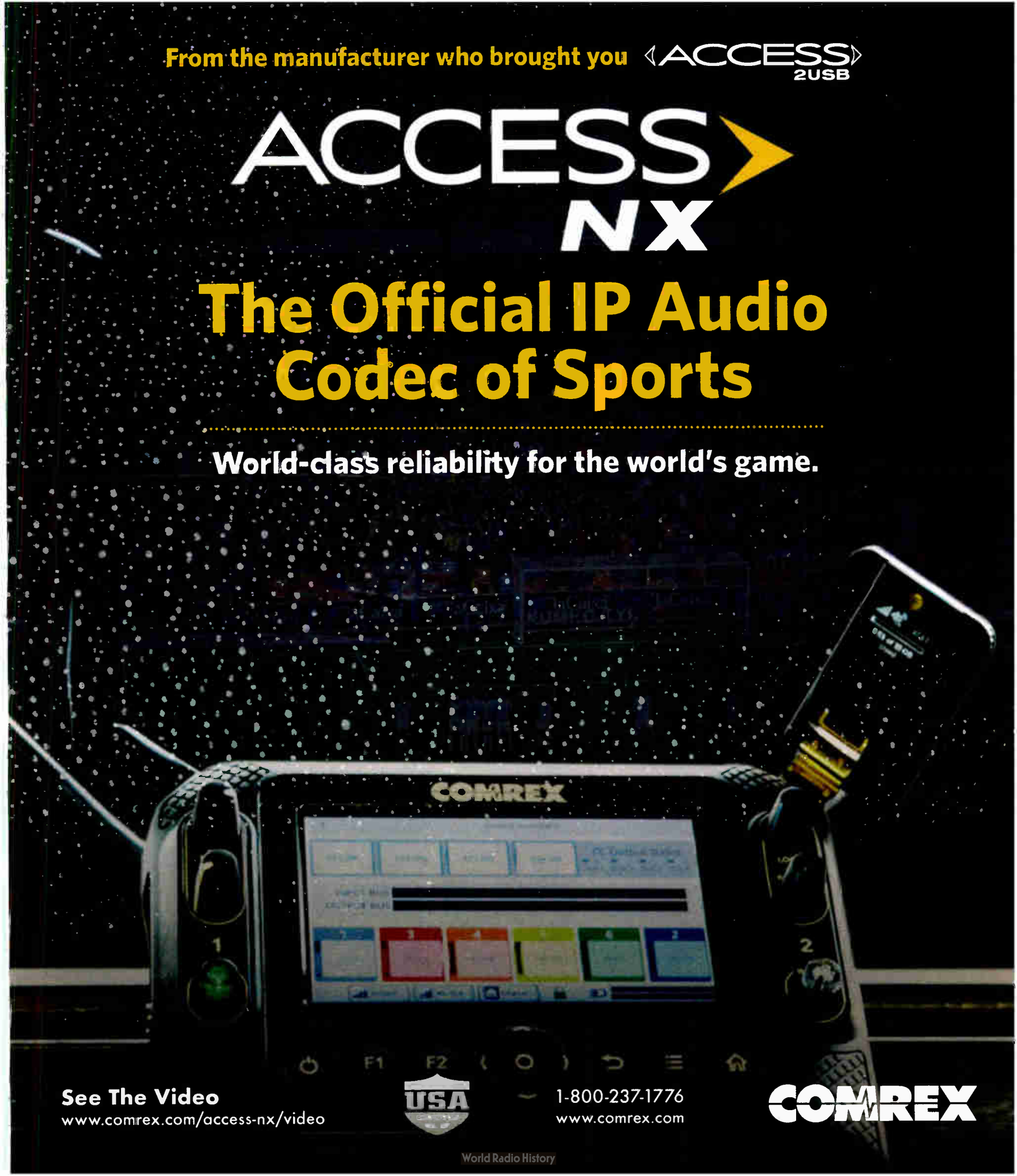
World Radio History

From the manufacturer who brought you ACCESS 2USB

ACCESS NX

The Official IP Audio Codec of Sports

World-class reliability for the world's game.



See The Video
www.comrex.com/access-nx/video

USA

1-800-237-1776
www.comrex.com

COMREX

World Radio History

Rachel Torres: Impressions on the Job

Apprentice comes away having gotten a clear-eyed look at life as an engineer

CAREERS

BY RACHEL TORRES

In the Aug. 15 issue of Radio World, the author described her participation in the NAB Education Foundation's 2018 Technology Apprenticeship Program. We invited her to share her impressions as the apprenticeship comes to a close.

Readers of Radio World, two months of working as an engineering apprentice at iHeartMedia in Greensboro, N.C., has given me a greater variety of experiences than I could have ever imagined. These experiences ranged from the terribly exciting to the rather mundane, but all of them were invaluable lessons. I have the TAP Program to thank for that.

About a month into my apprenticeship, I rode 45 minutes out to the "dump site," the dingiest transmitter site of the four in our market, at 10 p.m. During an impending thunderstorm, I met up with my two supervising engineers, and we got to work setting up inside. We pulled up the weather radar, tracking the storm as it progressed, mindful of the danger of replacing a transmitter tube in the middle of potential lightning.

Keeping a close eye, we got to work replacing the tube, which had been slowly draining of life for some time. The suspected issue to start with was that the tube was running too hot. But what may have been a simple enough endeavor to start with turned into a four-hour process when we realized that the replacement tube was "open," and when we nestled it into the tube socket, no connection was made. It was a dud.

We then made the effort to return the old tube to its rightful place for the time being, but quickly realized that the tube was not sitting right in the tube socket. The culprit? Bent and broken clamps, which were also likely to blame for the initial problem. There was a poor connection, and the old tube was working overtime.

We didn't get to replace the tube; but spending four hours in that slightly dingy, freezing transmitter site in the middle of the night and troubleshooting as we went along was one of the coolest parts about my apprenticeship.

NEW SKILLS, CAREER QUESTIONS

During my time at iHeartMedia, I've been allowed to be hands-on and work independently, putting new skills I've learned to use — whether that be something as simple as drilling a pilot hole into a wall or as exciting as soldering XLR connectors to cables. I've been met with many challenges, from conquering my fear of heights and climbing ladders to run cable under ceiling tiles to coming home with cuts and bruises from lifting, bending, cutting and crawling into small spaces.

Through it all, working with the engineering team at iHeart was an absolute joy. All three men who mentored me know their trade and were always willing to answer my questions, provided I made the effort to slow them down while they were troubleshooting an antenna issue and running a mile-a-minute. Everyone else I worked with, from on-air talent, to promotions, to sales people, treated me like a member of the team and were far more trusting when I would stop by to replace a piece of their computer hardware than I would have ever expected.

Choosing broadcast engineering as a potential career path is by no means off the table, but there were some facets of the job and the radio industry in general that have given me pause.

I sense that some in the industry feel, at times, a sense of impending doom. This phrase may be overdramatic, and I'm speaking generally now rather than about a specific cluster or company. But at least some people I've talked to in radio were concerned enough by the effects of consolidation, mergers of studio locations and all-consuming automation to nudge me slightly toward pursuing engineering in a different industry, if that's the career path I end up choosing.

Cost efficiencies, I'm told, often lead to engineering teams being stretched thin, responsible for facilities at multiple locations; even then the fear of losing one's job on short notice seems to be a real concern for many. A lack of job security generally was my unfortunate impression regarding broadcast engineering as a potential career path.

Rachel Torres

OTHER OBSERVATIONS

As someone who grew up listening to local radio, it was easy to take the medium for granted and to always just expect it to be there, never thinking too deeply into the "how it happens" and the "why it works." Though I'd clearly wondered about that more in recent years, it was still shocking to discover once inside the radio station just how easy it was to take an entire station off the air accidentally.

I had to learn to be alert and adamant

(continued on page 11)

IEEE BTS

(continued from page 6)

He said the symposium affords an opportunity for networking with other broadcast professionals during the breaks, evening receptions and lunches and breakfasts.

"In addition, we always have a number of broadcast equipment manufacturers — our sponsors — at the conference who are there to provide information on their products and discuss particular applications or problems on a one-to-one informal basis. I don't know of any other industry event that's quite like it."

GLOBAL GATHERING

The symposium has traditionally had a wide reach, attracting presenters and attendees from across the United States and abroad. This year's program includes speakers from Finland, Cameroon, Romania, Italy, Uruguay, Brazil and Korea, who will be there to provide information not only on broadcast technologies being utilized outside of the United States, but also studies and research work they have been conducting of emerging technologies of a universal nature such as ultra-high definition television and digital transmission standards and optimization of nationwide radio coverage.

The three-day IEEE BTS Symposium will be held at the Key Bridge Marriott hotel in Arlington, Va., across the Potomac River from downtown Washington and within easy reach of public transportation and airports serving the area. Information about the conference including hotel accommodations is available at *https://bts.ieee.org/broadcast-symposium*.

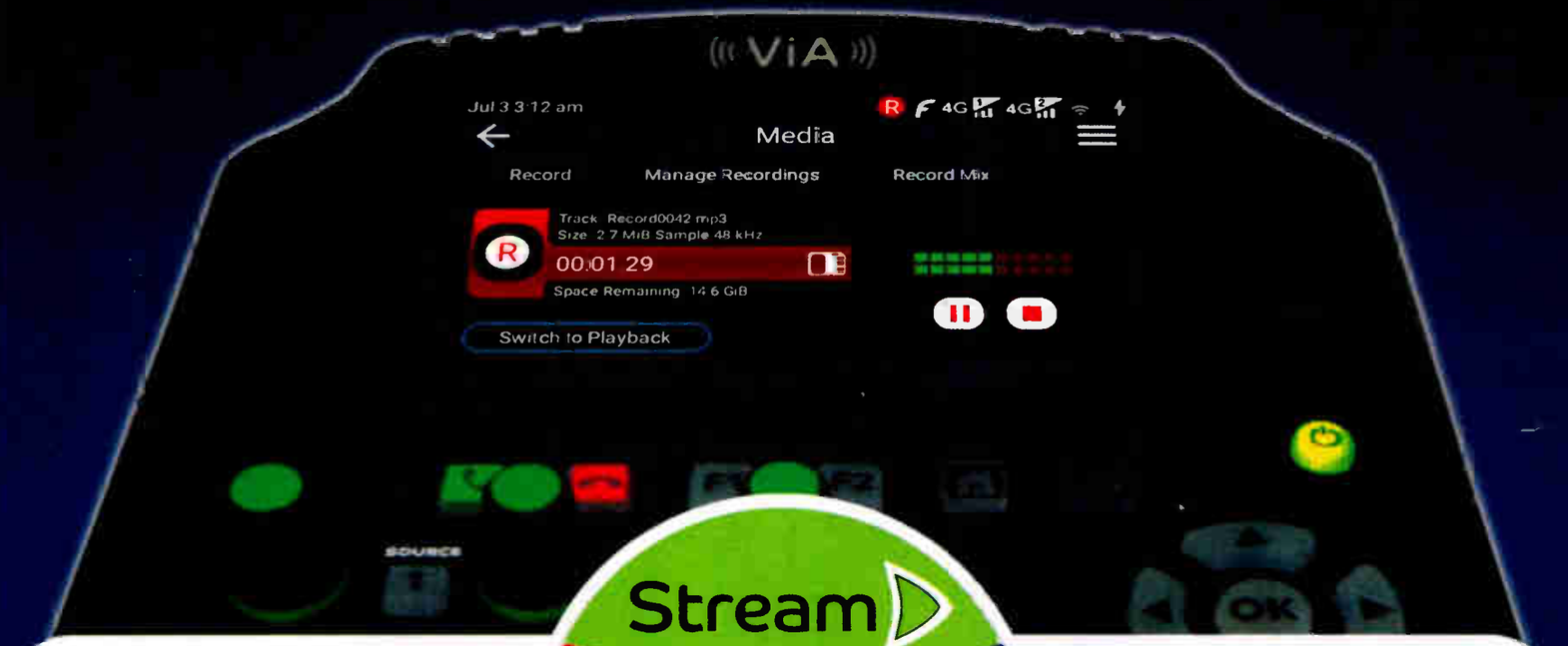
The author is editor in chief of IEEE Broadcast Technology Magazine and a BTS Life Member, in addition to being a longtime contributor to Radio World.

The ongoing U.S. television spectrum repacking and its impact on both TV and radio broadcasters has been a symposium hot topic.

