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At FCC, Shuldiner Emphasizes Continuity and Optimism

New Audio Division chief talks with Radio World about Class C4, interference, CDBS and more

NEWSMAKER

BY RANDY J. STINE

Mary Ann Dawley

Albert Shuldiner is a legal expert and broadcast technology buff in roughly equal parts, which argues in his favor as a good fit as chief of the FCC Media Bureau's Audio Division.

He's been on that job for about six months now and says he is acclimating to the role, which plays an important part in how the U.S. government carries out policies that affect radio broadcasters.

Shuldiner, 56, became familiar to many radio technologists from his years as general counsel at HD Radio developer iBiquity. Today he oversees the FCC division that licenses AM, FM, LPFM and translator radio services and manages

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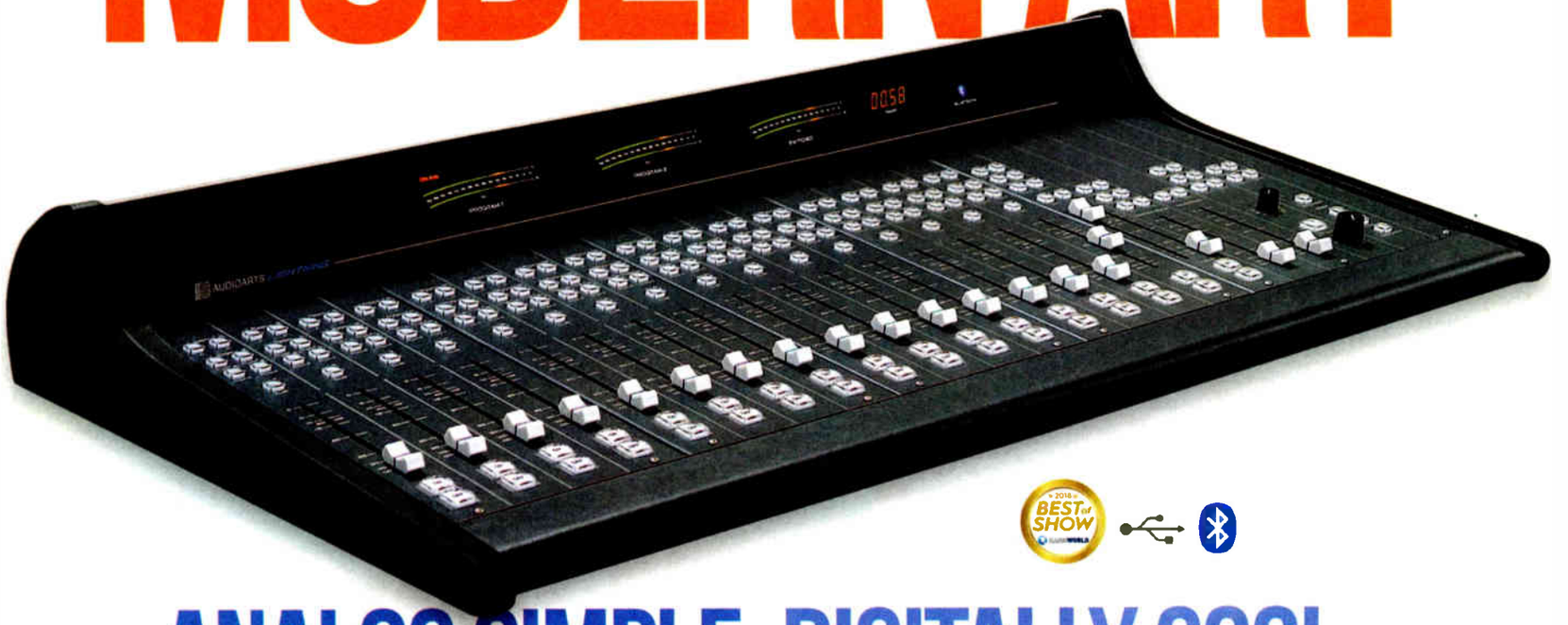

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Put Your Best Face Forward in Digital Dash

Experts discuss how to keep up with radio's evolution in the connected car

CARCONNECTED

BY THOMAS R. MCGINLEY

A dashboard image from the cover of NAB's "Digital Dashboard Best Practices Report," published in 2017 and available on the NAB website.

The National Association of Broadcasters and most radio stakeholders realize the future of radio will depend heavily on the connected car.

Every automobile manufacturer now offers an internet-connected, feature-rich infotainment system that is replacing the venerable AM/FM/satellite standalone radio in almost all new models. The integration of this multi-layered platform offers the consumer a dizzying array of new choices and options in the digital dashboard.

Since radio started becoming visual with the introduction of RDS and then HD Radio over the past two decades, traditional AM/FM stations have been able to add important "eye candy" to radio displays. Radio's primary competitors, like XM/Sirius and Pandora, have been doing this from their beginnings. How well terrestrial stations harness and display this new content will have a significant impact on their ability to compete with all the new services available in the connected car.

Last year, NAB released a comprehensive 23-page study of "Digital Dashboard Best Practices" for the industry that identified significant areas on which radio stations should focus to optimize and maintain their dashboard presence. It included an audit of how several markets were performing that exposed significant room for improvement.

A follow-up summary that managers and engineers can use to audit and tweak their own stations can be found at *http://nab.org/innovation/digitalDashboard.asp*. Then in December 2017, an interactive webinar was added; it remains available online.

METADATA MANAGEMENT

As part of the NAB's ongoing focus on traditional radio's evolving place in the connected car, the Broadcast Engineering and Information Technology Conference at the spring NAB Show offered a timely discussion on this topic.

Moderated by NAB Vice President of Advanced Engineering David Layer, the panel featured Glynn Walden, consultant and former design engineer with USADR and iBiquity; Stu Buck, founder of Arctic Palm; Mike Englebrecht, director of broadcast engagement for TagStation and NextRadio; Mike Raide, senior manager of broadcast technologies for Xperi Corp.; and David Julian Gray, senior product manager of content production for NPR.

Buck opened the discussion by identifying various visual features stations can add to their dashboard presence. Even stations only implementing RDS without HD Radio can and should display station slogans and promos, music titles and artists, program titles and hosts, weather and traffic reports and other messaging, including real-time content, he said. HD Radio and its Artist Experience feature can add pictures and album artwork along with traffic flow and weather maps, all in color to the screens of HD Radios and smart devices.

Buck described the component pieces of the metadata flow needed to convey this data. Much of the data is captured automatically from the station's automation system and conveyed either via an IP connection over the LAN or via serial port. Other data is captured directly from satellite or internet-based services. A third-party "middleware" capture and parsing software app typically is employed as an interface the user can program and maintain to control the data sources and how the data is displayed.

Arctic Palm is among the middleware metadata management apps available to stations. Acquired by HD Radio owner DTS in 2016, Arctic Palm offers a suite of five programs tailored to control and optimize specific station activities and their data management functions: CS Content Management, CS Copy Management, CS Call Management, CS Interactive and CS Center Stage Live. Center Stage Live incorporates several of these modules as a "Swiss Army knife" of metadata management.

One of the issues stations face regarding metadata is the need to filter out data not intended for public viewing. Voice track IDs, ad and song file numbers, log comments and specific automation control characters are examples that the Center Stage Live module can block from appearing in RDS and HD text scrolls.

The middleware app posts the programmed metadata to various transmission and display destinations. Those include the RDS generator, HD Radio and Importer ingest portals (JMSAC module), station websites and associated streaming services, Tag Station and NextRadio services, other web-based services like TunedIn and iHeartRadio and even real-time digital billboards.

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World Radio History

DASHBOARD

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TAGSTATION AND NEXTRADIO'S ROLE

Mike Englebrecht outlined the role TagStation and NextRadio are playing to provide free live radio on smartphones and additional subscriber-based metadata services to radio broadcasters.

Parent company Emmis Communications is heavily invested in helping radio create the best audience experience possible to maintain radio's prominence in the car, he said. It introduced TagStation as an app following the middleware software to further enhance metadata services for radio.

TagStation is a web-based metadata management system providing not only text data for RDS but also station logos, album artwork plus advertising and event-based visual enhancements for station websites, online streaming, as well as for HD Radio and smart device displays.

NextRadio is a free downloadable app that enables listening to FM radio stations or their online streams complete with visual enhancements on smart devices. LiveGuide makes navigation easy on iPhones and Android phones. Emmis has been proactive in pushing cell carriers to unlock the onboard FM chip in smart devices. NextRadio is now equipped with Dial Report, an audience measurement reporting service that feeds back listener usage and advertiser response data to subscribers.

HD RADIO

Mike Raide, a senior engineer with iBiquity and DTS (now owned by Xperi), discussed how visual radio is delivering more engaging and effective impact for both listeners and advertisers.

HD Radio can send not only album art plus station and advertiser logos, but also nearly real-time images of Doppler weather and traffic congestion areas on full color maps.

Advertisers can be hyper-local by targeting ad messages to selected demos and regions of the station's coverage area, he said. With a visual display to enhance an advertiser's message, recall of that message increases by significant percentages, especially with millennials. Enhanced ads with graphics are supported by the popular middleware data management providers like Arctic Palm, Jump2Go and The Radio Experience.

NPR'S APIS

National Public Radio has been actively engaged in content delivery enhancements for the digital dash via two new application programming interfaces, or APIs, that it provides to its affiliated network stations.

David Julian Gray, NPR's senior product manager for content production, described the goals of NPR's content delivery APIs as "discoverable, available and sustainable." The MetaPub API integrates with middleware apps and TagStation to "clean up" the data parsing for better and more consistent displays.

How well terrestrial stations harness and display this new content will have a significant impact on their ability to compete with all the new services available in the connected car.

The other new API is a link to Amazon's Alexa smart speaker. Digital virtual assistants like Alexa, Cortana, Siri and others, will undoubtedly find their way into the connected car. Gray said half of the NPR audience in cars is using smart devices instead of the dashboard radio, and 25 percent of millennials choose to use the NPR webstream in lieu of radio.

NPR One, introduced in 2015, is a platform designed to enable content created by local NPR stations to become easily available to other member stations and national audiences. More than just podcasts or a stream on a station's website, it's been dubbed "the app that wants to be the Netflix of listening." NPR One is still evolving and open for further smart app development, Gray said.

All the panel participants agreed that radio is in a race to remain prominent and help build the connected car of the future. Putting your best face forward on the digital dash is a vital part of that effort.

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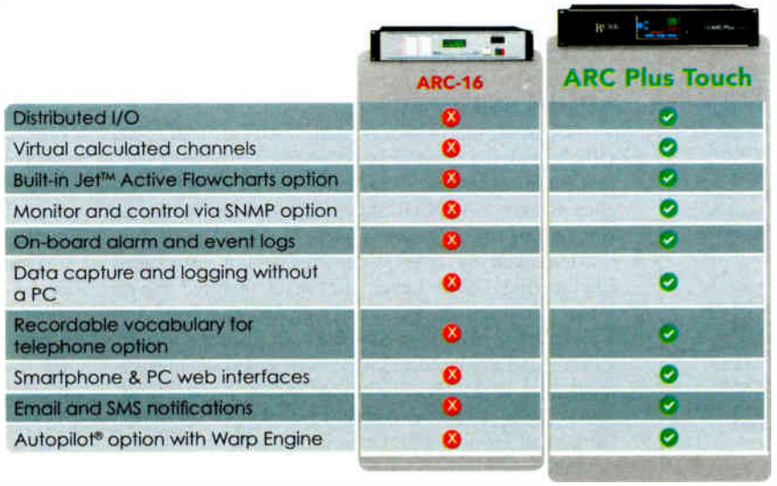

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Nebraska Workshop Sparks Interest

Why our state broadcast association just held our first Radio Engineering Workshop

COMMENTARY

BY JIM TIMM

The author is president/executive director of the Nebraska Broadcasters Association.