World Radio History

More than Just an IP Codec

Introducing Record and Playback on the ViA



Record

- Select & record any input, return audio or file playback
- Stream, Record & Play simultaneously
- Record to SD card
- View & manage recordings

Stream

Rec

Play

Playback

- Create playlists of local & imported recordings
- Route file playback to any output or record media
- Offline Cue monitoring

ViA

Join the remote revolution

Tieline

The Codec Company

317-845-8000 | sales@tieline.com | tieline.com

World Radio History

Fall Brings Bumper Tech Crop to Clinic

Three-day event is a staple of the autumn tech conference calendar

REGIONAL SHOW SPECIAL

BY TOM VERNON

One in a series of occasional articles profiling regional conferences and trade shows.

"Either go big or go home." That mantra drives much of American culture, and it's one reason many of us make the annual trek to Las Vegas for the NAB Show. But sometimes smaller is beautiful too. State and regional trade shows have their advantages.

At a past clinic, participants talk about taking field strength measurements.

The 62nd annual Broadcasters Clinic of the Wisconsin Broadcasters Association is one such opportunity, and it remains among the nation's most respected engineering conferences. In recent years, the clinic has drawn approximately 300 attendees from 22 states, including participants from as far away as Alaska; since its debut, it has been recognized seven times with a regional conference award from the Society of Broadcast Engineers.

RW spoke with Linda Baun, vice president of WBA, about what will be happening at this year's event, which takes place Oct. 16–18 at the Madison Marriott West in Middleton, Wis. Sessions on the first day focus on radio, the second on both radio and TV, and the third day is all about television. More than 22 sessions are scheduled, featuring at least 15 speakers. The Upper Midwest SBE Meeting is concurrent.

HONORED HISTORY

The Broadcasters Clinic has quite a history, dating to 1956. The list of presenters over the years reads like a Who's Who of broadcasting and engineering: Leonard Hedlund, Dennis Williams, Don Markley, John Battison, John Ryan, Tom Bolger and many others.

Yet this event has had only three chairs. Beginning in 1975 and continuing for more than 30 years, Don Borchert spearheaded the Midwest Regional Broadcast Clinic under the auspices of the University of Wisconsin-Extension and, then in 1994, the WBA.

Borchert's broadcast engineering career spanned six decades and began in 1950. including service to Lee Broadcasting in Minnesota and Iowa, as well as RCA Broadcast in Chicago. In 1968, he became director of engineering for WHA Radio & TV in Madison, a position he held for the next quarter century; during that time he was chief engineering consultant for the construction of two significant broadcast facilities: Vilas Hall, the UW-Madison Communications and Broadcast Center, and the massive 1,423-foot candelabra-style tower shared by broadcasters in Madison.

In 2003, the Society of Broadcast Engineers named him Educator of the Year; in 2006 he was inducted into the Wisconsin Broadcasters Hall of Fame. He died in 2010.

The second chair, Leonard Charles, had served on the Clinic Committee for many years and led the event from 2010 to 2017. He has served on the Technology Committee as well as the Next Generation Broadcast Platform Committee at the NAB and was a member of the Wisconsin Emergency Communications Committee. Among many honors, he has twice been named Engineer of the Year by SBE and was the 2013 recipient of the NAB Service to Broadcast Engineering Award. He was inducted into the Wisconsin Broadcasters Hall of Fame in 2017.

Upon Charles' retirement, Kent Aschenbrenner became the chair of the Broadcasters Clinic Committee, so this is his first Broadcasters Clinic as chair. Aschenbrenner has been a TV and radio broadcast professional for 41 years. Based at WTMJ in his hometown of Milwaukee, he oversees Scripps' spectrum repack at 17 stations and nine LP displaced stations. His responsibility for 34 radio stations is winding down due to the sale of Scripps radio assets. With degrees from Milwaukee Area Technical College and the Milwaukee School of Engineering, he serves on the NAB TV Technology Committee and is a proud holder of an FCC First Class Radio-Telephone License.

RADIO SAMPLER

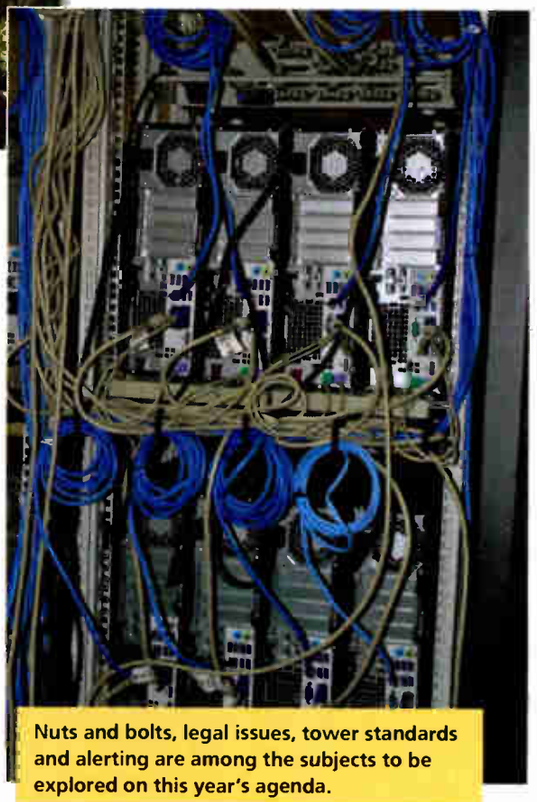
Sessions are selected by a committee that meets twice a year to review submissions, Baun said. "Most of the members are engineers from Illinois and Wisconsin, and topics are selected that are relevant to area radio and TV."

The late Don Borchert led the clinic for three decades.

For example, Don Backus will lead one about liquid-cooled transmitters. Ask radio engineers what they know about this and they might tell you they're something the television guys need to deal with. Others might recall them as an historical footnote from the 1940s, when high-power AM and shortwave sites often had a cooling pond and fountain in front of the transmitter building to chill those enormous tubes.

"Modern liquid cooling is a closed-loop system, it's quite reliable and boring and there are no fountains," says Backus, who is account manager, radio transmitters for RSA Broadcast & Media. He says today's liquid cooling is easy to install, economical to operate and requires less maintenance than air-cooled transmitters.

"Instead of sizing multi-ton air conditioning systems, with liquid cooling the excess heat is drawn outside with-



Nuts and bolts, legal issues, tower standards and alerting are among the subjects to be explored on this year's agenda.

World Radio History

A promo image for the 60th anniversary two years ago.

out blowers, fans and ductwork, and because liquid cooled is more efficient, there's less excess heat to deal with."

Other advantages are a smaller footprint, with a 40 kW unit easily fitting into seven square feet of floor space. Following installation, the station can expect increased reliability and significant savings on its electric bill. Backus notes that many of the installation steps are different. "On the other hand, successful implementation usually requires less work, albeit different tasks, than installing an air cooled transmitter.

In another session, David Layer, vice president of advanced engineering for the National Association of Broadcasters, will provide a "Radio Technology Update."

"I purposely offered a broad title because NAB is doing a tremendous amount of work in the radio technology area right now and I am eager to share a glimpse of this with the audience," he said. The technologies he will discuss include hybrid radio implementation and deployment, voice control for radio receivers and all-digital radio for AM and FM. "I am also planning to talk about some of the innovative work being done by Pilot, NAB's innovation initiative, as well as the NAB automotive initiative."

Other sample sessions of interest to radio include "HD Radio, Past, Present and Future" with Jeff Welton of Nautel; "New FM Processing Technology Brings Studio Quality Audio to the Receiver," with Jeff Keith of Wheatstone; "Broadcast Equipment Virtualization Is Here Now," with Alex Hartman of Optimized Media Group and Kirk Harnack of the Telos Alliance; "Reducing FM Combining Costs Using Efficient Configurations" with Sean Edwards of Shively Labs; and "DC Legal Issues for Engineers" with David Oxenford of Wilkinson Barker Knauer.

The trade show portion of the event will include more than 70 vendors; exclusive exhibit time is set aside each day.

Baun emphasizes certain advantages of a regional or state show. "In addition to the local seminar topics, there's a more relaxed atmosphere where you can have lengthy conversations with exhibitors and presenters on a one-to-one basis. There are also more opportunities for networking with other local engineers."

Find info about the event at *www.wi-broadcasters.org/events/*.

APPRENTICE

(continued from page 8)

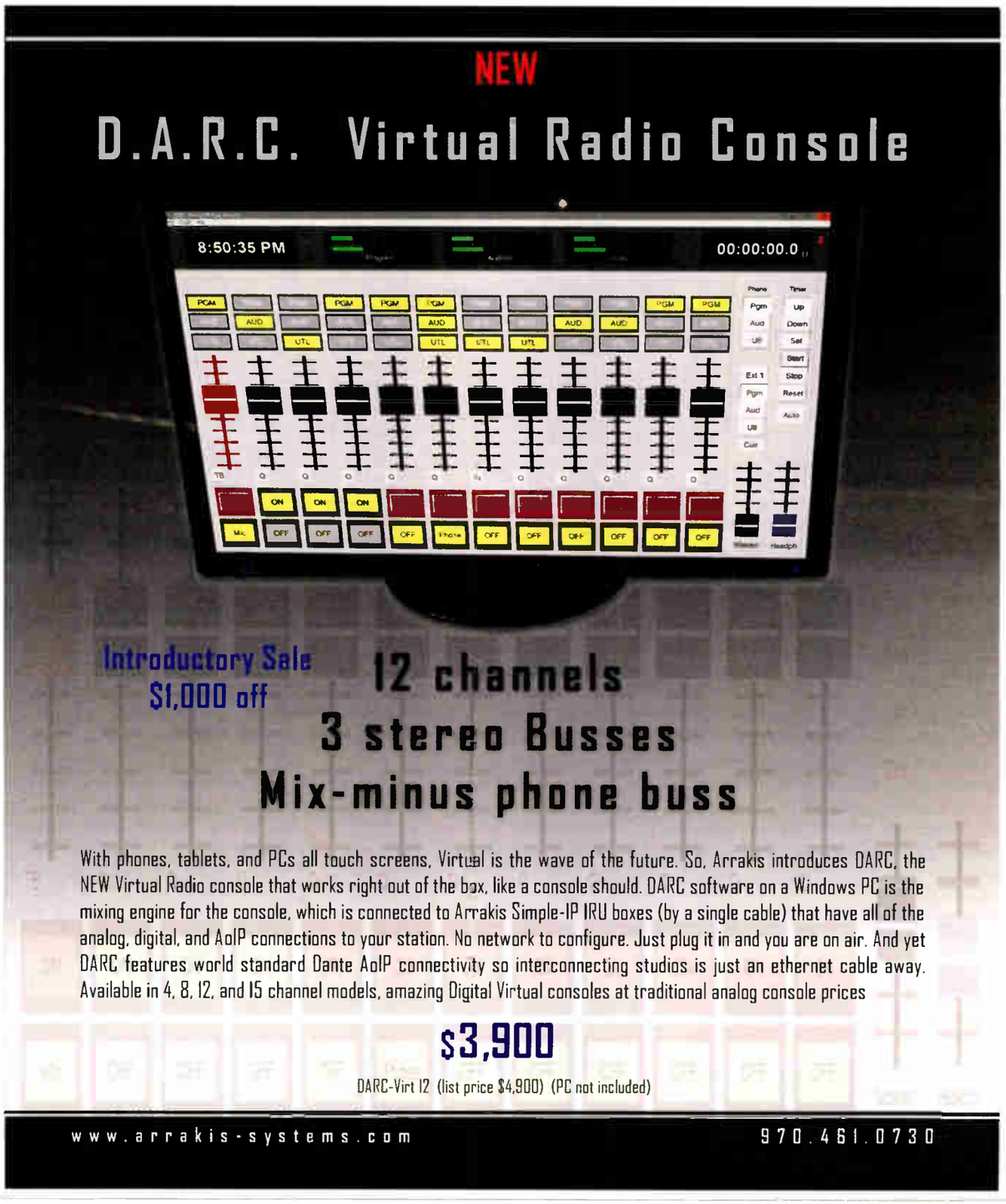
about where I was stepping, and which cord I was grabbing. There are times when a cable is unmarked but is in the way or in the wrong spot, and you must simply yank it out, hoping to not hear your phone buzzing two seconds later, a coworker demanding to know why their internet connection was just lost. Oftentimes, in the face of completely unrelated issues or human error, people still look to engineering to lay the blame. Engineers keep the heart of the studios beating, and that can seem a daunting task on some days.

As I write, my apprenticeship is winding down, and my fellow TAP participants and I are making rundowns and finalizing scripts for the live webcast we will produce at the NAB headquarters in Washington in September. We've been documenting our apprenticeship journeys through video journals and photographs, and we have been keeping each other posted on how things are going.

My experience has been exciting and eye-opening, leaving me with a deeper appreciation for the things engineers face and accomplish day-to-day on the job. The impression is likely to be a long-lasting one, and the lessons I've learned will remain with me as I navigate a future career, whether it be in engineering or another industry altogether. The program has been nothing short of a blessing.

Thank you for reading.