They came to Kearney, Neb., from radio stations all across the state. Stations in cities and towns like Crete, Hastings, Lincoln, Omaha, O'Neill, Scottsbluff, Sidney, Wayne and West Point. One even came from Cody, Wyo.

Twenty-four men and two women. Their job titles ran the gamut of radio station personnel: on-air talent, program director, operations manager, assistant engineer, IT manager, salesperson, owner and general manager. Most had more than one title, a couple carried them all.

People have to know their facility by sight, sound and smell.

– Larry Wilkins

Why did they come to Kearney for three days in June?

To learn about radio engineering.

And Larry Wilkins was just the man to teach them.

Wilkins is the director of the Alabama Broadcasters Association's Engineering Academy. He is a fellow with the Society of Broadcast Engineers, holds a certification level of Professional Broadcast Engineer and serves on the National SBE Certification Committee.

As a Radio World reader you're well aware of the shortage of qualified radio engineers and the lack of future engineers in the pipeline. You're likely also aware of Larry Wilkins and his tireless efforts to teach engineering skills. Fittingly, Radio World bestowed its Excellence in Engineering Award on Wilkins a few months ago. His career achievements are remarkable.

The Nebraska Broadcasters Association's first-ever "Radio Engineering Workshop" was put forth to strengthen the engineering skills of station staff that have shown an interest in doing more for their employers. Wilkins said, "I've found that a number of non-engineering station personnel already have some basic technical aptitude and interest. DJs, board ops, production people and others can pick up new skills that may help them troubleshoot and often fix some common problems.

"This particular workshop doesn't generate SBE-certified RF engineers, but it does arm personnel and their stations with helpful knowledge and skills," he said.

"For more challenging issues, perhaps now they can bridge a short-term solution before a contract engineer can arrive to implement a more permanent solution or better diagnose the extent of the problem."

Wilkins' outline for the NBA's Radio Engineering Workshop was robust, yet presented in terms everyone could understand. Taking a detailed look at audio and RF transmission, Wilkins covered "everything audio" from the origination to the input of the RF transmission system. Microphones, mic placement, analog to digital, proper audio levels, processing and live audio mixing. AM and FM transmission systems, analog and digital transmitters, transmission lines and antennas, and ... the care and proper feeding of all of that and more.

Wilkins also offered plenty of sage advice on good, fundamental engineering practices.

"Weekly transmitter site visits are so important. People have to know their facility by sight, sound and smell. When you arrive each week take a good look around — on the grounds and inside the building. Use your binoculars to take a careful look up and down the tower. Has anything been vandalized? Is anything missing? Does anything look out of place? When you open the door to the building, do things sound and smell the same as they did last week, or has something changed?

"Being as familiar with your transmitter site as you are your own home or office can often lead to early detection of a potentially critical problem. Failure to do so can be quite costly and disruptive to the station and the people you are licensed to serve."

David Kelly, owner/operator of KTCH(FM)/KCTY(AM) radio in Wayne, Neb., is chairman of the NBA Board of Directors. Kelly said, "The NBA Board identified the acute engineering shortage several years ago and has been working to find practical ways to begin to fill that gap. Our geography creates unique demands on the sparse number of available contract engineers, especially in rural markets. We were greatly heartened at the registration numbers for our 'first ever' engineering workshop here in Nebraska."

Noting the variety of job titles of those in attendance, Kelly added, "The goal was to reduce the anxiety level of station personnel confronted with an engineering challenge at their station and allow them to assist existing engineering resources through an understanding of how their station systems operates in order to more quickly restore a station in an off air emergency or experiencing an abnormal operating condition.

"The ABA Academy course, designed for beginners, covered not only RF and record-keeping but provided a concise update on current digital technology as it impacts broadcast — radio in particular. Larry Wilkins' low key, conversational and well documented presentation style received praise from every attendee. This workshop should not be ignored by any state challenged by a shortage of engineering talent."

Chad Moyer, a farm broadcaster at KTIC(AM/FM) in West Point, Neb., said, "I learned so much in this course, from transmitter operations and HD Radio to the proper way to set up a production room. There are many things I can take from this course to improve operations in our station."

Larry Wilkins now has a fan club in Nebraska.

Will your state be next?

World Radio History

SHULDINER

(continued from page 1)

instances of interference, a topic that has occupied much of his time since he joined in January 2018.

The University of Pennsylvania Law School grad succeeded Peter Doyle as audio division chief. In late May, he discussed a variety of front-burner issues with Radio World, including the possibility of broadcasters sharing the C-band and the creation of a Class C4 FM service. He also discussed working at the FCC under the leadership of Chairman Ajit Pai and the outlook for the media modernization initiative.

Radio World: *What have the first few months been like and what has surprised you about the job?*
Albert Shuldiner: It's been busy. We have a very high volume of cases that we process in this division. I have really focused on getting up to speed on pending matters. And being new to the commission, it has taken time to get to know people here in the front office and within the Media Bureau. That's been a big part of my focus. Michelle Carey, chief of the Media Bureau, has been very welcoming.

I have also spent time speaking with people from within the industry and taken meetings with those in radio trying to understand their top concerns. That outreach is important to me.

RW: *What are some of those matters taking up a lot of your time?*
Shuldiner: It's those things everyone has been reading about. The C4 FM proceeding. We did a lot of work on the recent NPRM on translator interference. There have been a number of adjudicatory matters that we have taken care. Things like applications for review and for reconsideration that we have resolved. Of course, AM revitalization matters, and certainly, there has been a lot of work in the auction windows for cross-service translators.

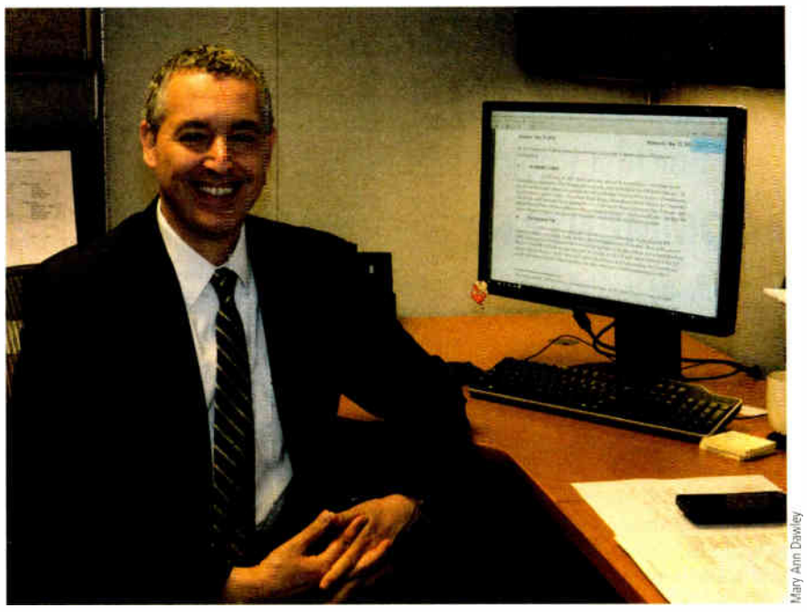
RW: *How is your management style different from that of your predecessor, Peter Doyle? Can we expect a lot of operational changes in the division?*
Shuldiner: I don't people will see much of a difference now that I'm here. There will be continuity. I was very fortunate to spend time with Peter during the transition earlier this year. I know Peter placed a tremendous emphasis on producing a high-quality product in terms of the rulemaking and the adjudicatory decisions the Audio Division releases. That's important and will remain so. Peter was passionate about expanding opportunities for new entrants to the radio industry, and that will continue.

A number of initiatives remain incredibly important, such as LPFM and cross-service translators. Those remain very important to the industry, and I don't see many changes coming to those efforts. And we will continue to focus on compliance. Fortunately, the vast majority of our licensees understand their responsibilities.

RW: *NAB's David Layer described you as a "great lawyer who is more technically inclined than most." You served on the National Radio Systems Committee for a number of years. How do you think that background will guide your decision making at the FCC?*
Shuldiner: First of all, David is way too generous. I'm not an engineer and never had any formal technical training, but I was fortunate to have worked on a number of technical issues for many years.

At iBiquity, I did a lot of the company's work that came before the NRSC. I helped develop the original test program to validate the HD Radio system. I presented numerous technical papers to the NRSC and other groups. I've done technical briefings both domestically and internationally for regulators and groups.

I like to think I have a firm grasp of the technical rules involving radio, also the interference issues facing the AM and FM bands, and the methodologies the commission and the industry use to assess the potential for interference and actual interference.


Mary Ann Dawley

All of that experience has come in handy already at the commission, since much of our work has to do with licensing and figuring out how to license stations without creating new interference. So having a good understanding of the interference environment and the terminology used by the industry to address it has been important. In addition, there is a brilliant technical team in place here at the FCC led by Jim Bradshaw to help me.

RW: *Describe your relationship so far with Chairman Pai.*
Shuldiner: We have spoken several times since I started. He is incredibly supportive of the broadcast industry, and that has been very impressive to me. He and his staff closely follow the work this division is working on. They have given us excellent feedback on the issues we are addressing. They have been extremely supportive, which is great for the industry and great for this division.

RW: *The Class C4 FM proposal to allow over 100 Class A stations to double their power up to 12,000 watts appeared to be in a "time out" at the commission until it released a notice of inquiry (MB Docket 18-184) in early June. Where is the commission on creating a C4?*
Shuldiner: We have had the C4 proposal pending for a while. Although we received support for C4 in comments on the original petition for rulemaking, we also have heard concerns about increasing interference in the FM band. We decided to ask for more industry input before proposing any changes to our rules.

The NOI released recently asks a lot of important and detailed questions about the C4 proposal. We hope the comments we receive will give us greater guidance on the industry's views on C4 and whether we should propose a formal change to our rules.

There are two main issues in that proceeding. One is the creation of a new broadcast class between Class A and C3.

The other part of it is a consideration of a process to reclassify stations so that they receive protection based upon their actual operating parameters rather than a station's class maximum. We have held meetings with various parties about C4. There is some concern from the industry and they would prefer we address existing interference concerns within the FM band first before we authorize a new class of service.

> **"We think the changes** to the listener complaints process will help. I think the requirement to require six listener complaints strikes a good balance."