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



World Radio History

Repurposed Gear Adds Missing Console Features

Plus, here's some advice to use inside and out of the radio studio

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

It's been fun reading and sharing reader submissions about how they got started in broadcasting. Keep 'em coming; and if you have high-resolution pictures, old or new, email those as well. Send to *johnpbisset@gmail.com*.

Dino Gatsoulas had an interesting start to his broadcast career. He is no stranger to radio. In the '70s he caught the bug. His father had a Greek show on WKRI in the Providence, R.I., area. Dino would accompany his dad but found himself shadowing the engineer. He loved looking in the backs of the equipment racks, especially watching the belts and gears of the reel-to-reel machines.

When he was around 5 years old, Dino's dad sat him on a knee to say "Kala christougenna" ("Merry Christmas" in Greek) in the studio. He told Dino to watch the red on-air light, and when it came on, he was to speak. The on-air bug bit when Dino attended church the next day and all these people told him how good he sounded.

Fast-forward to the mid '80s. Dino and his dad had several Greek programs, culminating in a 24/7 Greek language SCA service. That's when Dino really got to enjoy modifying things and learning how they work — all while on a budget. Like many broadcast engineers, Dino says he's mostly self-taught, except for basic electronics in high school.

On that theme, Dino also tells us how he repurposed a DJ light controller as a remote start application in a small-budget studio.

As engineers, it's in our genes to repurpose one piece of gear to solve another problem. Dino has been reading RW since the 1980s. In building his budget voiceover studio, he chose a Behringer DX-2000 DJ mixer because he liked the built-in remote start options. However, Dino needed more, so he repurposed an old DJ light switch panel, which he found in his garage.

He took it apart, and painted it black to match the mixer, leaving only the switches. His Brother P-Touch label maker did the rest.

Dino had one problem: He found that the switches didn't quite line up to the faders. However, if he flipped the panel upside down, the buttons matched up perfectly with the faders.

Dino replaced the first two switches with DPDT toggle switches that he had on hand. They control the mics. They were black, but he raided his wife's makeup drawer and "borrowed" some sexy red nail polish. The toggle switches connect to a home-made relay box that mutes the studio speakers while turning on the mics and on-air lights. The finished project is shown in Fig. 1.

As for the remote panel, Dino says you can find these used light switch panels on the internet.

Got a mod or upgrade you put together? Share it with your fellow engineers through Workbench. Your printed submission will also count toward SBE recertification credits.

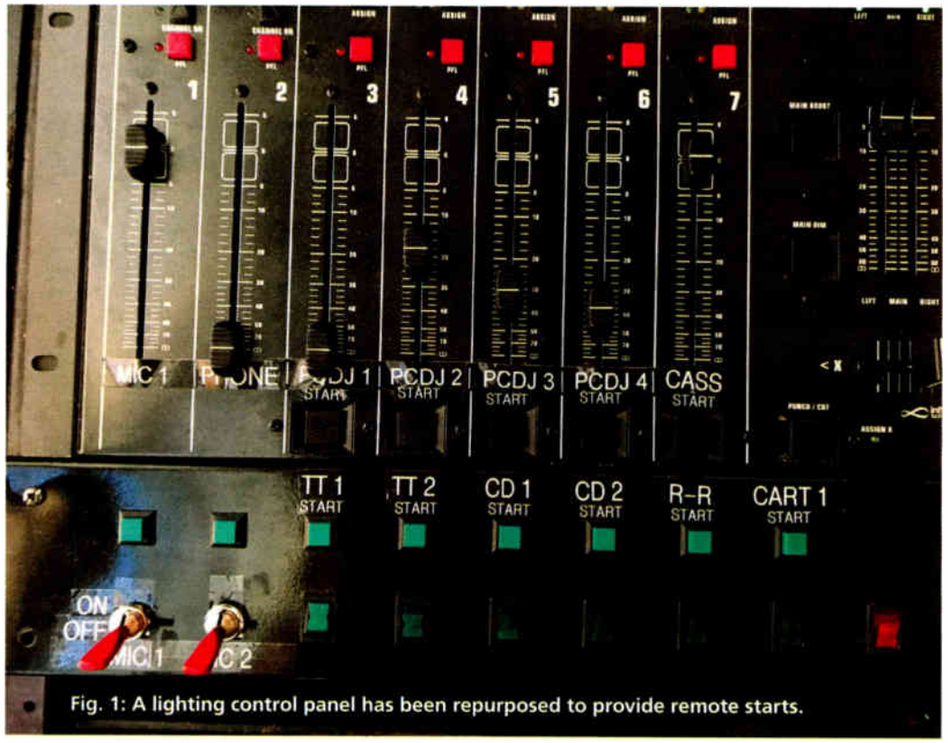


Fig. 1: A lighting control panel has been repurposed to provide remote starts.

If you are looking look to upgrade a conference room in 2019, you may want to consider the Yamaha YVC-200 portable USB+ Bluetooth speakerphone. The portable conferencing device is designed to provide users with ample, clear sound no matter where they work.

"The workplace has changed greatly since even five years ago, with more and more people meeting remotely, setting up temporarily in huddle spaces, or working wherever is most convenient. This has redefined users' expectations and conferencing requirements," said Phil Marechal, Yamaha Unified Communications vice president of business development and product management, in a company marketing piece.

He said the YVC-200 is suitable for employees, business executives, entrepreneurs and anyone else who needs conference-room quality audio without access to a conference room.

The compact speakerphone fits in your palm and combines voice activity detection and adaptive echo cancellation. The voice activity detection focuses on speech rather than background noise and delivers full-duplex conversation without dropouts, even when multiple people are speaking, the company says.

To start a remote meeting, users connect the YVC-200 to their audio, video or web conferencing client. Equipped with both USB and Bluetooth, with pairing to NFC-enabled devices, the YVC-200 can connect to a PC, smartphone or tablet. A built-in rechargeable battery provides up to 10 hours of operation. Plus, the speakerphone is software agnostic.

Contact a Yamaha dealer for more information.

Bible Broadcasting's Steve Tuzeneu sends in a link to some neat audio delay software.

Initially designed to sync up radio sports broadcasts with television, a delay of from 0.1 second to several minutes can be selected. The software was developed by Fountain Computer Software Tools.

Their website is *www.fountainware.com*. Select their software products from the list on the left. Engineers may also be interested in their free audio spectrum analyzer software or free topo maps. (For spelunkers, there's a Cave Mapping software tool that's also interesting.)

Consulting Engineer Charles "Buc" Fitch, P.E., wrote a column nearly 10 years ago on controlling your FM antenna deicers.

You've probably heard, with respect to social media and questionable choices, that the content of the World Wide Web never goes away. Well, the same can be said for Radio World articles, and what's even better is that Buc's tips are just as relevant nearly a decade later.

Buc warns in the title of his piece that February is not the time to see if your deicers are working! Enjoy the last of Indian summer, download the article and if you don't have deicer controls, consider adding Buc's suggestions.

You'll find the article at *www.radioworld.com/miscellaneous/dont-wait-for-february-to-check-deicers*. Or at RW's home page, type "Fitch deicers" into the search field.

Your ideas can help your colleagues. Send Workbench tips and high-resolution photos to johnpbisset@gmail.com. *Fax to (603) 472-4944.*

Author John Bisset has spent 48 years in the broadcasting industry and is still learning. He handles Western U.S. radio sales for the Telos Alliance. He is SBE certified and is a past recipient of the SBE's Educator of the Year Award.

World Radio History

HD Radio

INOVONICS SUPPORTS HD RADIO
LIKE NO OTHER

THE FINEST SELECTION OF FM & HD RADIO PRODUCTS IN THE RADIO BROADCAST INDUSTRY

JUSTIN 808 FM | HD RADIO TIME ALIGNMENT PROCESSOR

100% Automatic to Within +/-1 Sample

Precise time alignment between analog FM and HD1, Dynamic Web interface, SMS/email alarms, Data logging with graphic display.

719 DAVID IV FM | HD RADIO AUDIO PROCESSOR

Sophisticated Sound

Ultra low latency, DSP design; 5 bands of dynamic range compression and "graphic-EQ", 25 factory and 20 customizable presets, Stereo-Gen with RDS metering, easy setup and control.

AARON 655 FM | HD REBROADCAST TRANSLATOR RECEIVER

Combines Multiple Processes in a Single Box

DSP-based FM/HD Radio Receiver, Audio Processor, Dynamic RDS Encoder, and Streaming

639 FM | HD RADIO MONITOR RECEIVER & 638 FM | HD RADIO SITESTREAMER

Compact and Agile

Inomini products provide powerful monitoring in reduced size & cost

INOmini 639
- Professional off-air monitoring
- Analog L/R & AES outputs
- Alarms

INOmini 638
- Remote Monitoring Via Web
- Streaming on-line
- Alarms & Notifications

Why Inovonics?

Quality Solutions. Competitive Prices. | Three-year Factory Warranty.
Quick to Install. Easy to Program. | Quality after sales service.

www.inovonicsbroadcast.com | sales@inovonicsbroadcast.com | 831-458-0552

INOVONICS BROADCAST

World Radio History

High School Radio Network Broadcasts Teen Voices

Working on LP broadcasts and streaming teaches life skills, nurtures interests beyond the classroom

PROGRAMMING

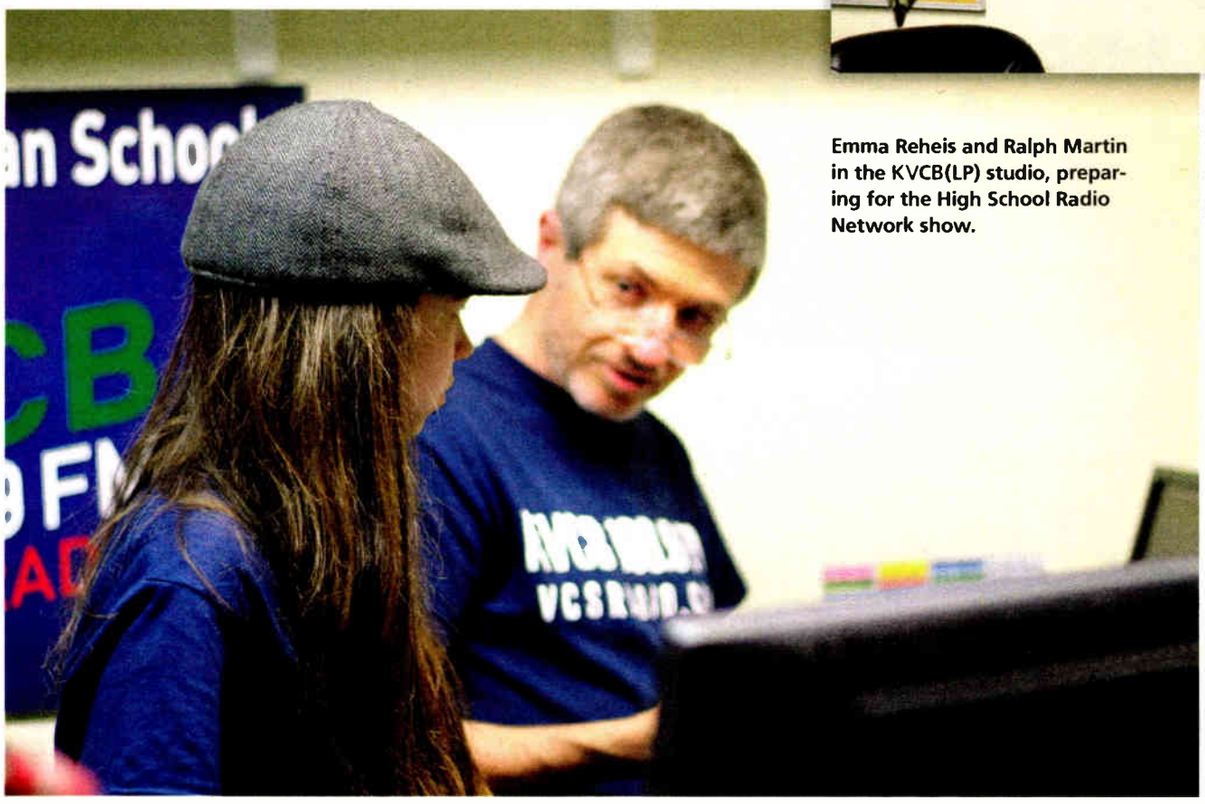
BY JENNIFER WAITS

On a Wednesday afternoon last spring, a dozen high school students file into the Vacaville Christian Schools' music room, with a trio of girls assembling in the main KVCB(LP) radio studio for a live one-hour coast-to-coast broadcast of the High School Radio Network.

Every Wednesday, a different high school radio station takes the lead, sharing its broadcast with fellow High School Radio Network colleagues.

The mix of conversation and music heard during KVCB's Feb. 7 show is fairly typical, although each station lends its personality to the mix. The fall

KVCB(LP) studio



Emma Reheis and Ralph Martin in the KVCB(LP) studio, preparing for the High School Radio Network show.

Photos by Jennifer Waits

Hosts Sydney Reheis, Emma Reheis and Metina Cassinelli test their equipment, ask lingering questions of their teacher Ralph Martin, and reveal that they aren't too nervous about doing their first network show. As the program begins, they launch into a flurry of conversation and music, bantering about celebrities and popular culture, playing requested songs and fielding phone calls and text messages from friends, family and strangers. A teacher calls in, revealing that he is listening while grading papers. Further afield, a network station from Indiana messages that they are enjoying the program.

Although on a typical show, the girls are speaking largely to a local audience at their school and in Vacaville, Calif.; during a network broadcast, their voices are amplified and can be heard on high school radio stations in faraway locales, from Arizona to Indiana to Tennessee.

2019 KVCB schedule includes "VCS Sports Coverage LIVE," "Mornings for You," "Studio D LIVE," "Sound Art Central" and "Time Travel Central."

Last semester's programs also included "The Mosh Pit" on Scratch Radio WJWS(LP) at Jasper High School in Jasper, Ind., during which the student hosts chatted about upcoming concerts, from Cher to Ty Dolla Sign, and played music from the artists.

KMIH(FM)'s General Manager Joe Bryant, who got his own start in high school radio, shared that his school broadcast from Mercer Island, Wash., this spring, and the remote was hosted by three seniors and also included "an extended sports segment from our sports talkers," as well as music from a local band fronted by a station alum.

FROM HIGH SCHOOL RADIO DAY TO RADIO NETWORK

With live shows launching in September 2016, The High School Radio Network is now in its third year. Ralph Martin of KVCB (aka "VCS Radio") is the mastermind behind the project, which stemmed from his initial desire to connect with others in the radio community. After reaching out to High School Radio Day founder Pete Bowers, he was off and running.

The longtime general manager of high school radio station WBFH(FM) in Bloomfield Hills, Mich. — he retired last year — Bowers started High School Radio Day in 2012 as a celebration of high school radio, and it's been held annually since. Bowers estimates that there are approximately 200 high school radio stations in the United States, with about 80 taking part in High School Radio Day 2017.

Although High School Radio Day initially was a way to call attention to the often-overlooked high school radio scene, its impact has exceeded expectations. The website serves as a resource and meeting place for high school radio, and it helped to spawn a Facebook group for advisors, a mailing list for high school radio stations and a high school radio app to facilitate listening to these stations. The High School Radio Network is a logical extension of these efforts.

After making contact with High School Radio Day participants, Martin proposed the idea of having stations take turns going live and sharing programming every week. Upon receiving enthusiastic responses, he set up a website and a plan for weekly hour-long broadcasts occurring every Wednesday at 6 p.m. (ET).

Stations in the new "network" would agree to broadcast the program (no matter where it originated) every week. During the show, participants omit their own station IDs, instead announcing, "High School Radio Across America."

Nearly two years into the project, there are around eight radio stations regularly producing live programming for the Wednesday broadcasts, which are being picked up by more than 20 radio stations. At this writing the fall 2018 program schedule was to posted soon on the network's website, *www.hsradionetwork.com*.

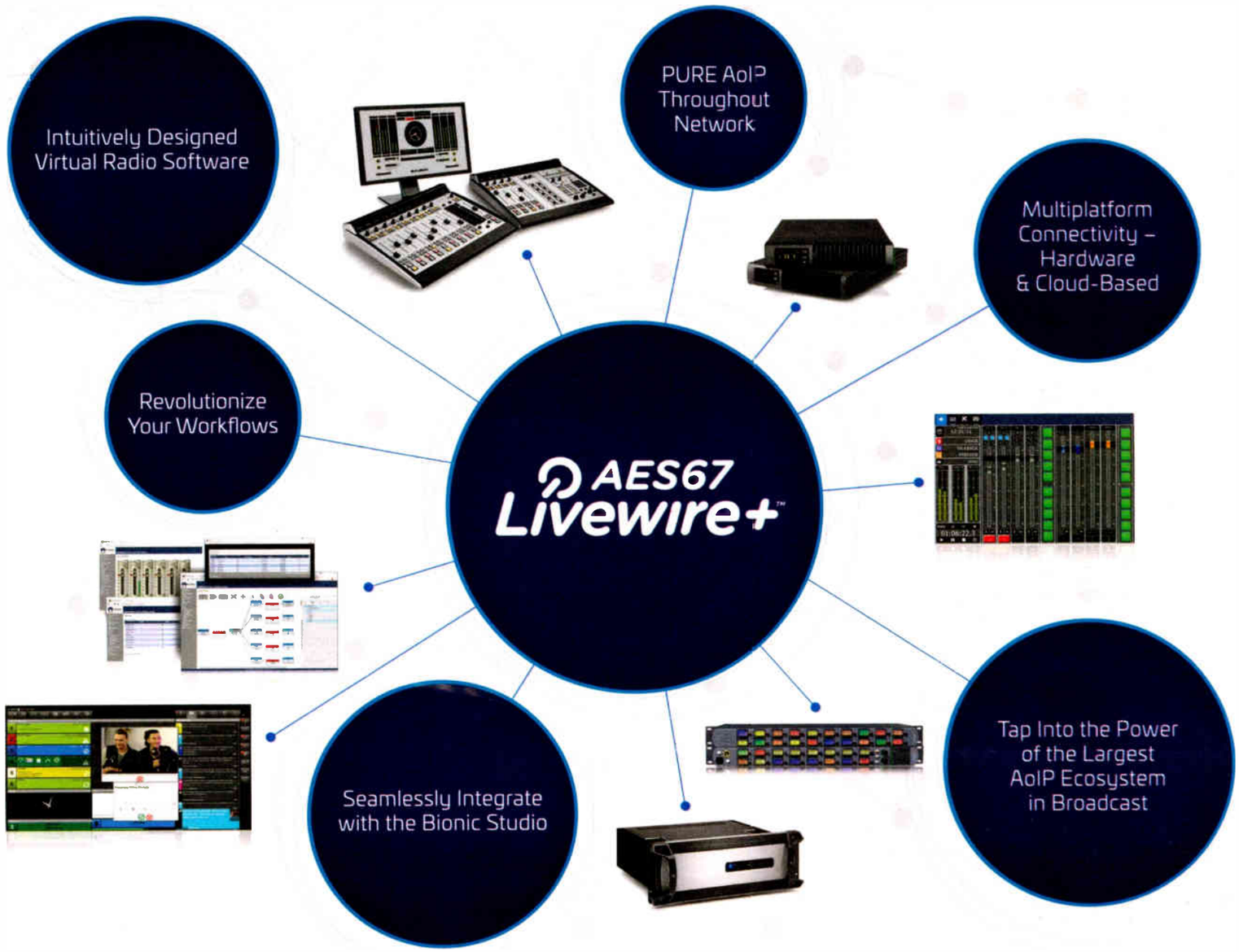
Bowers remarked, "It's cool to think that the show you are airing on your station is being broadcast on other stations around the country."

The students at VCS Radio seem to agree. Ninth grader Metina Cassinelli acknowledged the appeal of being part of a broader high school radio community. Having listened to shows done by other

(continued on page 16)

World Radio History

Welcome to the Ne(x)twork



Experience a Fully Integrated AoIP Environment.

Axia is the Ne(x)twork, and the Ne(x)twork makes next-tech *work*. PURE AoIP throughout the network means Axia delivers a fully integrated AoIP environment, revolutionizing workflows and providing the largest AoIP ecosystem in broadcast. AES67 compliance ensures a plug-n-play experience with all AoIP gear.

While other AoIP broadcast protocols still rely on TDM-based systems to work—whether this concerns routing, mixing, distribution, or intercom—Axia operates purely in the AoIP domain, eliminating antiquated, expensive, cumbersome, and hard-to-maintain equipment.

Tap into the largest AoIP network in broadcast. 115+ Livewire partners, 8,000 Axia consoles, and 100,000 connected Livewire devices.

Join the Ne(x)twork.

TelosAlliance.com/Nextwork
Available in the US: BGS.cc

AXIA
THE TELOS ALLIANCE

©2018 All right . reserved. TLS Corp. C18/16051

World Radio History

HIGH SCHOOL

(continued from page 14)

schools, she pointed out, "It gives me a sense of unity knowing that we are all just a bunch of kids sitting in front of a microphone."

Additionally, high school radio is providing a unique experience to its participants.

Bryant said, "What we teach in high school radio is storytelling, interpersonal relations and confidence … The skills my students get by putting down the cell phone, Snapchat, text messages etc., and having actual conversations with each other carry over to how well they do presentations in other classes and eventually in college and in a variety of careers."

While commercial radio faces its challenges, Bryant said, "the need for people to entertain with stories and disseminate information has been around since cave drawings and always will be."

In the words of VCS Radio participant Sydney Reheis, "High school radio is very fun. When a teacher or fellow student tells me they heard me on the radio, it brings a smile on my face."

The creative aspects to radio aren't lost on students either. Cassinelli points out, "We are kids; we have homework and sports, but being able to be on the radio for just an hour is a very freeing experience. It's a time to be yourself and have fun. This is our escape, and I encourage other people with any interest at all, to join."

EXPANDING PROGRAMMING — AND GOALS

For High School Radio Day 2018, there was also a network twist: It was celebrated for an entire week, from April 21 to April 28, with some stations doing live shows together or sharing promotional spots.

In keeping with that concept, High School Radio Network sharing isn't necessarily limited to the Wednesday show and some stations have offered up additional programming that can be aired by affiliate stations at any time, including live music performances, public affairs talk shows, and extended Wednesday broadcasts.

Although Martin's original motivation for starting a radio station was linked to his desire for students to talk about music, the project has clearly grown into a much larger program with broader goals. On a practical level, Martin said that his students learn about teamwork as well as about audio production.

Martin now has a greater appreciation for the importance of high school radio. He added, "I love high school radio, and I like what has been happening here, and I hope that that same energy is felt all over."

Photo by Jennifer Waits

Metina Cassinelli, Sydney Reheis and Emma Reheis in the VCS music room following their first High School Radio Network program.

Bowers has been at it even longer, sharing that, "In the 41 years I managed a high school radio station, my students never ceased to amaze me [with] how entertaining they could be. A case could be made that what you hear on high school radio is unique compared to college radio, commercial radio and satellite radio.

"The challenge we share with college, commercial and satellite radio is getting people to listen to our content. In my heart I know, if people were to tune into high school radio, they would like what they hear and would probably listen to it more."

Jennifer Waits is a co-founder of Radio Survivor and a research associate on the Library of Congress' Radio Preservation Task Force. She obsessively tours radio stations, which she chronicles on her blog Spinning Indie. A college radio DJ since the 1980s, she's been at four stations and has hosted a music show at KFJC(FM) since 1999.

XPERI®
xperi.com
ENABLING EXTRAORDINARY BROADCAST EXPERIENCES
in the car, on mobile, and in the home around the globe
HD Radio® Digital AM & FM
aim all in media
dts Connected Radio
ARCTIC PALM Technology Inc.

World Radio History

EMX is the most full-featured and modernly innovative broadcast console ever from PR&E.

It's got more of everything you need to run even the largest, most complex studios with ease, yet feels right at home to PR&E veterans. Its AoIP networking, based on the industry-standard WheatNet-IP Intelligent Network, is no-nonsense, no-failure, and eminently expandable.

Get MORE – EMX takes PR&E beyond the limit.

More Bus Options

4-stereo PGM, 2-stereo AUX buses, 1–dedicated mix-minus bus, & 2-channel telco out provide flexibile functionality for major market applications.

More Channels & Control

16, 20, or 24 input channels with optional wide frame sizes. Bus-minus on each. Full logic & machine control. Tricked out studio, control room, & monitor channels.

More Audio & I/O

Parametric EQ & full dynamic control on every channel rivals standalone processors. 2-SQ mic pres & 8-stereo analog & digital I/O, all easily expandable.

More Studios

Connect as many studios as you have via CAT6 and integral 5-port switch or off-the-shelf switches. Intelligent AoIP network routes and controls audio sources anywhere.

EMX

pre.com/emx-rw

PACIFIC RESEARCH & ENGINEERING

Designed and built in the USA by Wheatstone • 252-638-7000 • sales@wheatstone.com

World Radio History

ENCO Presenter Amplifies On-Air Operations for All Classical Portland

Color-coded active GUI keeps DJs on their toes

USERREPORT

BY JORDAN LEWIS
Director of Radio Operations
and CHRISTA WESSEL
On-Air Personality,
All Classical Portland

PORTLAND, ORE. — Embodying the spirit of the Pacific Northwest, All Classical Portland is a public radio station that broadcasts classical music to 250,000 local listeners each week in Portland in southwest Washington, and some coastal Oregon communities on 89.9 MHz. More than 6 million people have streamed online at *www.allclassical.org* from approximately 160 countries. It is our commitment to share the most dynamic and wonderful performances on the air and consciously work to build our community through public service and the programming we share.