RW: *The possibility of radio broadcasters sharing the C-band with other users has them on high alert. The item is on the FCC's July agenda. Do broadcasters have reason for alarm at this point?*
Shuldiner: I don't know a whole lot about that issue, since I'm not directly involved in that proceeding or with the planning involved. It's being handled by the satellite folks here and not my division. I know that it is very important for broadcasters to get their C-band earth stations registered before the mid-July deadline. I've read a lot about it in the trade press. I think there will be additional opportunities for broadcasters to share their concerns. *[The registration deadline was later extended to mid-October, though the commission is still expected to consider C-band changes in July. —Ed.]*

RW: *FM translator interference is getting a lot of attention within the walls of the FCC. Does the commission's NPRM 18-60 released in May go far enough to hasten the remediation process?*
Shuldiner: That's certainly our goal.

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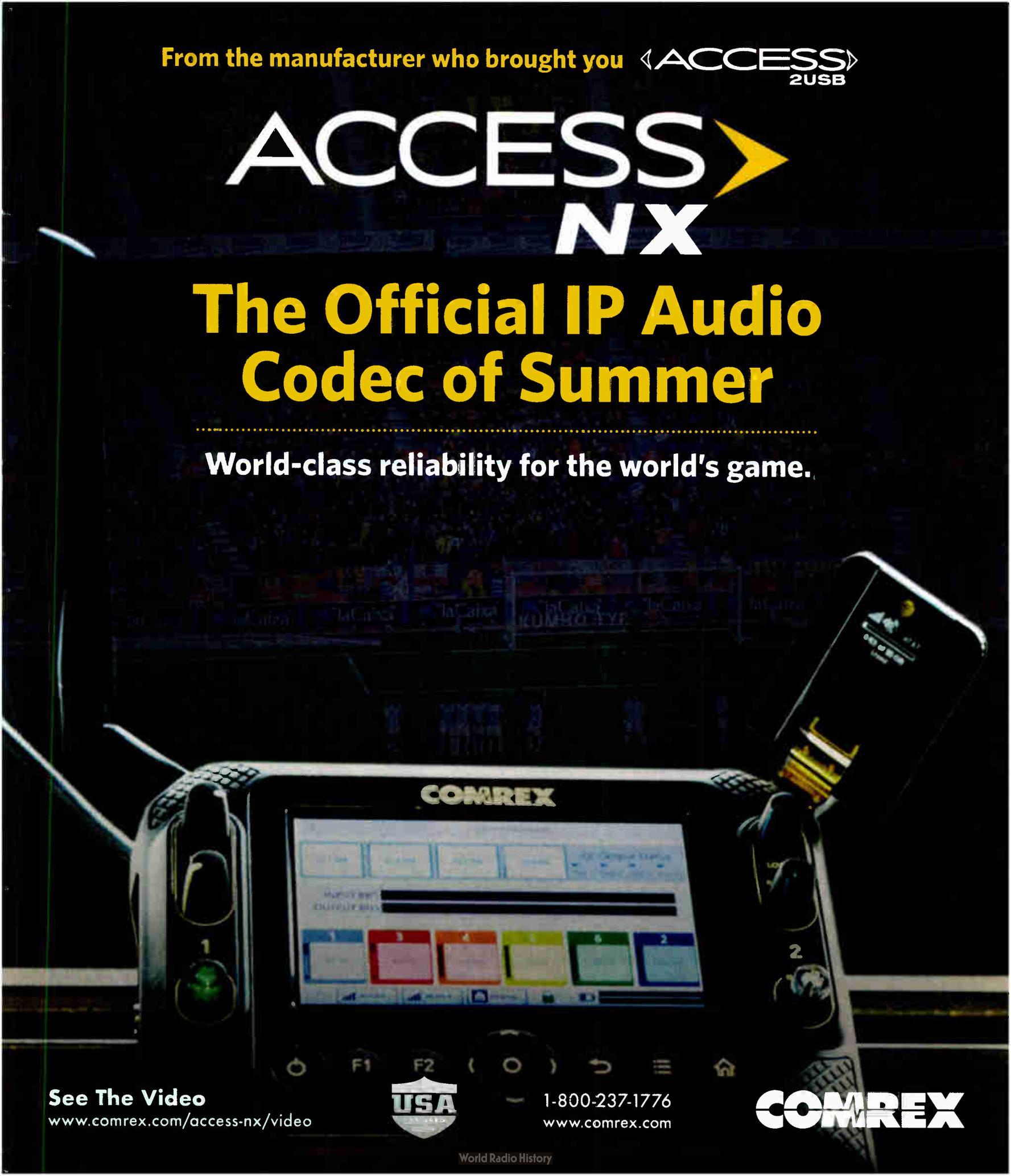

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SHULDINER

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We hope to streamline the process to make it easier on all parties involved. There are several things in the NPRM that will help us reach quicker resolutions. For example, the first main proposal is that translator stations will be able to change to any available frequency within their band to resolve interference. They won't be limited to first, second or third adjacent. We hope that will resolve lot of the complaints without us even being involved.

We think the changes to the listener complaints process will help. I think the requirement to require six listener complaints strikes a good balance. These procedures will provide better guidance to translator and full-service stations to help encourage them to deal with each other honestly and work together to settle complaints. Overall, we think these changes will speed up the remediation process.

RW: *What about all of these filings from Prometheus and other LPFM advocates objecting to FM translator applications they say will take away their slots and violate the Local Community Radio Act?*
Shuldiner: Unfortunately, I cannot comment on that matter, since those are objections to specific applications, which makes it restricted. But of course, we are aware of the filings and working on those. *[The commission subsequently dismissed the approximately 1,000 informal objections recently filed by three LPFM advocacy groups including Prometheus Radio Project. –Ed.]*

RW: *You've recused yourself from future work in digital radio rulemaking proceeding to avoid any conflict of interest, but what do you see as the next step for HD Radio?*
Shuldiner: Speaking not as chief of the Audio Division but just from my knowledge of HD Radio technology from my previous role with iBiquity, I'm still enthusiastic about it. We've seen a slow and steady rollout of the technology.

I still think it is a great improvement in the quality of terrestrial radio broadcasting because it offers new features for listeners. I wish it had caught on faster, but I still see it as a slow and steady gain.

RW: *Do you envision the FCC ever authorizing all-digital services or setting a sunset date for analog service to transition to all-digital radio in this country?*
Shuldiner: I don't think there are any formal proposals before us on that topic. I know there has been discussion within the industry about all-digital broadcasting. I think that is something that if it were presented to the commission in the future would get full consideration.

RW: *What is left on the Chairman Pai's modernization of media to-do list?*
Shuldiner: I think the bureau has spent a lot of time looking at our rules and we're still looking for ways to do away with outdated rules. The Policy Division really has taken a lead in those efforts. But the Audio Division is also looking at ways to streamline. However, no new proposals have been announced publicly yet; I would expect more work on that later this year.

RW: *What is the next step in AM revitalization?*
Shuldiner: A couple of things. We are still working to continue to process applications from the two cross-service translator auctions from 2017 and 2018. That's Auctions 99 and 100. We closed things out in Auction 99 in early June, but we still have a lot of work to do in Auction 100. We have granted hundreds of construction permits from 99. We are very pleased that from within a year of the commencement of that proceeding we have granted more than 800 new CPs and finalized all of the mutually exclusive matters there and completed the bidding in that proceeding.

We are now focused on Auction 100, which began in January of this year. We have already granted several hundred new CPs in that auction. The settlement process is now underway. We [feel] that by the end of this year we will have completed most of the FM cross-service translator work.

We continue to look at the overall AM revitalization proceeding. We recognize that some of what we said early in the proceeding was not well received by the industry, particularly involving AM nighttime protection. We are revisiting those issues and we expect to have more to say on that later this year.

RW: *Does the Audio Division foresee any other licensing windows coming soon, perhaps for NCE?*
Shuldiner: We've been just really focused on the FM translator windows. Once we are done with those I think we will go back and see what steps we take in regards to other services, including NCE service, LPFM service and the overall FM band. We will consider them all at some point.

RW: *The Audio Division will be transitioning from the Consolidated Database System to the Licensing and Management System for electronic filing this calendar year. Are you aware of the concerns voiced by some in the industry?*
Shuldiner: Yes. We are actively working on the transition to LMS. It's a major effort on our part. Some of the filing forms have already moved from CDBS to LMS. More of that will be happening over the next several months.

Our plan is to do it gradually and give people a chance to learn the system and for us to be able to assess it and make sure everything is going smoothly. I can promise you that it is being done in a very thoughtful and rational way.

We are very interested in feedback from the industry as the migration continues, if problems pop up. It will take some patience on behalf of our licensees, but when complete we will have a more flexible and user-friendly system in place.

RW: *Are there any other radio-related issues the industry should be made aware of?*
Shuldiner: From the conversations I've had with those in radio, the interference issue is tops by far, but our overall goal is to allow for more efficiency by radio stations. We know there are challenges facing the radio industry. We want to work with broadcasters and make sure that the regulatory structure does not create an impediment to their business but at the same time make sure they comply with our rules.

RW: *While you still have the floor, is there a final message you have for the radio industry?*
Shuldiner: I will say that I am very open to talking to anyone in the industry and getting their input about issues. It's important to know that they can call me or meet with me.

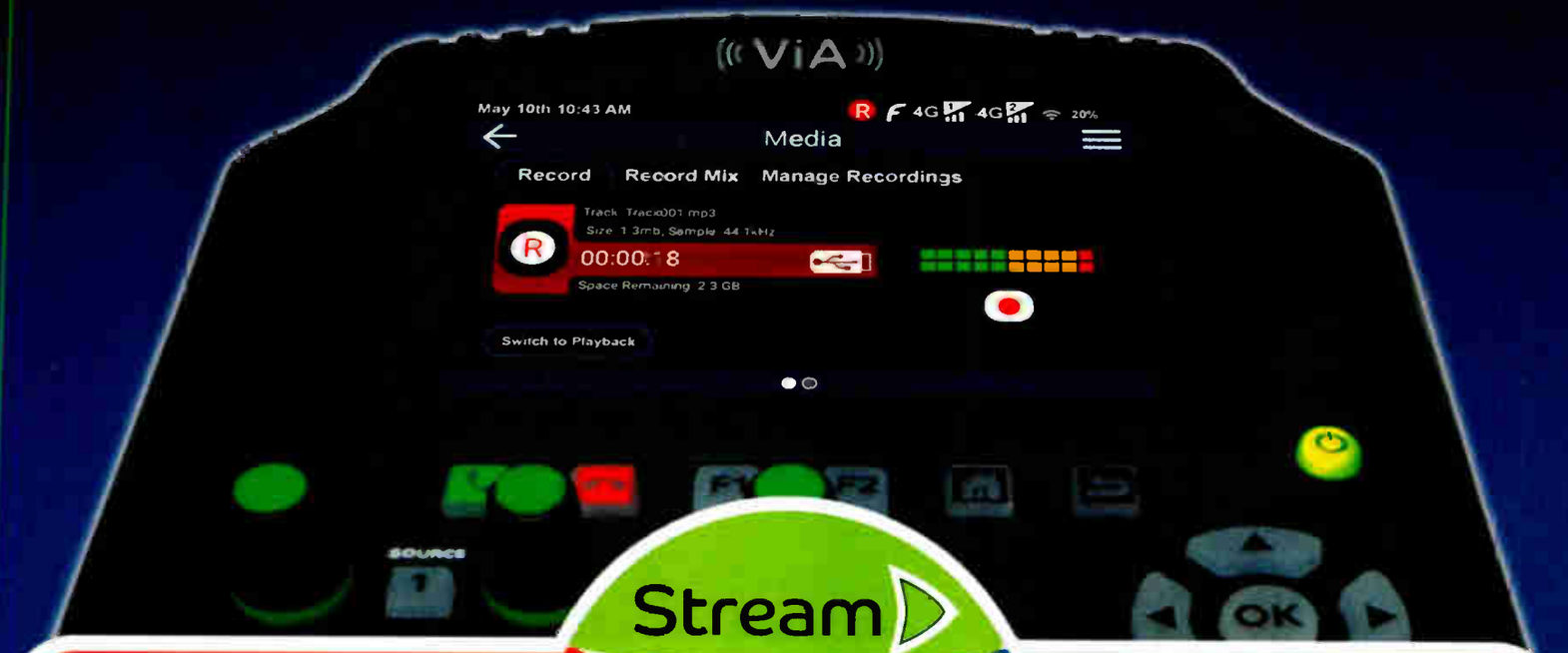
I am very fortunate that there is a great staff here to help me. Lisa Scanlan, Michael Wagner and Tom Hutton are the lead lawyers in the division, and they also are accessible. I look forward to establishing relationships with more folks in the radio industry.