Founded in 1983, All Classical is Portland's only 24-hour classical radio station, reaching listeners across Oregon via a network of HD Radio transmitters and repeaters, including KQHR(FM), serving Hood River/The Dalles, and KQOC(FM) and KQMI(FM), serving coastal areas. We moved our facility four years ago to a modern space within the Hampton Opera Center, where we enjoy spectacular views of downtown Portland, Tilikum Crossing, and the Willamette River from our on-air studio.

Since installing ENCO's DAD (Digital Audio Delivery) radio automation system in 2009, we've relied on it daily for playout of virtually all of our music playlists, as well as six to eight prerecorded shows and promos. Assets loaded into the DAD database — on network attached storage — are assigned cut numbers, making them easier to search, organize, and manage. And while the system can be monitored and managed remotely, this automated playout system has proven to be precise and reliable.

NEW INTERFACE

Earlier this year, we upgraded our DAD system by opting for Presenter, an intuitive user interface that organizes the most critical information about our on-air operation into multiple on-screen windows, including the daily playlist, a search feature along with a Presenter program window. With any new software adjustments must be made, and staff must be appropriately trained. There were challenges for us implementing Presenter, but luckily the process was fairly quick and smooth thanks to our dedicated staff.

With its big, colorful buttons, icons and other on-screen visuals, the Presenter display makes it easy to grasp the status of our on-air operations at a glance. For example, as an item at the top of the playlist nears the end of its live playout, an on-screen element flashes boldly to get the operator's attention, so that no cues are missed. Program changes are also much easier to make, simply by dragging and dropping items between the on-screen windows. The ability to achieve this on the fly during a live show is especially powerful.

When we need to search for a particular item, the search tool allows us to enter terms based on a keyword, phrase or number. It immediately generates a list of results residing in the cuts database that you can choose from, and we simply drag our selection over to the Presenter screen to add it to the playlist, even within moments of it going to air.

While DAD enables us to fully automate our station around the clock, we prefer for our on-air hosts to be on live during the day. This ensures that they can truly engage with listeners and refer to things happening in the community. For timeslots during the night and portions of the weekend, the announcers are voice-tracked. Those recordings are added to the DAD playlist and interspersed with the music, which ensures reliable, fully automated playout on schedule.

DAD color-codes the playlist so that operators can check the status of the transitions, including those that will be fully automated. Red means that playback will stop after the current selection ends, and an operator will need to step in to initiate the next track for playout. Yellow means the system will autoplay, but that no one has voice-tracked the transitions to finesse the way that one selection will lead into another. And green means the segues have been finessed, and the system is set to autoplay one selection after the next until the live operator takes back control.

The flexibility to be on the air live during the day, but to fully automate shows during the night, weekends and holidays, means that our staff can work reasonable hours and enjoy a better quality of life. DAD automation — including its new server-based environment — has really changed the way we do radio. And Presenter has made a world of difference in how we run our live operation.

For information, contact Ken Frommert at ENCO Systems in Michigan at 1-248-827-4440 or visit www.enco.com.

World Radio History

GREAT BIG SOUND

LITTLE TINY PRICE

FM-55
AUDIO PROCESSOR

No matter what they listen through, your station will sound louder, cleaner, bigger...for less

Performance Facts

Intelligent iAGC

Produces a consistent, spectrally-balanced sound regardless of density variations in incoming source material. Essential for different media formats.

Smart Stereo Enhancement

Specialized automatic level and spectral management algorithms provide a wide but extremely stable 'on-air' stereo image.

Exclusive Bass Processor

Allows you to dial in just the right amount of low end. Three simple controls ensure the right amount of consistent bass is added. Easy. Elegant.

Multipath Control

Mitigates market and terrain-specific multipath behavior, reducing the problem of multipath-triggered receiver-induced stereo blend.

Wheatstone® baseband192

A single AES/EBU cable between the processor and a current solid-state FM transmitter carries the digital baseband signal for exceptionally clean sound.

WheatNet-IP Compatible

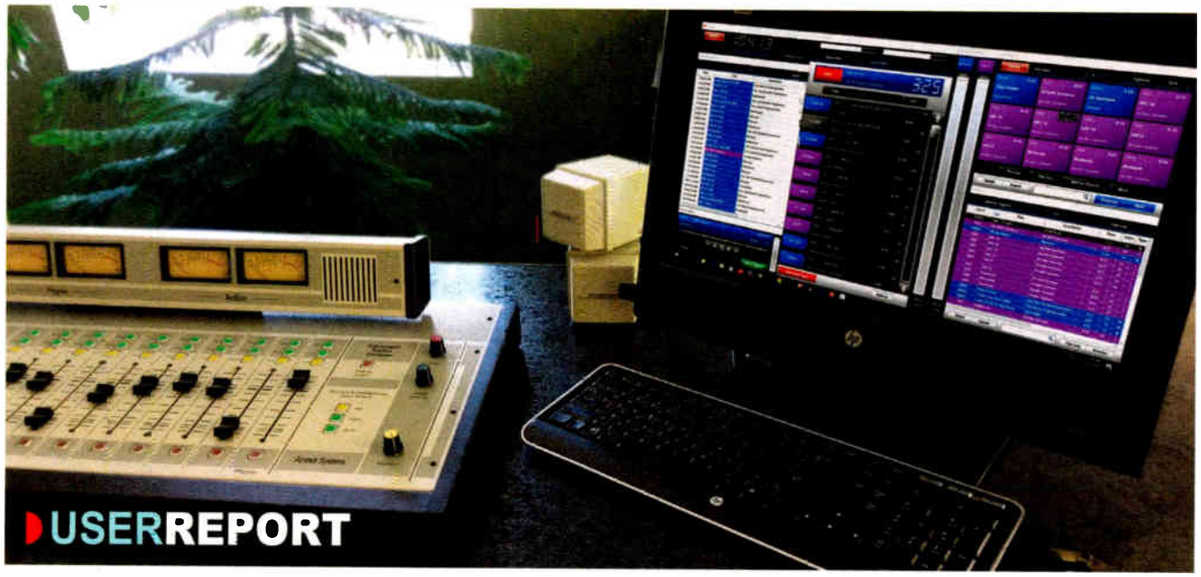
Stream the FM-55's audio throughout the WheatNet-IP audio network and control it from anywhere using its PC-based GUI.

Wheatstone
BROADCAST AUDIO PERFECTIONISTS

World Radio History

Gap's WLSD Is High on Apex

Arrakis automation meets changing needs of Virginia station



BY ADAM STURGILL
Program Director/Engineer
WLSD(AM/FM)

NORTON, VA. — On Aug. 20, 1953, Gap Broadcasting Company launched WLSD(AM). The station was assigned the frequency of 1220 kHz with daytime power of 1,000 watts and nighttime power of 45 watts.

The call letters represent the broadcast counties served: Wise-Lee-Scott-Dickenson in Virginia. Our station is located in Norton and our tower is located on the eastern border of Big Stone Gap, atop Powell Mountain near Maples Gap.

We have been in the community for decades now, and have seen a lot of change and growth over the years. Our studio has been no exception. Our latest project was upgrading our automation system to the state-of-the-art Arrakis Systems Apex system that we now enjoy.

What got us started looking for a new automation system came down to a few factors. The first factor was a format change, to a style of programming that was best described as unique. The second was the age and limitations of the existing automation system employed. The third on the list was the demise of our satellite dish. And then the last, and most of all, was the addition of an FM translator.

In 1975 WLSD(FM) was formed. WLSD(FM) later split to become sister station WAXM(FM). And starting this year, we brought WLSD back to FM!

When we saw Apex, our first thought was "Welcome to the 21st century!" Apex replaced an aging automation system that was running on Windows 98 and wasn't very user-friendly. We wanted something that could do drag and drop, and not require you to record your audio in real time. But we also needed something networkable and accessible remotely.

MUSIC SCHEDULING

Apex immediately caught our eye, and I was drawn to Apex for a few reasons.

For starters, I've had experience with Arrakis in both consoles and automation. I was a huge fan of the Digilink Xtreme system. Plus I have the tendency to do business with those that take care of their customers. Customer service is key in any operation, and I had only had wonderful experiences with their support staff. They are quick to help, and are always sharp.

Second, Apex offered a host of features that are useful and practical. A built-in music scheduler was a must in our new operation, and Apex has a convenient and quick way to set up music templates. The other feature that we appreciate is the flexibility to move between live and local to fully automated with the press of a button. This handful of features is what drew us to the system first. The other features have been more icing on the cake. We pulled the trigger on our order in June.

INSTALLATION

We felt blessed that the process of getting set up with Apex was quick and easy. Honestly, the installation went flawlessly. We are using the Apex Hard Disk option, which comes with the Arrakis Harmony Sound Card. Since we don't do any satellite automation, there was no need to use their Bridge or Satellite routing. The hardware installation went from box to installed in under an hour. The Harmony Sound Card made things super easy with the use of Cat-5/RJ-45 and has four multiple outputs which are great for Apex's built-in hotkeys. It also has a record input that allows you to take any outside source like our console and record for later.

So far, using Apex has been a delight. Some of our favorite features are definitely the scheduling and built-in tools. That all said, there are a bunch of features we haven't touched upon yet, and we are excited to keep learning about all it can do.

One thing I recommend for a process such as buying new studio equipment is, "Ask questions." If you don't understand something, even if it's something simple that is holding you up, reach out to Arrakis. They built the software and hardware from the ground up, so they are going to be able to point you in the right direction. When I was getting set up, I ran into a few settings that I didn't fully understand such as setting up cart rotations and music fill. A quick call to support and all was fixed.

We are excited about our new addition to our studios, and look forward to growing our station with our community.

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

World Radio History

Welcome to Broadcast 3.0

ruby – Radio never looked so good.

LAWO

Join us @ AES #824

DOWNLOAD ruby BROCHURE bit.ly/2kT8Obi

Feast your eyes on the new ruby mixing console.

Intuitive. Uncluttered. Powerful, yet so refined. Streamlined from every angle. Optimized controls: everything you need, nothing you don't. Only 5 cm (2") tall, from the bottom of its exquisitely cast side frames to the tops of its carefully chosen rotary selectors.

But great design goes beyond mere good looks. Which is why ruby is expertly crafted for both speed and accuracy — controls perfectly placed to fall naturally to hand. Premium-grade displays, faders and switches. Standards-based AES67 networking. Powerful features like AutoMix smart mixing and instant one-button switching between live and production modes. Up to 96 channels of DSP and 1,920 routing crosspoints*. The cherry on top? A customizable, context-sensitive touchscreen GUI that puts virtual control of mixer functions, playout software, studio devices, even Web feeds, social media and video, right at your operator's fingertips.

No other console is this smart. Slim, trim, and sharp as the cutting edge. Engineered and built without compromise by German craftsmen.

Sprechen Sie deutsch?

Welcome to your command cockpit. Graphical, intuitive, customizable: ruby's onscreen interface, powered by our VisTool GUI builder, is so much more than just meters and a clock. Multi-touch controls instantly give what's needed to control studio devices, tweak dynamics, adjust virtual faders, meter true loudness — even design your own custom screens. The possibilities are virtually limitless.

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

www.lawo.com

World Radio History

Olesa Radio Relies on AEQ AudioPlus Automation

Ability to communicate with other AEQ equipment provides a bonus

USERREPORT

BY RAFA MARTINEZ
Technical Manager
Olesa Radio

OLESA, SPAIN — Olesa Radio was formed back in 1982 as a local radio community service in Olesa, near Barcelona. Olesa Radio started with programming limited to the afternoon/night and weekends. Counting on a large number of collaborators, Radio Olesa slowly managed to become a reference to local entities and associations.

The main challenge for community stations is to be able to keep a 24/7 schedule of quality programming on air to gain and maintain listeners' loyalty. This normally involves a huge human and technical effort and the need for alliances that allow for the broadcasting of contents that are of local and national interest.

UPGRADING

In 2008, when we moved the studios to the current location, we made the decision to install AEQ's MAR4SuitePRO automation system. Now we have upgraded to the company's AudioPlus.

It provides us with some really good features. It is compatible with any kind of audio card, even IP ones.

In addition it has editing and management tools. We have two workstations installed, one for each studio; one of them acts as the server. A dedicated keyboard is used, allowing us to trigger audio files conveniently.