> **"We've been just really focused** on the FM translator windows. Once we are done with those I think we will go back and see what steps we take in regards to other services."

World Radio History

More than Just an IP Codec

Introducing Record and Playback on the ViA



Record

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World Radio History

What Got You Into the Business?

Also: Learn from this transmitter site inspection routine shared by David Wigfield

WORKBENCH
by John Bisset
Read more Workbench articles online at radioworld.com

What got you into this crazy, fun business? While driving the other day I was reminded of a personal early motivator.

With the move by utilities to underground service distributions, you don't see many aerial cable splicing tents anymore; but as a young boy, I watched a phone tech strap on his climbing spikes and belt and ascend the pole outside my house. He assembled a platform and tent and crawled inside.

As a little boy, I found this fascinating. I ran inside and ran a piece of string between the radiator and end table, and built a similar structure with my Tinker-Toys. A couple of tissues and tape completed my tent — and then I dispatched my plastic army men inside the tent to get to work.

What motivated you? Share your early experiences to me at *johnpbisset@gmail.com*.

David Wigfield is the technical supervisor for Entercom's San Francisco cluster. He responded to our recent site inspection list discussion with a checklist of what his colleagues look for every week at the KCBS(AM) transmitter site in San Francisco.

On the way into the site, they check to make sure that the PG&E locks on all gates remain in place. Sometimes other tenants who use the road get frustrated and cut the locks out of the chain or bypass them. If they are bypassed, David or his staff makes sure they are added back in the chain.

David then looks at all four towers. This may seem obvious but don't forget to look. Do they appear straight? The transmitter site is in a pasture; harvesters have clipped guy wires before.

Are all lights on? The site is 2 miles from an airport so they burn 24/7/365. If your site doesn't have such a requirement, try an inspection at twilight so you can verify all tower lighting.

Are there new tunnels visible, burrowed by animals?

Next, check the generator building. Is the gen OK? Block heater? Any fluid drips? David checks the battery charger and battery connections. Also check the day tank for proper fuel level and any leaks. He opens and looks at the transfer switch. David has had MOVs across all phases and to ground. Are they OK? It's usually obvious when they blow.

Outside, David checks all fuel lines coming into the gen building from the tank. Again, looking for damage or leaks.

David cautions us not to overlook the roof. They check the STL tower, the STL dish and its cable and connections. Review all other antennas to see if they look OK (no bent elements or bad connections or feed lines). Finally, don't overlook the air conditioners and drain lines.

David walks around all four towers, noting any problems with the catwalks. As he walks, David checks the feedlines going into the tuning houses, looking for damage from expansion and contraction. He also inspects the protective tape, where the transmission is touching metal supports, to ensure it is still in place and has not fallen off or been eaten by critters, in addition to inspecting the feedline and conduit that runs along the catwalks. Are there missing supports and is anything sagging? Also make sure that the weeds are under control around the catwalks and the

(continued on page 12)

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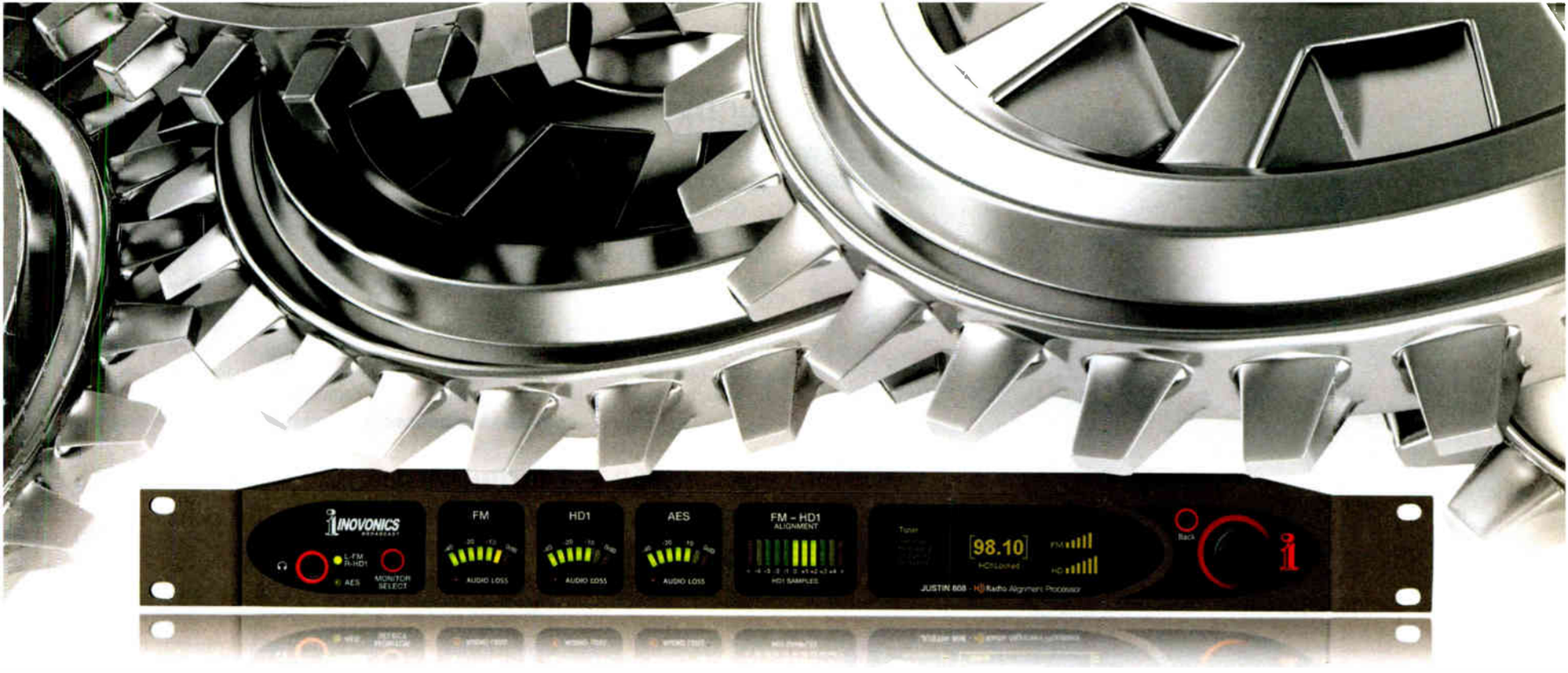

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HD Radio

GETTING FROM HERE → *TO HERE*

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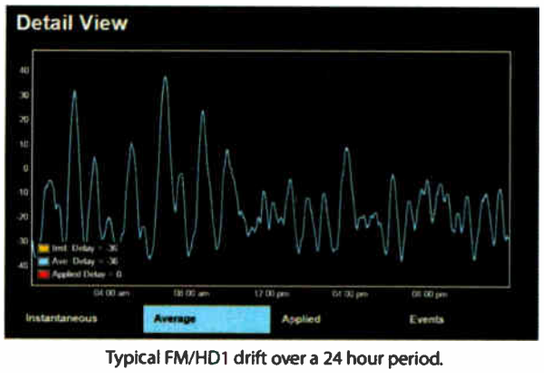
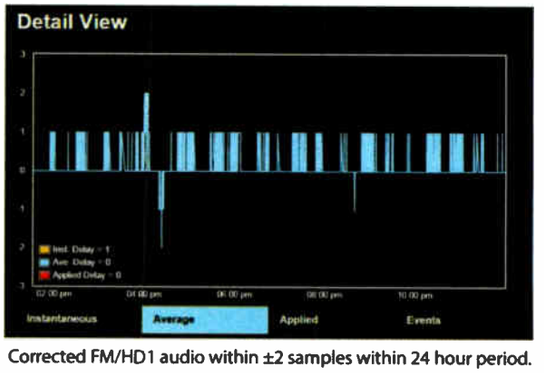


Typical FM/HD1 drift over a 24 hour period.



Corrected FM/HD1 audio within ±2 samples within 24 hour period.

±2 Samples

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World Radio History

WORKBENCH

A cable splicing "tent"

(continued from page 10)

tower bases.

David also makes a visual inspection of the connections from the output of the tuning house to the tower, making sure lightning loops look ok and are not deformed from a strike.

While at the tower base, David checks the Austin Ring transformers for insulation problems. These transformers need to have new tape and silicon applied from time to time. Better to see it before it becomes a problem. Also inspect the tower base insulator for cracks or bullet damage. David then sights up two sides of the tower to see if it looks straight. After you have done it for as many years as David has, you can detect if the tower is out of plumb a bit. Finally, are the counterpoise screen wires OK?

David checks all tuning houses and ATUs, using a flashlight and looking at all the RF switches, coils, capacitors and arc gaps for signs of burning.

Also check all component standoffs for cracks, which could lead to arcing. Speaking of arcing, check any interface relay contacts visually for signs of arcing.

This next one, David says, he learned the hard way. He now looks at the solenoids on his RF switches to make sure one is up and one is down. Several years ago, they had a switch where the connection to the linkage that swings the contactor arm broke and both plungers were down. Come pattern change, the station was off the air. Speaking of the RF contactors, also look for any loose hardware around the switches that might have fallen off. Keep in mind that these switches vibrate at least twice a day, so hardware can loosen.

David writes that even though the inspection sounds long, once you get a routine established, the whole outdoor assessment takes about a half hour for a four-tower, 5 kW, two-pattern array. It would be a lot less if you only have one stick, but doing this has saved David and his crew many times. Plus, you get the advantage of what things look and sound like under normal conditions, which can be helpful if a lighting transformer is making more noise or some RF component decides to start talking a little louder than it should.

Once you get a routine established, the whole outdoor assessment takes about a half hour for a four-tower, 5 kW, two-pattern array.