The automatic playout module allows us to prepare a playlist that is assembled based on selection criteria, using a presentation panel that provides the tools for editing the transitions between the audio files in an automatic or semi-automatic way.

We also count on tools to organize advertising, filling the already reserved slots with the contents of each advertiser's campaigns based on contract criterion. Pricing of advertisement in local stations like ours must be attractive, so

the advertisement management costs must be kept low.

News and local information bulletins are usually generated live, although AudioPlus allows us to remotely assemble, modify and broadcast news contents from a PC.

While AudioPlus has a quick audio editor, in order to create more artistic content such as intros, jingles and special ads, it also allows for working with external editors such as Adobe Audition, which we also use.

In order for a local radio station to be able to air interesting content day and night, it is important to work with other organizations that provide content.

PROGRAMMING

In order to provide a high-quality music programming during the night, from 12 to 7 a.m., we broadcast music and cultural programming by ICat.com. The costs involved in the creation of such content ourselves would not be acceptable for a small corporation like ours.

For the rest of the day, many local radio stations in Catalonia are integrated in the La Xarxa Audiovisual Local SL (XAL) network. The network consists of 125 stations collaborating in the generation and broadcasting of contents via an IP network using AEQ's Venus codecs.

Xarxa has its headquarters, studios and main station in Barcelona. Using a specially designed software application, contributions from the local stations and distribution using multicast groups can be organized.

AEQ AudioPlus automation system via the Venus codecs can respond to instructions generated by the Barcelona Xarxa headquarters. This way, thanks to AudioPlus, we receive news in the morning and noon; we also participate in a daily collaborative program in the afternoons and produce a weekly program about opera for other stations.

For Olesa Radio AEQ AudioPlus radio production and broadcasting automation system provides power and efficiency that is helpful to local radio stations in producing quality content 24/7.

For information, contact AEQ in Spain at +34-91-686-1300 or visit www.aeq.eu.

TECHUPDATE

DJB SOFTWARE IS IN THE ZONE

DJB Software's Zone OnAir Suite is a new software offering that the company says has evolved based on 34 years of radio automation experience.

Its infrastructure now supports a high-efficiency SQL database for local, network and wide-area operations and several versions of database sizes are supported giving buyers a choice based on budget and needs.

DJB Zone OnAir is a layout scalable product suitable for LPFM/AM/FM/repeaters and comes with flexible on-screen zones of the system functions that can be arranged, resized and layered in a variety of views. A "Layout Recall" is provided for quick layout change modes based on the talent preferences.

DJB Zone OnAir hot key panel supports button colors along with simple audio library drag'n drop on blank buttons to create new panels. The DJB Zone weather panel features hot keys for enhancement for live read weather reports with audio intros, outros and music beds. Air talent also has an Artist Enrichment panel that provides details of the artist's activities — latest releases, album history, recording studio dates, tours, website, streams and live appearances.

The system can be remote managed using iPad, Microsoft Surface, slate or smartphones with a browser remote interface. DJB Zone Remote Voice Tracking continues to provide VPN ease of access by remote talent to schedules, audio play out and in from remote sites for that "in-studio feel."

The company says its products are audio card-agnostic. Recording, WAV editing and multichannel play-out operate with full features on generic computer onboard sound cards, external USB sound cards, AudioScience and Digigram pro cards, along with IP audio drivers for Dante, WheatNet and Axia Livewire.

For information, contact DJB Software in Nevada at 1-702-487-3336 or visit www.djbradio.com.

World Radio History

GREAT SOUND MATTERS MOST

With audio processing, nothing matters more than your sound. You want people to stop, listen, and listen *longer*. Cutting-edge sound performance from the team of processing experts at Omnia can do that for you.

Huge cluster or small studio. Massive budget or lean and mean. In the cloud or in the flesh, Omnia has the products you need to make your signature sound consistently jaw-dropping and dial-stopping across any platform.

No one has the breadth of audio processors like Omnia does. From the flagship 11 all the way to the VOLT 1RU—all our products feature the same DNA of passion, performance, and innovation no matter the price point. Because every station deserves the very best sound possible.

It's Your Sound. Make It Legendary.

Omnia | telosalliance.com/omnia-sound-matters

OMNIA.11

OMNIA.9FM/AM

OMNIA.7FM/AM

OMNIA VOLT

OMNIA.9sg

OMNIA.SST SOFTWARE

©201* All rights reserved TLS Corp C18/15065

World Radio History

TECHUPDATES

SYNC HARMONY INTRODUCES AUTOMATION SYSTEM

Sync Harmony, a joint venture of Gen Media Partners and and Synchronicity.co, debuted Harmony, a playout system for broadcasters and webcasters.

It highlights Harmony as having a flexible design and unique business model that delivers great-sounding audio without up-front cash outlay. The package includes hardware, software, automatic upgrades and updates, and 24-hour support, on the basis of a monthly fee.

The hardware is a custom-built PC with an AudioScience sound card that can be located at the main studio or at a transmitter site and controlled remotely. Harmony modules, at no additional cost, include:

- Auto Importer — A living log technology that imports logs, spots, music and any other audio elements into the Harmony system;
- Voice Tracker — Records and edits voice tracks at the station, or anywhere using the included Remote Voice Tracker;
- File Copy — Captures and intelligently renames files from FTP or any other source and automatically make that audio available for on-air;
- Live Stream — Encoder software that generates a live stream in multiple formats;
- Surface — A Windows-based remote-control system for live events;
- Monitor — A system that watches critical system functions and alerts the Harmony support team and the station if there is an issue;
- Hot Keys — Multiple banks of available audio cuts.

Harmony maintains ownership of the hardware and says it promptly replaces damaged or inoperative equipment at no charge.

For information, contact Sync Harmony in New York at 1-332-255-8472 or visit www.sync-harmony.com.

NEOGROUPE MAKES SOLUTIONS GDPR COMPLIANT

Software developer NeoGroupe has released GDPR-compliant versions of its entire line of software solutions.

The company has enhanced its NeoWinners promotions and winners management software as well as its NeoScreener call screening application with GDPR/PDPA/SOX-compliant features, in order to protect personal data contained in databases.

The company says data encryption, user logins, the logging of changes and automatic deletion of old data, in addition to other features, ensure that NeoGroupe solutions operate in accordance to the regulations, thus allowing users to interact with their audience within the new set of rules.

For information, contact NeoGroupe in New York at 1-917-732-1009 or visit www.neogroupe.com.

SMARTER HOTKEYS FOR VOXPRO DIGITAL RECORDER/EDITOR

Wheatstone has a new software release for its VoxPro recorder/editor, the digital audio editing system used in many broadcast studios and newsrooms for live recording and editing of call-ins, interviews and spots.

VoxPro version 7.1 features smarter hotkeys as well as customizable shortcuts and improved file naming and importing functions.

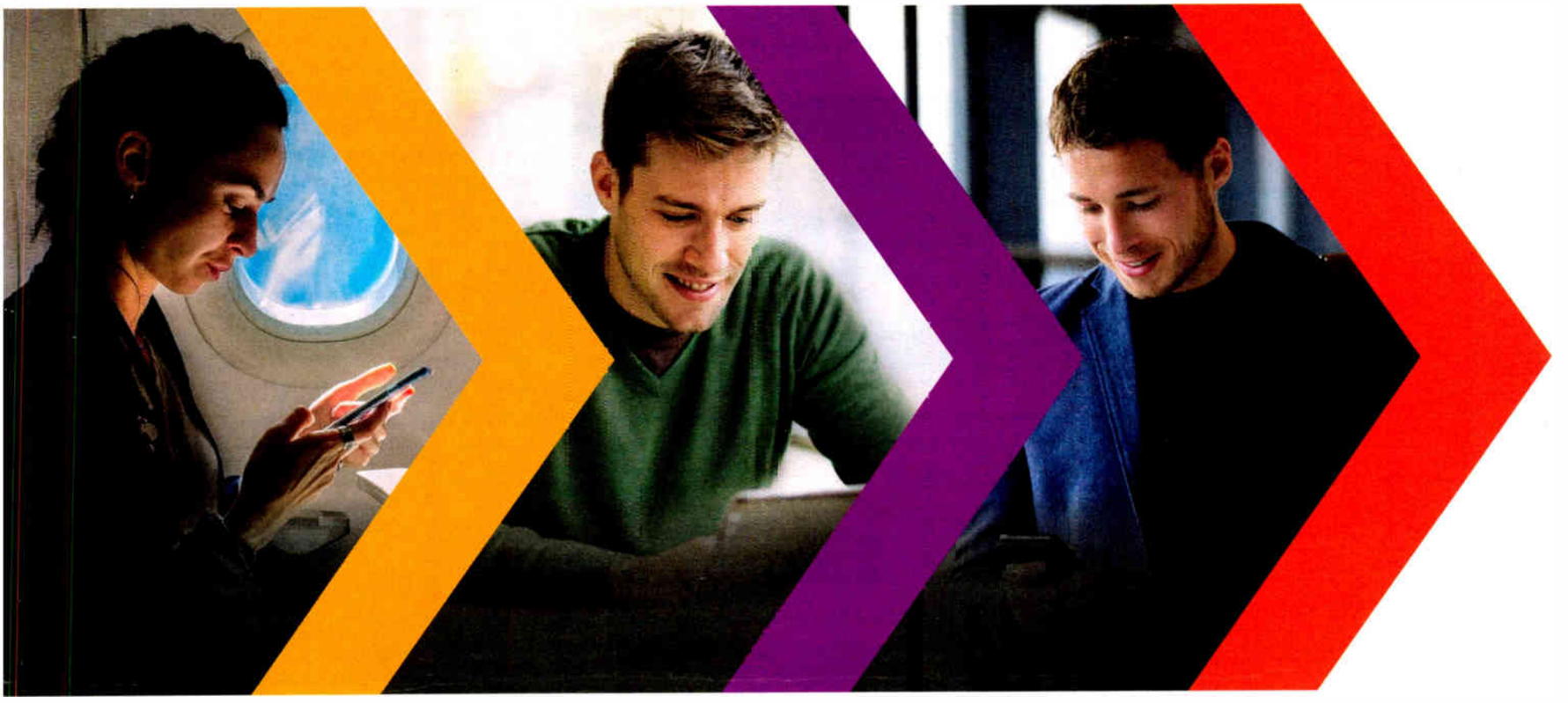
The company says that VoxPro is intended for broadcast applications and is known for its trademark VoiceSlip feature that automatically handles host/caller talk-over, as well as its GapBuster feature that can automatically remove silence from interviews and phone calls in seconds, rather than the minutes it would take to do manually.

Also unique to VoxPro is its controller with scrub wheel designed for real-time recording, editing and playback on the air, the control keys of which are mapped to specific functions in the software for fast recording and editing without requiring a mouse.

The company says that this version builds on VoxPro's position as a standard for live radio recording and editing in on-air control rooms and newsrooms with smarter hotkeys, which can now loop and pause sound effects, spots, music beds and interview quips. In addition, users now have access to more hotkeys at one time and can route hotkeys to individual faders (input strips) on the studio console plus color-code them based on 32 colors for faster recall.

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

World Radio History



We are mobile.

“We get to **work** on **our stations wherever** we are!”

Aquira2GO Zetta2GO Selector2GO

RCS Sound Software rcsworks.com

© Copyright 2016 RCS. All Rights Reserved. RCS Sound Software and its products and their marks and logos are registered trademarks of RCS.

World Radio History

TECHUPDATES

BSI OPX ONE UPDATES OPX

BSI OpX One is a new all-in-one version of the company's popular OpX Radio Automation Software for Windows PC, it said.

This new version features the same robust modular suite of programs offered in OpX, streamlined for use on a single PC. OpX One uses the same GUI interface of the original OpX; complete with easy-to-read colorful logs, import/merge traffic merging software, file management via FTP and File Server.

Handling of serial remote controllers, satellite receivers and many more serial hardware configurations with the Serial Server, and file playback with the OpX Audio server module.

BSI OpX One features Clock Builder software which simplifies the playback of syndicated satellite programming for configuration of triggering events via time-sensitive cues and audio switching commands.

Audio playback is supported via professional AudioScience sound devices or Axia and Wheatstone AoIP drivers. OpX One supports remote operation, Remote voice tracking and more can be performed from any IOS device via a free app.

For information, contact Broadcast Software International at 1-888-274-8721 or visit www.bsiusa.com.

RCS UPGRADES ZETTA

Broadcast automation software developer RCS says its Zetta automation system is the result of its own experience as well as feedback from users of its NexGen Digital and Master Control studio systems. Its modular design and ability to scale make it suitable for small, medium or large enterprise broadcast operations. Zetta can support a single station or work across multiple sites.

Zetta®

The RCS Living Log offers an advanced level of integration that enables a multitude of workflow concepts; the company says there's no need for users to wait for a refresh because updates are reflected everywhere.

The company also highlights Zetta's stability. Each function has a launcher app, which will restart a service if it stops unexpectedly — i.e. the Sequencer is separate from the audio playout and separate from the user interface as well.

To assure reliable operation, each computer in a Zetta system can be configured to Go Local with Zetta. This means the local computer will use a copy of the main database that is saved and synchronized on the local hard drive.

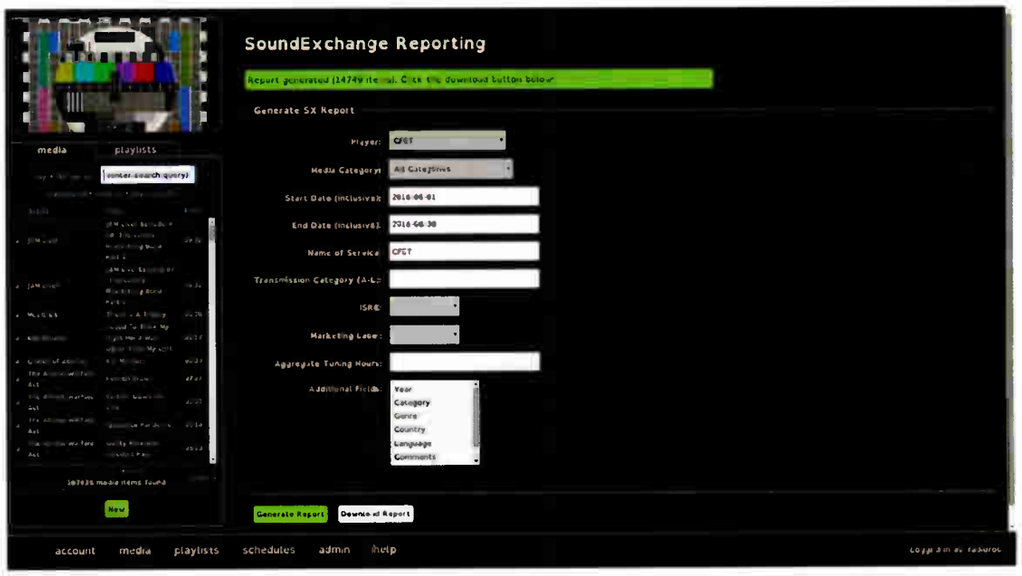
To support remote users, inspiration and last-minute changes, the Zetta 2GO app can control a Zetta automation/playout system from any mobile device. It can be used to manipulate what's on the air wherever there's an internet connection.

For information, contact RCS in New York at 1-914-428-4600 or visit www.rcsworks.com.

World Radio History

TECHUPDATE

OPEN BROADCASTER OFFERS AUTOMATED SOUNDEXCHANGE FEATURE



Open Broadcaster says it is the only open source media asset management platform combined with an emergency alerting system based on Common Alerting Protocol.

It works with basic generic computers including Raspberry Pi hardware with support for modern Axia Livewire AoIP digital consoles for plug and play operation run through a unified web browser dashboard.

Multiple users collaborate as a community to manage metadata and schedule multimedia digital assets using online media servers that broadcast LPFM indigenous community radio and CATV video playout with open source EAS overlays.

Open Broadcaster is available as a supported turnkey streaming appliance, hosted virtual cloud service or as open source broadcast automation software for users with some technical skills for a DIY installation on commodity computers. It is secure and reliable, the developer says.

In addition, Open Broadcaster is built so that additional features may be requested or sponsored for development with the community contributing code.

For example, a project was sponsored to create a module for SoundExchange royalty reporting. What once took many hours every three months can now be done with one mouse click. Formatted reports are automatically compiled into an XLXS file, with the correct headers for submission to SoundExchange. In markets outside of the U.S., this enhancement also enables stations to produce detailed on-the-fly reports showing media usage, statistics and metadata, further to work done with SoundExchange to ensure reports would be ingested seamlessly.

Since its incorporation in 2005, Open Broadcaster Inc. says it has offered hardware, software and streaming solutions to help clients be effective at any scale of operation.

For information, contact Open Broadcaster in Yukon Territory at 1-867-667-6397 or visit https://openbroadcaster.com.

Submit your listings to: michele.inderrieden@futurenet.com

BROADCAST EQUIPMENT EXCHANGE

RADIOWORLD September 26, 2018

ACOUSTICS

ANTENNAS/ TOWERS/CABLES

WANT TO SELL

CCA FM8000G Trans 107.9, great cond; 4-Bay Jampro antenna w/deicers; 3-bay Shively antenna FM. D Brockman, 606-965-3436.

AUDIO PROCESSING (INCLUDES ON-AIR)

WANT TO BUY

Teletronix LA-2A's, UREI LA-3A's & LA-4's, Fairchild 660's & 670's, any Pultec EQ's & any other old tube compressor/limiters, call after 3PM CST - 214 738-7873 or sixtiesradio@yahoo.com.

Wanted: real plate reverb. abgrun@gmail.com.

MICROPHONES/ HEADPHONES/ SPEAKERS/AMPS

WANT TO SELL

1934 RCA 77A double ribbon microphone, originally used by Arthur Godfrey at WFBR Baltimore. 100% perfect condition. Contact Bill Cook, 719-684-6010.

WANT TO BUY

RCA 77-DX's & 44-BX's, any other RCA ribbon mics, on-air lights, call after 3PM CST, 214 738-7873 or sixtiesradio@yahoo.com.

Broadcast Equipment Exchange
For more information, ask Michele at 212-378-0400 x523 or michele.inderrieden@futurenet.com
RADIOWORLD

MISCELLANEOUS

WANT TO SELL

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

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

WYBG 1050, Messina, NY, now off the air is selling: 250' tower w/building on 4 acres; collection of very old 78s dating back to 1904; 12' satellite dish on concrete base; prices d rastically slashed or make offer. 315-287-1753 or 315-528-6040.

SPACE AVAILABLE
212-378-0400 x511

CONSULTANTS

Doug Vernier
Telecommunication Consultants
Broadcast Engineering Consulting
AM/FM/TV/LPTV/DTV
Custom mapping service
Frequency searches
Propagation prediction
FCC application preparation
V-Soft Communications
Software for your PC
(800) 743-3684
www.v-soft.com

EMPLOYMENT

POSITIONS WANTED

Are you a small market station needing a good nuts & bolts engineer in the Los Angeles area? I will make your station shine! CET, fully FCC Licensed. Available for Full/Part-time/Contract work. Available immediately. Mitchell Rakoff, 909-446-6820, mitchellrakoff@yahoo.com.

World Radio History

Rebuilt Power Tubes 1/2 the cost of New!

Se Habla Español

ECONCO

Se Habla Español

Tel: 800-532-6626 Web: www.econco.com
Intl +1-530-662-7553 Fax: +1-530-666-7760

MISCELLANEOUS

WANT TO BUY

Collector wants to buy: old vintage pro gears, compressor/limiter, microphone, mixing consoles, amplifiers, mic preamps, speakers, turntables, EQ working or not, working transformers (UTC Western Electric), Fairchild, Western Electric, Langevin, RCA, Gates, Urei, Altec, Pultec, Collins. Cash - pick up 773-339-9035 or ilg821@aol.com.

2" plastic "spot" reels 6.5 or 8" diameter, as used for quad video. Wayne, Audio Village, 760-320-0728 or audiovlg@gte.net.

Equipment Wanted: obsolete, or out of service broadcast and recording gear, amplifiers, processing, radio or mixing consoles, microphones, etc. Large lots preferred. Pickup or shipping can be discussed. 443-854-0725 or ajkivi@gmail.com.

I'm looking for KFRC radio special of Elvis Presley which aired on January 8, 1978. I'd be willing to pay for a digital copy. Ron, 925-284-5428.

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

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

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

Looking to Buy or Sell Used Equipment?

Look no further, you're in the right place!

RADIOWORLD
Broadcast Equipment Exchange

Call today for current rates and deadlines!
212-378-0400 x523 • michele.inderrieden@futurenet.com

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

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

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

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

RECEIVERS/ TRANSCEIVERS

WANT TO SELL

Johnson Electronic SCA880 module, 67/92 Khz, 417-881-1846.

WANT TO BUY

AM Stereo radio. Call 417-881-1846.

RECORDING & PLAYBACK HARDWARE

WANT TO BUY

1960s-vintage MacKenzie Repeater machines, magazines, spare parts and manuals, complete or "parts" machines considered, James, 870-777-4653.

Large or small collections of 16" transcriptions or 12" transcriptions, not commercial LPs. Bill Cook, 719-684-6010.

Schnader telescriptions 16 mm musical films produced in the early 50 s. Bill Cook, 719-684-6010.

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

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

TRANSMITTERS

WCPE - The Classical Station seeks to work with other noncommercial stations to buy, sell, and exchange TX/RX equipment and components. Current needs: 1) Austron 1250A Quartz Crystal Frequency standards; 2) TFT Model 724, 730A & 763 monitors; 3) Vectron 204-8888 crystal oscillators, 5MHz; 4) Dielectric SPX 5500-501 3-1/8", 50ohm clamp-on directional couplers & associated carborundum resistors; 5) 36V, 2 to 5A rackmount power supplies. Please contact us via facilities@TheClassicalStation.org.

DISTRIBUTOR DIRECTORY

The following distributors serving the broadcast industry would be glad to help you with any of your requirements.

CORNELL-DUBILIER MICA CAPACITORS
FROM STOCK
JENNINGS VACUUM CAPACITORS
FROM STOCK
HIGH ENERGY CERAMIC CAPACITORS
SURCOM ASSOCIATES
5674 El Camino Real, Suite K
Carlsbad, California 92008
(760) 438-4420 Fax: (760) 438-4759
e-mail: link@surcom.com web: www.surcom.com

TUNWALL RADIO
SWITCH AND TRANSMITTER CONTROLLERS

AM/FM/MULTI-SWITCH AND CUSTOM DESIGNS
330.995.9642 www.tunwallradio.com

EMPLOYMENT

POSITIONS WANTED

Are you a small market station needing a good nuts & bolts engineer in the Los Angeles area? I will make your station shine! CET, fully FCC Licensed. Available for Full/Part-time/Contract work. Available immediately. Mitchell Rakoff, 909-446-6820, mitchellrakoff@yahoo.com.

ADVERTISE YOUR EMPLOYMENT AD ON OUR WEBSITE FOR ONLY $2 PER WORD!

ADS GET POSTED THE NEXT BUSINESS DAY AND WILL RUN FOR A FULL TWO WEEKS!

COMBINE THIS WITH AN AD IN OUR RADIO WORLD NEWSPAPER EMPLOYMENT SECTION AND REALLY COVER THE BROADCAST INDUSTRY AND THEN SOME!

www.radioworld.com

Call Michele Inderrieden for all the details at

212-378-0400 ext. 523
michele.inderrieden@futurenet.com

World Radio History

What Will Take Down Radio Pirates — And What Won't

Recent proposals don't address the real source of the problem

iStockphoto/serkorkin

COMMENTARY

BY DAVID HONIG

David Honig

The author is president emeritus and senior advisor of the Multicultural Media, Telecom and Internet Council. Radio World welcomes opinion and points of view on important radio broadcast industry issues.

When I read the press clips and commentary about radio pirates, I want to jump up and down, wave my arms and scream, "How can everyone be missing the most important fact about them?"

And I don't care if I look crazy putting it in all caps, but the part most people miss is: "ALMOST ALL PIRATES CHOOSE EXCLUSIVELY TO SET UP ILLEGAL, UNLICENSED STATIONS TO TARGET AND EXPLOIT LARGE-MARKET AFRICAN AMERICAN AND LATINO NEIGHBORHOODS."

Just what "services" do pirates provide to these neighborhoods?

They play the "club" version of records — the versions with the four- and 12-letter words that are banned by the FCC on licensed radio stations, but are easily accessible to young children on pirate stations; and they provide an audio stream free of bad news, bad weather or bad emergencies — because they don't broadcast news, weather or EAS alerts.

As a result, individuals often listen to their local "underground" stations, as they're sometimes referred to, with no awareness of how they hurt their own communities.

And at whose expense are these "services" delivered? Primarily minority broadcasters, who built their companies through years of hard work — providing genuine value, supporting their communities, and playing by the rules. Pirates say "let me steal a piece of this."

OPPORTUNISTS

At MMTC, we've encountered a pirate or three. We've learned how they think. They are neither crazy nor stupid. What they are are opportunists. Old-fashioned capitalists but not in a good way. And smart ones.

They know, to a moral certainty, that if they set up shop in Beverly Hills, they'd be cuffed or shackled before they laid down four of George Carlin's "Seven Dirty Words." They'd be thrown under the jail.