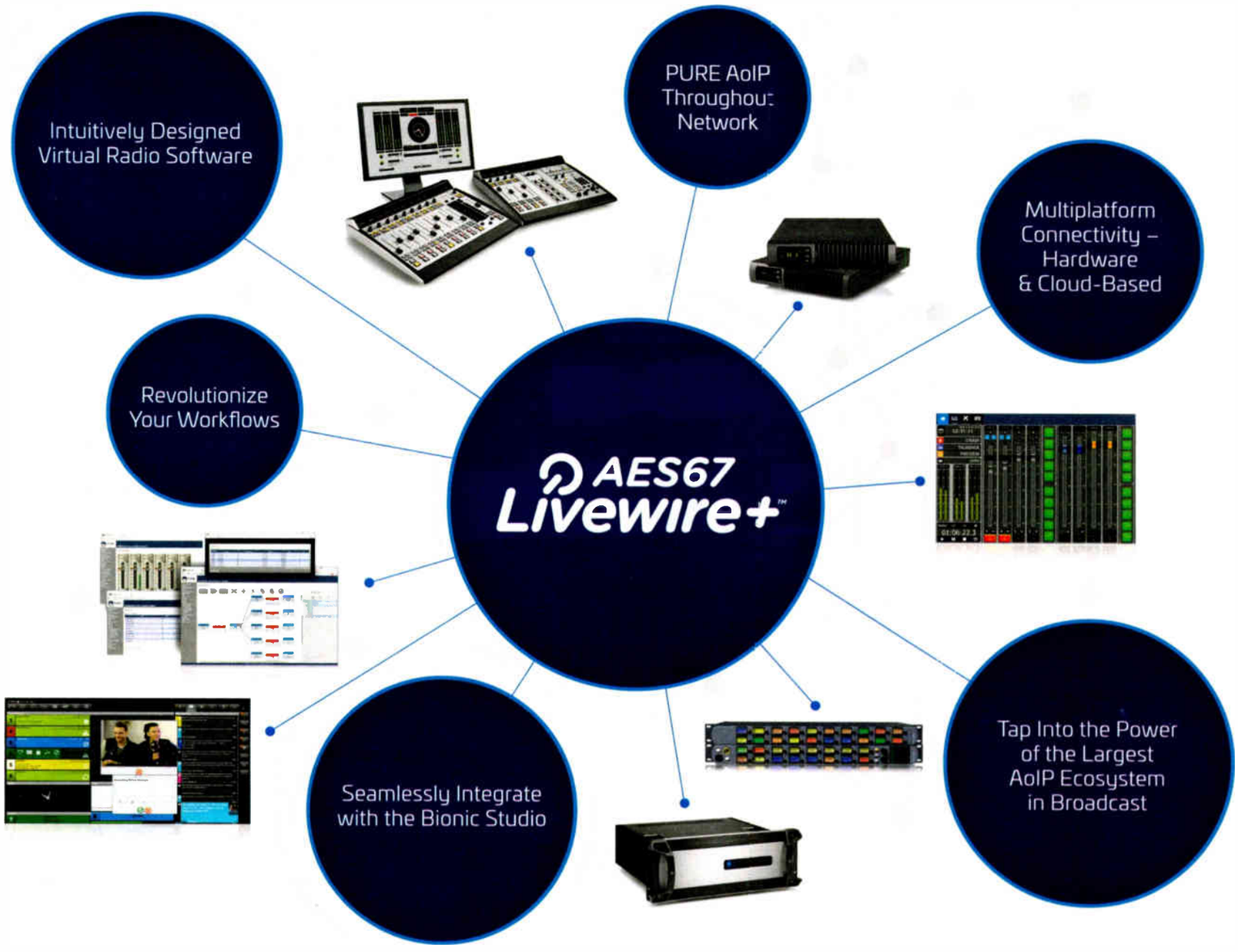
On behalf of Workbench readers, thank you, David, for the inspection suggestions!

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

Author John Bisset has spent 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.

World Radio History

Welcome to the Ne(x)twork



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

Logitek JetLink Adds Simple Management

Logitek Audio continues to refine its JetLink audio distribution software. According to the company, the latest step is JetConnect, a software manager for JetLink.

"The PC application makes it easy to click and connect to other computers and includes firewall transversal so users can easily access remote computers without the inconvenience of port forwarding," it states. "With JetConnect, users set up a master account for their station/company and then assign clients to the account. Clients can have easily identifiable, names such as studio, site name or call letters."

Once set up, users can select which sites to use for connection by point and click rather than having to type in IP addresses or assign ports.

JetLink is a cloud-based service requiring a subscription. As a cloud service, however, users can change assignments of computers for JetLink, making the system versatile and more secure. Licenses may be managed corporate-wide or by market.

JetLink and JetConnect are compatible with AoIP systems.

President Tag Borland said, "With JetLink and JetConnect, it's easier than ever to manage remotes or to set up a backup STL for your station, with full-fidelity audio and extremely low latency." He said the company plans to expand the abilities of JetConnect further.

Info: www.logitekaudio.com

Belar Enhances Artist Experience

Installed on Belar's FMHD-1 mod monitor, WizWin software will automatically manage bandwidth-heavy image data, while providing broadcasters with a diagnostic tool to monitor the health and status of the Artist Experience data stream.

The software recognizes the receipt of Large Object Transmission data encoded in the HD Radio signal, and decodes the image for display on a desktop or laptop workstation in alignment with text-based Program Associated Data such as artist name and song title.

After decoding and processing images, the monitor communicates with the WizWin software to translate the image display on a PC. This ensures that engineers can monitor the presence and proper timing of graphics, and also visualize the full color palette to confirm image quality.

Belar CEO Mark Grant said simple HD Radio receivers, such as car radios, are not adequate to provide the detailed level of monitoring needed. "Without the built-in diagnostic tools of the modulation monitor, there is no simple and immediate way to understand what is happening if the graphic fails, and the service defaults to a station logo, for example. WizWin provides our customers with a complete solution to decode, process, display and monitor Artist Experience data from virtually any location."

Info: www.belar.com

Neumann Reissues U 67

No more having to check eBay and vintage audio equipment dealers for possibly creaky old stock. Legacy microphone maker Neumann is taking a spin in the Wayback Machine with a reissue of one of its famed microphones, the U 67.

The U 67 was introduced in 1960 and quickly found a home as on option in recording studios throughout Europe and the United States. The adventurous broadcast engineer might try to talk his GM into springing for one.

The tube-based mic features the K 67 capsule for that buttery Neumann sound. The new issue, according to Neumann, is loyal to its past. President Wolfgang Fraissinet said, "The reissue has been meticulously reproduced to original specifications."

Keeping with the original are selectable omni/figure 8/cardioid pattern, low-cut filter, BV 12 output transformer along with matching tube circuitry for the EF86 tubes.

Info: www.neumann.com

Bittree Adds to ProStudio Patchbay Line

Interconnects maker Bittree is adding to its ProStudio line of audio patchbays with the PS48DB25F, PS96DB25F and the PS96DB25i.

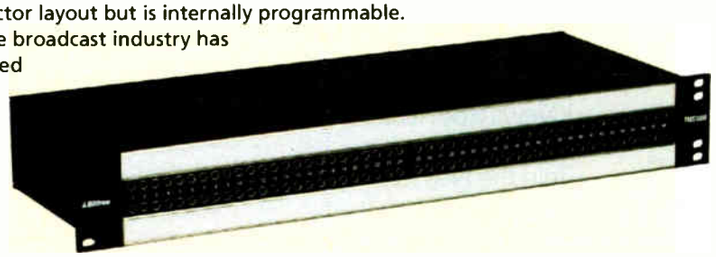
The PS48DB25F has 48 TT (bantam) connectors in a 2x24 desktop configuration, with DB25 rear connectors with pinouts for interfacing with Avid Pro Tools and Tascam gear. The PS96DB25F, shown, follows the same scheme but with 96 connectors and is rackmountable.

Both are front-programmable with circuits that can be changed via shunts under both designation strips. Selectable normalling and grounding are featured.

The PS96DB25i features the rackmount 96-connector layout but is internally programmable.

Bittree founder and CEO Glenn Garrard said, "The broadcast industry has undergone many transformational shifts since I moved from the music business to television in 1974, but many fundamental studio infrastructure challenges remain the same. Users still need reliable patching solutions that maximize signal integrity while allowing them to flexibly modify their signal paths."

Info: www.bittree.com



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APT SureStream Technology Goes Mobile

APT/WorldCast Systems says that its new Mobile SureStreamer can be used to maximize the uptime and broadcast quality of existing hardware or software codecs over 3G/4G networks.

The system has been designed around SureStream, APT's redundant-streaming technology, widely deployed in studio-transmitter links. It employs multipath streaming over two or more redundant networks to deliver a solid connection similar to that offered from traditional synchronous links such as T1.

APT says SureStream technology has been refined over several years and tested regularly on unreliable internet connections.

According to the company, the main benefit of SureStream is its ability to achieve the performance and reliability of a high-grade broadcast link for a fraction of the operational cost. Now Mobile SureStreamer offers these benefits to remote broadcasters in a portable, lightweight carry bag. It will work with app-based software codecs on phone and hardware codecs to provide a direct connection to any SureStream-enabled decoder.

The system can be preconfigured in the studio so nontechnical personnel and talent in the field can connect immediately on start-up. Four universal Ethernet ports allow connection to any type of network access including the two 3G/4G modems that are supplied with the Mobile SureStreamer. Also included is a portable three-hour battery pack with backup and easy swap-out options.

APT said Mobile SureStreamer is not restricted to audio use but can be deployed to protect UDP video and live media streams.

Info: www.worldcastsystems.com

JK Audio Releases New Outerloop

Interface maker JK Audio has a new edition of its Outerloop wireless link for intercoms.

The battery-powered Outerloop 3.5 is a bidirectional device that allows users to call into an intercom phone bridge, station phone coupler or any phone-based intercom app such as Unity Intercom or Clear-Com Agent-IC, for access to an intercom system.

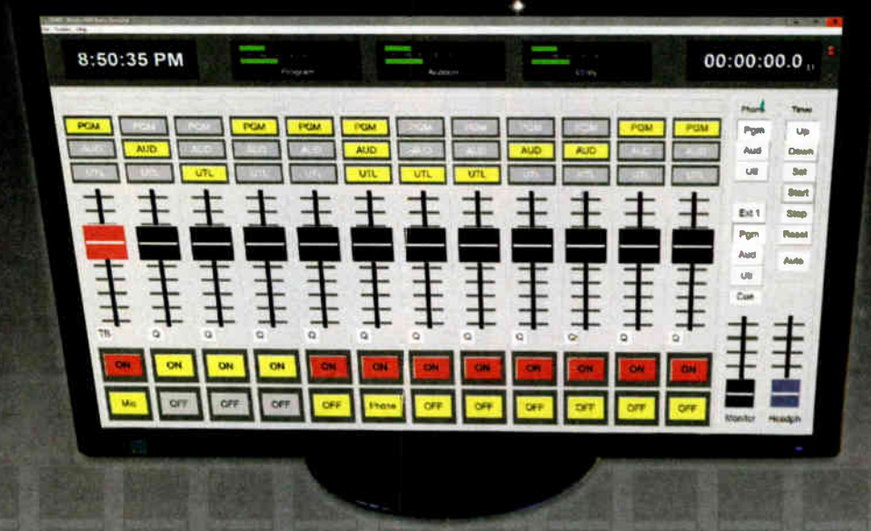
Each beltpack offers front-panel send and receive level controls, push on and off talk button, sidetone level control and HD Voice expanded bandwidth. A 3.5 mm/1/8-inch TRRS connector and cable connect to mobile devices. Compatible with electret or dynamic headset mics.