A bunch of years ago, I met a pirate who was trying to "get legal" by transitioning into LPFM. He had accumulated a little sum of money "serving" black communities in Harlem and Brooklyn, with no FCC license. Chatting with him, my ears perked up, because (1) he didn't know a lot of black people; (2) he hadn't grown up in those neighborhoods; and (3) except for who Michael Jackson was, he knew virtually nothing about black music.

> **Broadcast pirates,** emulating their seaborne cousins half a world away, carefully choose, as targets of opportunity, the neighborhoods they think the FCC doesn't care about.

But it turned out that he understood black social injustice quite well. I found this out when I asked him, "Why'd you choose black neighborhoods to broadcast from?"

And this dude flat out told me: "David, they're the safest place for a 'Part 15 broadcaster.'" [That's what some pirates call themselves, I kid you not. Real Part 15 broadcasters keep to their effective service range of about 61 meters; so I call BS. But digress.] "And why is it so safe for us Part 15 guys? Because the government doesn't care about black and Spanish neighborhoods. They don't do housing code enforcement there. They don't fill up the potholes there. They're in no hurry to answer 911 calls there. They don't provide equal schools there, or even safe schools. So, do you really think the government is going to enforce the Communications Act there?"

Excellent point!

It goes to the reason we call a pirate a "pirate."

Seaborne pirates carefully choose targets of opportunity such as container ships with small staffs in poorly-patrolled waters, such as those off the Somali coast. Broadcast pirates, emulating their seaborne cousins half a world away, carefully choose, as targets of opportunity, the neighborhoods they think the FCC doesn't care about.

WHAT TO DO, OR NOT

Now, let's talk about what you're reading this commentary to find out: How can the FCC shut down, punish and disincentivize a pirate?

Let's start with ginormous forfeitures. They won't work. Think about it: Pirates generally aren't "Trump-scale" rich. Mostly, they have little to lose, so they aren't going to be motivated by an unfathomably large forfeiture that can never be collected. They have no way to pay a $75,000 fine, so why would they be even more frightened by having to pay a $750,000 fine?

What about confiscating electronic gear? Really good idea, because it's unique. It takes days to replace and assemble tubes, diodes and cart machines into an unlawful radio operation. Confiscating gear strikes at the common strategy of pirates — get shut down at 101 Oak Street on Monday, then light up a transmitter at 102 Spruce Street on Tuesday.

What about going after landlords? Well-intended, but a bad idea. It's unfair as well as detrimental to the low-income housing marketplace. A landlord doesn't have any notice that the tenant is operating a one-room radio station on premises — any more than the landlord would know if the tenant is maintaining a one-room meth lab. Turning pirate enforcement over to landlords — and punishing the landlords if they overlook a pirate — would require landlords to pay someone to inspect the premises every few days — thus raising housing costs, decreasing housing quality, or both.

Similarly, small, local advertisers can't be expected to know that a pirate's operation violates the Communications Act. If you're reading this in Radio World, you're already too close to the subject matter. We radio geeks sometimes forget that maybe 90 percent of the public has never heard of the Communications Act (and most of the other 10 percent couldn't care less). On the other hand, a large national advertiser that buys spots on a pirate station should know better and ought to be sanctioned.

For its part, Congress needs to do two things to hit pirates hard:

First, it needs to restore cuts to the FCC's budget that brought about the closure of critical field offices. Three years ago, the FCC operated 24 field offices; today, it operates only 13. It needs 30!

Second, the FCC needs to be given

(continued on page 30)

HD Radio
VSSeries
300 W – 2.5 kW
Digital/Analog FM
nautel
nautel.com/VS
Big Transmitter Features in a Small Box

World Radio History

READER'SFORUM

FIRST RESPONDER PREP

David Seal gave an excellent overview of Indiana's plan to qualify practitioners of our profession as first responders ("My Experience With First Responder Status," Aug. 1 issue).

It might be useful to mention if a broadcast engineer goes through the training and receives a card allowing him or her through fire or police lines, what safeguards, supplies and protective gear they need to carry out assignments under dangerous conditions.

Thinkstock/hxdbzxy

- **Mindset:** Brush fires, raging flood waters and hurricane strength forces of nature will not respect a card.
- **Transportation:** A vehicle, preferably with four-wheel drive, in good repair with a full tank of fuel is a given. Oh, yes, a known good spare tire.
- **Protection:** Suitable head gear and clothing appropriate for the risk may enable you to get to your site, or, worst case, keep you from becoming a casualty.
- **Hydration:** Water. Plenty of drinking water.
- **Sustenance:** Food to keep you going as you work.
- **Meds:** Any medications you might need to have with you if conditions prevent leaving the impacted area to go home.

This information and guidance might be covered in Indiana's training, but anyone considering accepting the broadcast engineering version of "Mission Impossible" should think about these considerations before they sign up. The goal is make sure responders get to their sites and return home safely when their work is done.

Richard Rudman
Remote Possibilities

WWII RADIO MEMORIES

The article "AFRTS Radio Shows Now Online" (Aug. 1 issue) skims over a rather earth-shaking 1940s radio world occurrence.

First, may I say that I'd run into Roger Carroll (real name Carroll Rutkin) first when he was at ABC in Hollywood, later during his long stint as a popular dee-jay at indie KMPC with its 50 kW transmitter in "the Valley" north of "Hollywoodland."

As for that occurrence: When the National Broadcasting Company was forced to divest itself of sister net NBC Blue, it named the spinoff "American Broadcasting System." That's because a local broadcaster had ownership of the desirable letters, ABC. I believe that NBC parent RCA paid $50,000 for the American Broadcasting Company name and had to assist and contribute to the seller's smooth name change transition to something else.

Roger was typical of many who started their careers in radio as a page at NBC's modern Sunset and Vine Streets HQ, where they functioned as ushers for the audience shows featuring more big-name movie stars than you could imagine.

Interestingly, I started my career in 1952 as a technician at this same facility which had already been converted to teleproduction and was soon to transfer all its activities to its present home in Burbank. While I worked in Hollywood, we were still pre-recording shows on monochrome film. The landmark NBC Building became home to a savings & loan company.

Roger, if you're reading this, please know that we folks who loved World War II radio — I attended many AFRS shows recorded at CBS/KNX, Sunset-Gower St. studios — are grateful for your AFRTS broadcast preservation work, yet sadly must mention here that our mutual friend and preservationist, named in the aforesaid story, Frank Bresee, passed away June 18.

Oliver Berliner
SounDesign Engineers

ADVERTISER INDEX

This listing is provided for the convenience of our readers. Radio World assumes no liability for inaccuracy.

PAGE	ADVERTISER	WEBSITE/URL
26	AES	www.aes.org
11	Arrakis Systems Inc.	www.arrakis-systems.com
15	Axia - The Telos Alliance	www.telosalliance.com/axia
1	Broadcast Bionics	www.phonebox.com
31	BSI	www.bsiusa.com
4	Burk Technology	www.burk.com
7	Comrex Corporation	www.comrex.com
24	Dixon Systems	www.dixonsystems.com
1	ENCO	www.enco.com
13	Inovonics Inc	www.inovonicsbroadcast.com
21	Lawo	www.lawo.de
5	Lightner Electronics	www.lightnerelectronics.com
20	Logiciel NGI Inc.	www.ngisoftware.com
6, 10, 12, 18 22, 29	Nautel Ltd.	www.nautel.com
23	Omnia - The Telos Alliance	www.telosalliance.com/omnia
25	RCS	www.rcsworks.com
9	Tieline Technology	www.tieline.com
2, 17, 19, 32	Wheatstone Corporation	www.wheatstone.com
16	Xperi	www.xperi.com

ADVERTISING CONTACTS

NORTH AMERICA:

MICHELE INDERRIEDEN
212-378-0400 x523
Fax: 301-234-6303
michele.inderrieden@futurenet.com

PETE SEMBLER
212-378-0400 x324
Fax: 650-238-0263
peter.sembler@futurenet.com

VYTAS URBONAS
212-378-0400 x533
Fax: 630-786-3385
vytas.urbonas@futurenet.com

EUROPE, MIDDLE EAST & AFRICA:

RAFFAELLA CALABRESE
+39-320-891-1938
Fax: +39-02-700-436-999
raffaella.calabrese@futurenet.com

PIRATES

(continued from page 29)

the authority to take pirates to court on its own, rather than depend on the Department of Justice to bring lawsuits on the FCC's behalf. Pirates rank very low among the DOJ's litigation priorities. It never made sense for an agency with the top-level expertise of the FCC's Office of General Counsel to have to depend on the DOJ to do its enforcement litigation.

Finally, there's one thing the FCC can do right now: Chairman Pai, or any of the commissioners, should appear at one of the national multicultural civil rights organizations' conventions and give a speech that says approximately as follows:

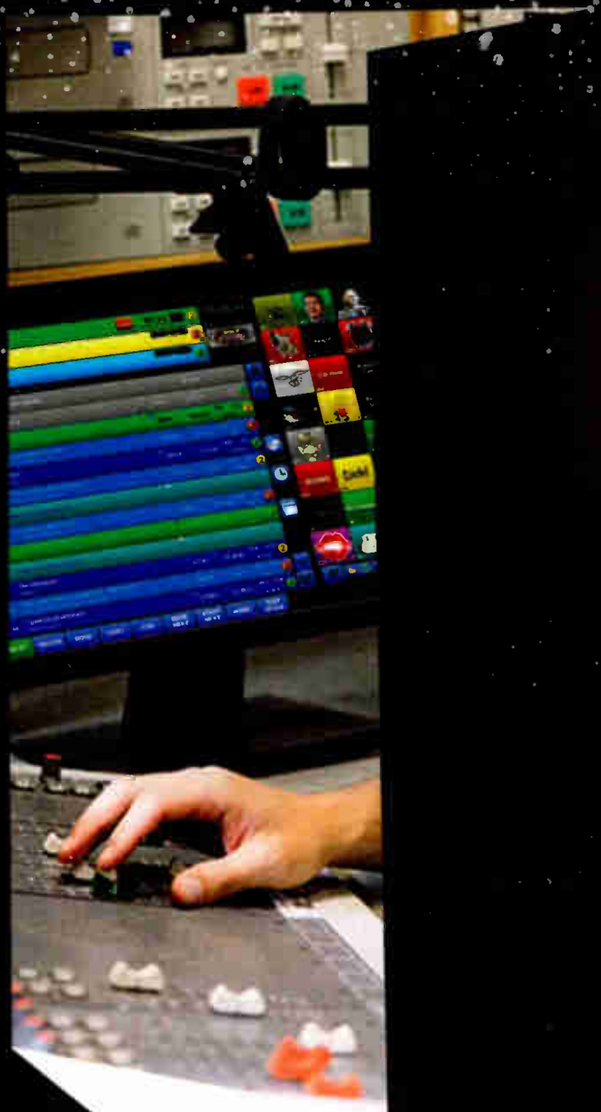
"Radio World just published a commentary that says that pirates think the government doesn't enforce the law in multicultural neighborhoods — making those neighborhoods a safe haven for radio piracy. That's not going to be true on my watch," and then lay out exactly what the commission is going to do to run down, capture, and prosecute pirates with equal zeal no matter whose neighborhood pirates choose to exploit.

If you have additional thoughts, criticisms ideas and prayers on how to take down pirates, please send them along to *dhonig@mmtconline.org*. Let's make 2018 "the year radio pirates slithered under a rock and stayed there."

Write the author at dhonig@mmtconline.org. *Comment on this or any story by emailing* radioworld@futurenet.com *with "Letter to the Editor" in the subject field.*

World Radio History

Open the door to *your* possibilities!



Powerful, state-of the-art automation with the flexibility to grow with you...

- The power of OPX in one stand-alone computer
- Easy to learn
- The power to handle the largest audio libraries
- Satellite and live programming
- Additional stations
- Remote voicetracking
- Remote control

OPX ONE

BSI

Call (888) 274-8721

(888) BSI-USA-1

or email us at sales@bsiusa.com

World Radio History

WHEATNET-IP INTELLIGENT NETWORK

The Future Can Bring Anything

LXE is Ready for Everything

Virtually every button, knob, and display on the LXE is programmable using ConsoleBuilder. And you can design dynamic custom touchscreen interfaces to augment LXE's extensive screen set with ScreenBuilder.™ Need more input faders? Enable up to four layers to multiply the number (up to 32) in the same footprint. Whether it's 2020, 2040, or 2080, your LXE will adapt to your needs.

Your Forever Console

Download your free E-Book: Advancing AoIP for Broadcast

wheatstone.com/wnip-rw

Wheatstone
BROADCAST AUDIO PERFECTIONISTS®

phone 1.252.638-7000 | wheatstone.com | sales@wheatstone.com

World Radio History