It is available in male or female versions — with one four-pin and one five-pin XLR connector on each beltpack.

Info: www.jkaudio.com

NEW

D.A.R.C. Virtual Radio Console



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DARC-Virt 12 (list price $4,900) (PC not included)

www.arrakis-systems.com 970.461.0730

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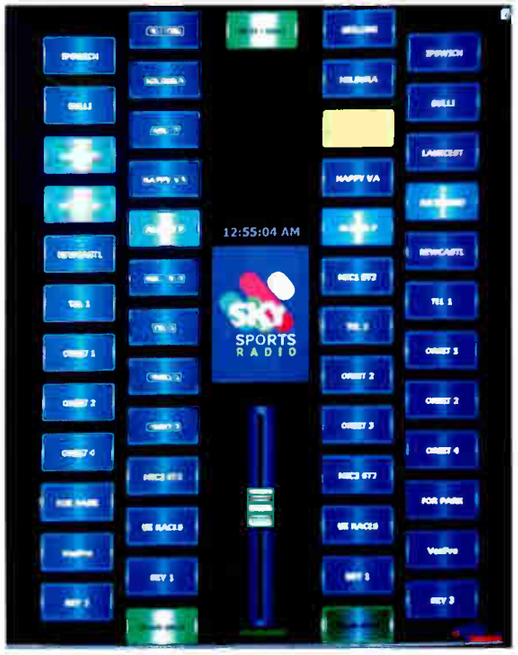
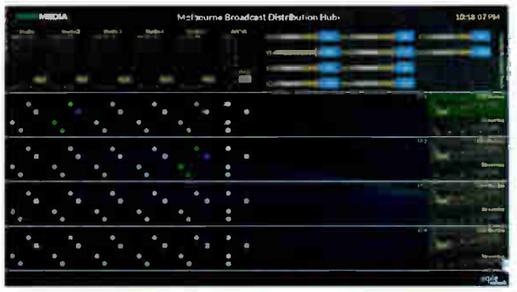
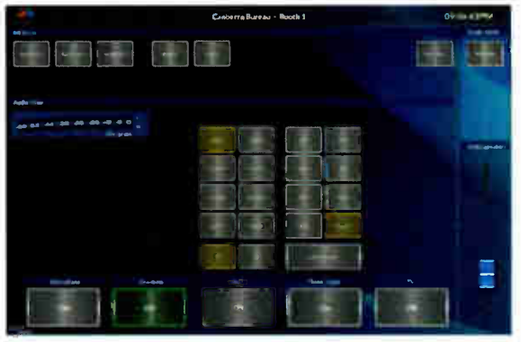
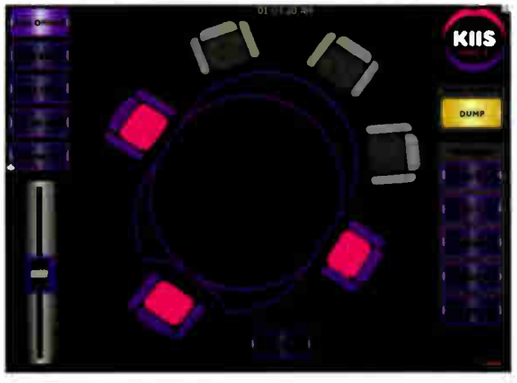
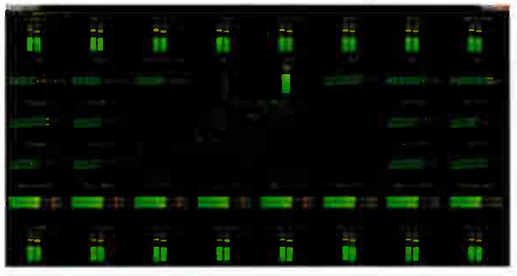
Why Stop At The Console...

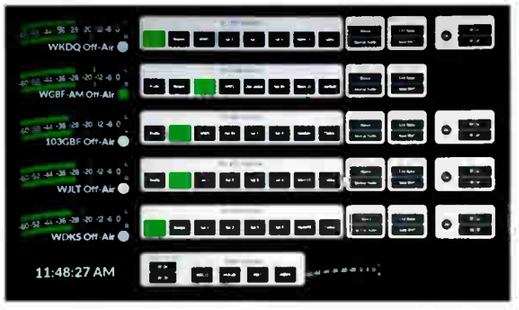


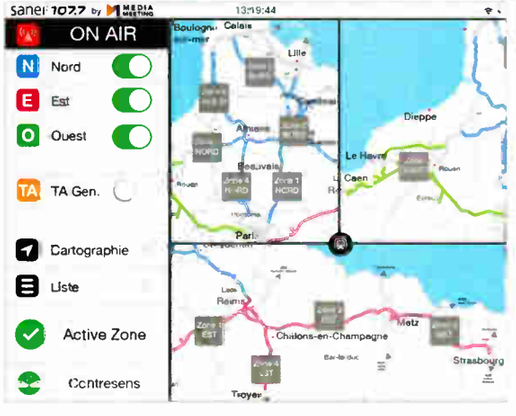


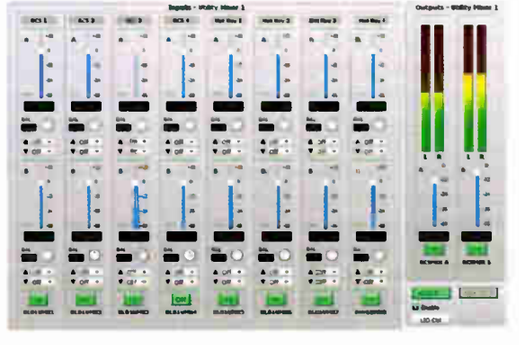












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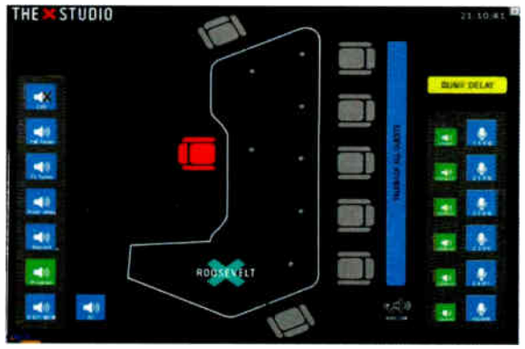

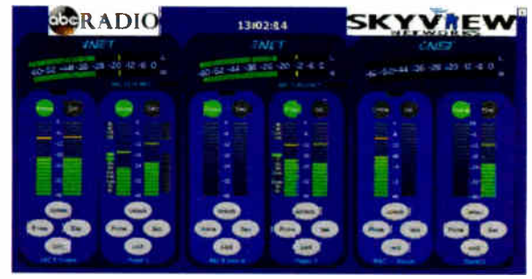

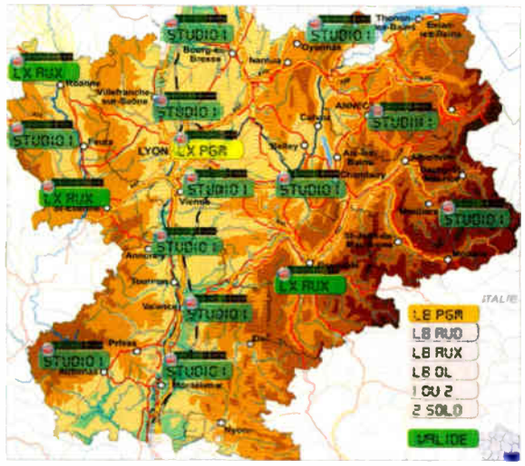

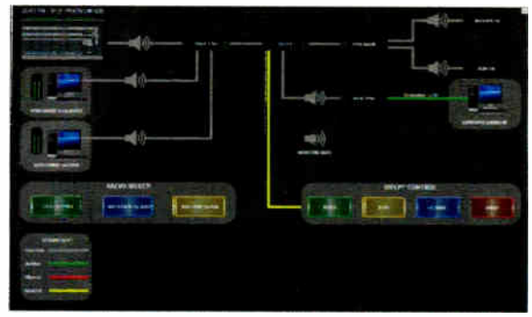

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Comrex Develops IFB System

Codec-maker Comrex has something a little different. The EarShot IFB is phone system aimed at marrying traditional IFBs with modern phone technology.

Sales Director Chris Crump said, "We'd visit TV stations and see banks of old telephone auto-couplers connected to expensive analog phone lines. Most other phone tech has transitioned to voice-over-IP (VoIP), but remote IFB audio remains stuck in the last century."

Up to 30 users can listen to program or IFB feeds by calling into EarShot IFB with a mobile phone. EarShot IFB can handle up to four program feeds, or two IFB feeds. For higher fidelity, smartphone apps can be used to generate studio-quality audio. EarShot IFB provides users with connection to low-cost cloud-based VoIP services, or to a station's VoIP PBX.

Technical Director Tom Hartnett pointed to potential cost advantages: "It was a no-brainer to provide a simple hardware solution to the IFB problem. The folks we talked to were sick of paying for a dozen or more POTS lines to provide this function. EarShot IFB will pay for itself within a couple of months in phone service savings alone."

Info: www.comrex.com

Platinum Tools Cuts the Rope

Ever have the problem where the pair of dykes in the tool bag aren't quite hefty enough to cut a wire or cable on the first go, so you have to rotate them around and around to finally make a cut?

Platinum Tools feels it has a solution in its Wire Rope Cutter. Made from carbon tool steel, it has jaw length: 0.5 inches (12.7 mm) and a jaw thickness: 0.25 inches (6.35 mm).

President and General Manager Lee Sachs said, "Our new Wire Rope Cutter has been designed to cut through the toughest wire rope and cable. ... Lightweight yet durable, it will cut 3 mm steel cable and rope, and up to 6.5 mm soft cabling without unwinding the wire rope."

He noted that it's equipped with a crimping cavity for looping and crimping steel cables and wire rope, complete with rust-resistant black oxide finish and comfort grip TPR.

Info: www.platinumtools.com

DEVA Introduces DB45 FM Monitor

DEVA says its new DB45 is an essential tool for the reliable monitoring of FM signals. With a DSP-based core and a compact design, the system promises accurate parameter measurement including the RF level, MPX deviation, MPX power, left and right audio levels, RDS and pilot injection levels.

Upon demodulation of the FM signal, the SDR FM tuner digitizes the RF signal and all signal processing is achieved through calculations. Courtesy of this tool's precision digital filters, DEVA says, the FM multiplex signal's components can be reproduced from one device to another accurately and repeatedly. This means, for example, that the same signal applied to two devices would give the same result.

The DB45 also features an "easy-to-use" web interface, a built-in audio streamer, which lets users listen to and record audio from any station, and TCP/IP (GSM connectivity is optional) for remote monitoring.

Info: www.devabroadcast.com

Burk Readies Latest ARC Plus Remote System

Site remote control and monitoring systems specialist Burk Technology recently introduced a new member of its ARC Plus family of remote site monitoring and control equipment.

Arcturus is a turnkey solution providing protection and safety for multiplexed antenna sites, Burk says. It will monitor important parameters and provide needed action to minimizing damage to combiners, transmission lines or antennas. The company says transmitter interlocks are controlled by Burk's new high-speed VSWR protection.

Vice President/Chief Technology Officer Paul Shulins said, "The system's built-in trend analysis uses proprietary algorithms to predict out of tolerance conditions for VSWR, line pressure, and room temperatures, allowing operators to take corrective action before safe operating levels are exceeded."

He added, "Arcturus protects your RF plant and allows engineers and site managers to precisely monitor their entire facilities remotely or in person."

Info: www.burk.com

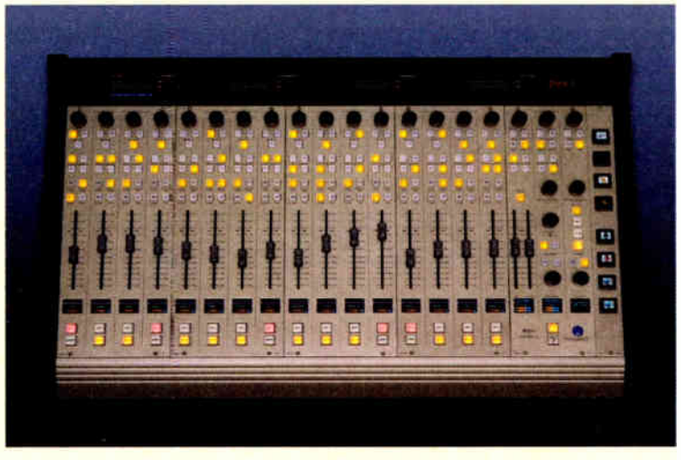
Wheatstone Delivers New PR&E Board

Wheatstone is building on its recently acquired PR&E brand with the introduction of the EMX.

It offers four stereo main buses, two stereo aux buses, an offline bus plus a dedicated two-channel telco record output, and a separate bus-minus feed from each channel.

Channels offer pan, EQ/dynamics, selectable talkback and a programmable control knob.

In addition, each channel has an OLED display to show channel settings.



It is available in 16-, 20- and 28-fader configurations with single and extended frame options.

The EMX is at home in the WheatNet-IP network environment with an onboard Gigabit Ethernet switch. It works with the PR&E Mix Engine.

Field Service Engineer Richard Maddox said, "Having three user programmable buttons on each fader channel allows for a wide range of custom configurations to match studio formats and workflows, and its Ethernet connectivity and ACI interface allow for remote control ability from across the hall or across the country."

Info: www.wheatstone.com

World Radio History

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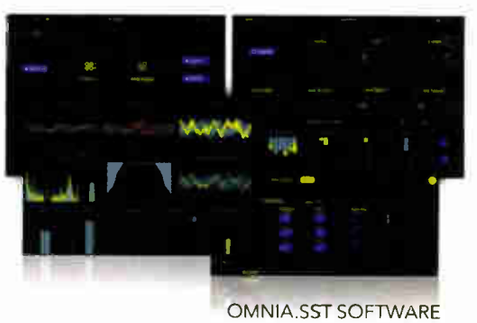
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World Radio History

Gabriel Media Chooses Wheatstone

New studios get IP-12 control surfaces, TS-4 Talent Stations and WheatNet-IP

USERREPORT

BY ROB GOLDBERG
Founder and CEO
RadioDNA

MINNEAPOLIS — Smaller-market radio stations tend to go into new studio buildouts with limited budgets and high expectations. In Gabriel Media's case, we were working with a set budget that needed to cover a lot of ground — from wiring, furniture and sound reinforcement to studio routing and consoles for a new space in downtown St. Cloud, Minn. RadioDNA came in as the integrator to provide a turnkey facility that took into account two working studios with more than your average number of satellite feeds being tossed back and forth.

Gabriel Media is a nonprofit that airs AM talk station KYES 1180 as well as Christian music KKJM(FM)/Spirit 92.9, both of which are active in the community. They needed to be able to switch between automation and live without issue, along with being able to send talent out on a remote without having to send along a technician.

With this move into a facility that once was a real estate office, they also wanted to move from 25+-year-old consoles and punchblock routing into the latest in control surfaces with IP audio networking that would let them automate more of what was critical to their operation.

I recall Deb Huschle, the GM for Gabriel Media, stating, "The most important thing is we have to trust that it will keep us on the air. Second to that is that we have to be able to get back on the air if something does fail, and that's a big issue because we don't have an engineer on-site."

We started with Wheatstone's WheatNet-IP audio network framework. We built a rack room with two racks of WheatNet-IP I/O Blades and other gear that everything would interface with. We ran 12 Cat-6 cables to two almost identical on-air studios, both of which double as production studios, giving them plenty of patch points in and out of the studios to carry everything from telco and sources to logic. We ran cabling through a wire basket in the ceiling, bypassing the need to run cable trunks, which shaved some cost off the budget. For each studio, we went with Wheatstone's IP-12 control surfaces. This 12-fader console is adaptable as either an on-air or production board, which made it ideal for Gabriel Media's new studio; that and its affordability.

We then added several TS-4 talent stations for guest positions. Each TS-4 connects into the network and has headphone jacks, cough button, plus USB jacks so guests can plug in their laptops or other devices during interviews; the studios can get very busy on the air and off during the stations' two pledge drives every year.

There was enough budget left over to bring in curved-screen monitors in one of the main studios, which gave it a cockpit feel that the talent likes.

Because both studios are almost identical, talent can move easily from one to the other — along with their specific console presets. Networking makes it possible to run the studios live or to send automated programming directly to air with the simple push of a button regardless of which studio they're in.

We also integrated the stations' AudioVault automation and codecs into the WheatNet-IP (through Wheatstone's ACI protocol). This means that remote talent is able to control everything — laptop, iPhone, whatever device they use in the field — through the network without an additional board op or technician at the other end. A fully integrated system also means my team of engineers can dial into the network to make routine maintenance changes from a secure laptop, or to troubleshoot a problem if necessary.

As with all our projects, we color-coded and mapped out signal paths so that changes can be made easily at any time. Recently, we were just informed that Gabriel Media will be adding an FM translator, which we expect to be able to integrate into their operation easily.

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

TECHUPDATE

CALREC IS BACK WITH TYPE R SYSTEM

Type R is a new modular, expandable, IP-based radio offering from Calrec Audio. It combines standard networking technology with configurable soft panels that can be tailored to operator needs.

The physical control system consists of three slim-line panels: a fader panel, a large soft panel and a small soft panel. Each is compatible with COTS hardware and powered over Ethernet to keep cabling to a minimum, the company says.

Type R has a simple 2U core with integrated I/O resources to get users up and running immediately. One core can power three independent mixing environments with no sharing of DSP resources. The ability to use multiple mixing engines and the flexibility of an AES67-compatible network provide flexibility for use as independent studio consoles, microphone processors or utility mixing.

The touchscreen soft panels are designed around colorful control elements and can be customized as multifunction panels. Soft panels can be utilized in landscape or portrait formats and used to provide adaptable and specific functionality for talent, while ensuring overall control by the station technical team. This functionality can be changed from show to show using memory loads and can be tailored to fit the talent.

Fader panels have six faders and immediate access to essential controls. Fader panels can be added or removed by plugging or unplugging an Ethernet cable.

"Type R is a thoroughly modern and customer-focused radio broadcast system that adapts to a station's needs as its requirements evolve," said Henry Goodman, director of product management, Calrec Audio.

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

World Radio History

Welcome to Broadcast 3.0

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LAWO

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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

KISL Sings Praises for Arrakis

MARC-15 eases transition to new studio

USERREPORT

BY BRUCE KNOPPER
Station Engineer
KISL

AVALON, CALIF. — KISL(FM) is a unique radio station — located on the beautiful island of Catalina, in the city of Avalon, 23 miles off the southern California coast. This is an island that is completely independent as far as physical connections to the mainland. It has its own power plant, water supply, sewer system, phone via microwave etc.

KISL was licensed in the early '90s on 88.7 FM with a power of 200 W.

It is a community radio station staffed and operated by volunteers. The programming is mostly automated but 30 percent of it is live. When DJs come into the studio they push the "big red" button and go live. The format is very loose, as long as the content is not offensive. The station is also used when we have special events such as a blues and jazz festival, the air show and July 4th parade (a big deal). Organizers use the station to simulcast the announcer.

And when we have local elections, the candidates come to the station to pitch their cases. We have also done many live concerts.

The station had an old (very old) PR&E console that came from KMET in Los Angeles. It was showing its age. Plus, the studio was worn down, with dirty carpets and more.

Since we are a community nonprofit station with a limited budget, most of the equipment was donated or found. "If you are going to throw that away, can I have it?"

About a year ago, we received a very generous donation from the owner of ACE Clearwater Enterprises. He also lives on the island part time, and was very excited that we had our own radio station.

We ended up replacing almost everything. The choice for the console was to keep it analog but flexible. The Arrakis MARC-15 was one of the few that could be configured for our needs with the right line, plus USB digital inputs, telco, etc. It had to be durable, able to withstand inexperienced operators and high humidity, because we are located in the harbor.

In addition, it had to be very easy to operate and similar to the old one we had. That is important for the operators since they are not "professional" DJs and this way they would feel comfortable with the new setup.

Of course it was very exciting to get all new equipment. And since we use PCs a lot, having USB input on the console was great. I had to do some modification to make easier for the DJs. Arrakis was very helpful in providing additional documentation to help me. Also, I bought a few matching blank panels for additional controls and functions.

I understand that the RJ-45 connector is the new standard, but not the best to work with for our analog-dominant application. With audio and control on the same connector, the installation was not as "clean" as I hoped at first. However, after I found a Cat-6 patch panel, the installation came together much better — RJ-45 from the console to the patch panel and there was a standard 66 punch block that would accept 22-gauge wire. That way I can run Belden 8451 shielded cable to the different points in the system.

In addition, if I need to troubleshoot or check levels, I have found it is easy to do with an RJ-45 adapter.

So far, everything sounds clean and the operators are happy!

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

TECHUPDATE

YELLOWTEC INTELLIMIX GOES FOR EIGHT CHANNELS

Yellowtec has increased its Intellimix Desktop Mixer to eight channels per module.

At a glance the Intellimix appears to have only four channels, but a recent "Octopus" upgrade lets users utilize up to eight channels simultaneously.

To use the Intellimix Octopus eight-channel option, users adjust the configuration "number of faders" to "8Faders" within the Intellimix wizard. The assigned eight sources will be displayed in two layers. Push on the Intellimix's rotary control to switch between the display of sources 1–4 and 5–8.

It is also possible to connect two Intellimix Control Units to one single Intellimix Base Unit to be able to simultaneously adjust all eight channels by letting one Base Unit display Channels 1–4 and the other one Channels 5–8.

Intellimix Octopus is compatible with second-generation aluminum Intellimixes. From now on, the new Intellimix Octopus firmware is integrated in every purchased Intellimix Desktop Mixer. Existing Intellimix units can be upgraded to Octopus for free. The firmware upgrade is available at *www.yellowtec.com/intellimix/downloads*.

For information contact Yellowtec in California at 1-805-931-6081 or visit www.yellowtec.com.

World Radio History

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World Radio History

Mataró Ràdio Renovates With AEQ and Dante

Arena and Forum digital consoles work across IP networks

USERREPORT

BY FERRAN VALLS
Broadcast Chief
Mataró Audiovisual

MATARÓ, SPAIN — Mataró Audiovisual was born in 2006 as a public entity within the city's local governing council. Its mission is to handle the region's audio-visual communication initiatives.

AEQ has been with us from the start of our journey. Back in 2006, we launched our first studios with AEQ analog consoles and the Mar4win automation systems, also from AEQ.

Two years later, in 2008, we expanded our facilities, acquiring two AEQ Arena digital consoles, with 15 faders each, connected to an AEQ BC2000D routing and mixing engine, one of the most powerful available on the market.

With this installed legacy, one of the requirements for our new studios was to use IP technology in order to flexibly connect equipment between the different studios and central control. We built an IP network that connects the consoles in both studios and an input/output interface for the central control equipment rack. This basic infrastructure allows us to grow as our needs do.

With this in mind, we decided upon AEQ Forum IP digital consoles with 12 faders each and Dante network AoIP technology, as well as the AEQ NetBox 32 AD audio interface with high number of inputs and outputs.

Another advantage of using AEQ Forum IP console is that our temporary home at the nearby University of Mataró, was already using the Forum IP in their radio studios. This made operation easier for our staff while our studios were out of commission.

In order to extend the console's control and operation, we have added the optional Forum IP Screen software. It provides a convenient display of all console main parameters: VU meters, clock and timer, on-air status and phone lines.

Thanks to the IP network we were able to reuse previously acquired equipment such as our AEQ Arena console. The Arena separates its control surface from its routing and mixing engine, located on the floor below in central control. This allows us to change the studio's settings without having to leave central control.

The Rádio Mataró move project has been supervised by General Manager, Mai Ros, and our technical team, with the collaboration of Nacho Olivella, AEQ sales area manager for Catalunya. NRD Multimedia has been the main contractor for the renovation project.

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

TECHUPDATES

HENRY SPORTSCASTER SIMPLIFIES PLAY-BY-PLAY

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

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

The company says that because play-by-play sporting event coverage requires real-time off-the-air communication between talent and tech, the SportsCaster includes an intercom system that allows back-channel communication between the producer, announcers, field reporter and camera operators. The intercom system provides selective communication to any or all members of the broadcast team. The producer can give cues to the announcers and/or field reporter while "calling the shots" to the camera operators.

The producer controls the intercom audio paths, so that each team member hears only what is necessary without hearing comms intended for someone else. This minimizes confusion, especially when dealing with less-experienced announcers and techs, according to Henry Engineering.

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

For information, contact Henry Engineering in California at 1-562-493-3590 or visit www.henryeng.com.

STAGE TEC NEXUS AUDIO ROUTING SYSTEM

Stage Tec's Nexus digital, decentralized audio routing system offers 32-bit TrueMatch conversion with 158 dB dynamic range and is suitable for networking, routing and processing audio, control, and ancillary data in many installations.

The company says it is suited for applications ranging from studio matrix switchers or switch-room routers to full broadcasting center networks while also a choice in smaller systems as a compact, portable transmission system.

At the recent NAB Show Stage Tec introduced the latest board for the network, the Nexus Fiber and IP-Interface (XFIP), which customers can use when they need small, cost-effective audio networks without a Nexus Star router. The XFIP board uses DirectOut's AES67.IO module, which has AES67 implementation.

The XFIP is equipped with one AES67.IO module and supports up to 256 channels in and 256 channels out on the Nexus side. On the AoIP side, it can process 256 channels in a maximum of 32 streams. The XFIP supports redundant audio transmission according to SMPTE 2022-7 guidelines.

For information, contact Stage Tec/ASK Sales & Representation in California at 1-818-701-6201 or visit www.stagetec.com/en/.

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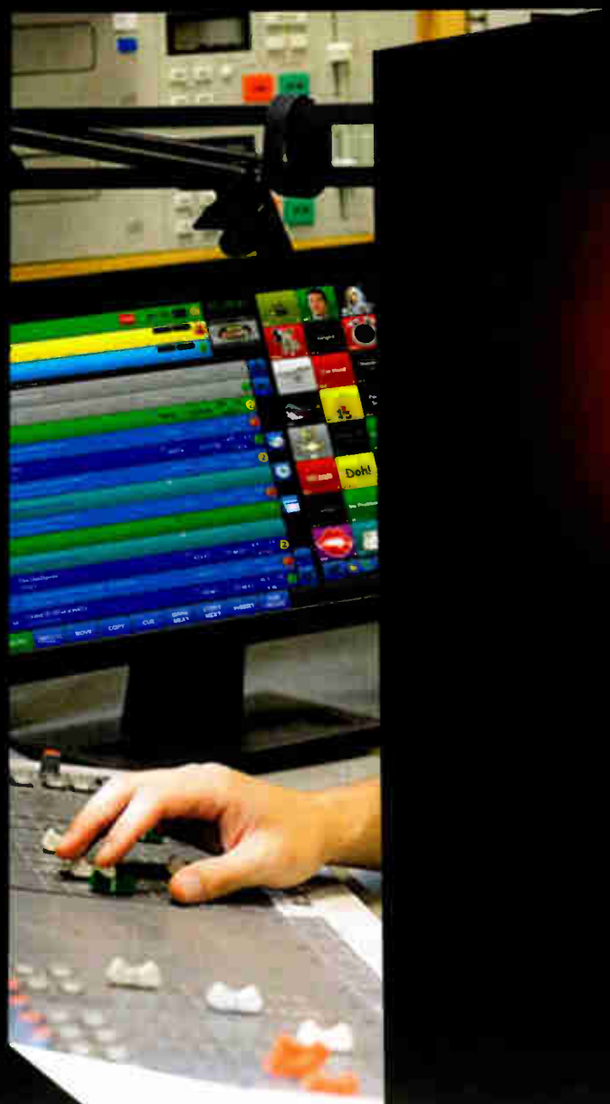

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World Radio History

Studer Micro Is at Home on the Road

Dante power provides network options for all sorts of jobs

USERREPORT

BY MICHAEL "MICKY" CURLING
Technical Producer
MIX Broadcast

MANCHESTER, ENGLAND — I need to start with a disclaimer. I love Studer. My love affair started in the '90s, when I was learning to edit on their legendary tape machines. In the mid-noughties I pushed hard be the first BBC department to purchase an On Air 3000 console. I love Studer's build quality and the innovation that they stand for.

I work a lot these days in the world of event and federation radio, producing on-site programs for sports like track and field and horse-racing. This low-budget world is traditionally dominated by small PA desks that tend to repel journalists and presenters.

The answer to most of my prayers comes in the form of the Studer Micro. It consists of a 3U core and (up to) two well-built fader units powered over Ethernet. You get 12 XLR I/O (four with mic preamps), two AES I/O, two headphone outputs and GPI/O for red lights and cough switches. For me, the killer feature is eight channels of Dante — meaning the desk will hook up to a computer or stage box.

You can configure any combination of stereo or mono channels and assign associated clean feeds (Studer like to say N-1) and apply dynamics and EQ easily. You've got loudspeaker muting, split PFL (absolutely essential on any console) and a separate record bus for those times when your presenter says, "I need to record this interview NOW." You also get built-in recording and playback options — especially useful in my world for playing out overnight programs. The headline is that you're getting a lot of radio console for about the same price as a small PA mixer. I've not found anything comparable after years of searching. The Studer Micro looks great too: Radio presenters aren't scared to touch it and engineers spend a lot of time fawning over it.

The first thing that strikes you after you've finished lusting over the console is the lack of knobs. There are no physical controls for channel gains, pans or headphones. Studer has provided a clever, Wi-Fi enabled, web interface that runs on any browser and that is where all configuration and control take place. Don't underestimate though how frustrating it can be to have to reach in to the browser to change a mic gain, or to turn your headphones down.

Studer being Studer, it has done some clever things: You can place an iPad on a mount above the faders and you can charge it at the same time from the built-in USB socket. The faders feel good under your fingers and there are big, back-lit buttons for PFL, channel on/off and for routing signals to the record bus. If you want to be really portable, you can run the core without any faders. This is something I did at the Royal Wedding in the U.K., where I was using the desk as a basic mixer for visiting radio broadcasters.

Each channel can be configured with a purpose: "DJ" and "guest" channels mute the loudspeakers and "Input for Sends" channels get their own talkback and automatic N-1. I'd love to use these dedicated talkback channels for my commentators but at the moment the software doesn't allow me to override the N-1 mix. I'm told that a new software version is on the way and it feels like my small needs could easily be fixed. I only have one more request for v2 and that's a user-configurable hard limiter across the output channels. I also hope v2 brings the promised VoiceMix automatic mixing.

At the end of the day, this desk has taken my low-budget radio world to a whole new professional level. The desk has proven 100 percent reliable in operation and for me it's been such a relief to hand over the faders to journalists and producers, knowing that they're working in an environment that feels familiar. Roll-on v2 of the software but let's not forget how much desk you're already getting at this price-point. The love-affair continues.

For information, contact Mark Hosking at Studer at +44-1707-6687017 or visit www.studer.ch.

TECHUPDATE

LAWO RUBY CONSOLE DEBUTS SMPTE-STANDARD DUAL-REDUNDANT NETWORKING

Lawo says that its Ruby mixing console has received a major update.

V6.0 software adds SMPTE 2022-7 Seamless Protection Switching, also known as "hitless merge," to the Ruby Power Core engine. SPS enables the mixing engine to connect to a broadcast facility's AoIP infrastructure using two independent, redundant networks paths, and switch between primary and secondary switch fabrics without interruption should a network link fail.

In addition, Ruby consoles now support up to 256 AES67/Ravenna audio channels at once.

Ruby is an AES67-compliant radio console that the company says was designed from the outset with networking in mind. Its Power Core mixing engine comes with two AES67/Ravenna ports and four high-density MADI ports, each with 64 channels of I/O, for 384 channels of audio standard. More analog, digital, microphone and MADI signal capacity can be added via eight rear-panel expansion slots, making Ruby suitable for stations that want to migrate to AoIP without sacrificing legacy infrastructure.

Ruby's Power Core mixing engine offers DSP capability — enough to sweeten up to 96 input channels. Each input channel features input gain control, signal presence indicator, direct out, insert, aux send with pre and post switching, pan/balance, and AutoGain for mic inputs; audio-shaping tools include equalizer with three fully-parametric bands plus semi-parametric bands configurable as shelf, high-pass, or low-pass filters, plus gating, expansion, compression and limiting.

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

For information, contact Lawo in California at 1-888-810-4468 or visit www.lawo.com.

World Radio History

Going Axia in Lexington

Studio and equipment upgrades at WUKY

USERREPORT

BY JOHN LUMAGUI
Operations & Programming Manager
WUKY/University of Kentucky

LEXINGTON, KY. — Here at WUKY(FM)/91.3 MHz in Kentucky, we recently went through a major transition period when we moved our studios into a new space and upgraded our equipment setup.

When it came to the equipment, WUKY chose Axia, specifically the Fusion AoIP console, at the recommendation of engineering consultant William Smith. William had used the products to great success in a previous build for another client and we were confident that he could help us achieve the same results.

We decided to embrace state-of-the-art digital technology to bring WUKY into the 21st century. Our old plant was a mishmash of analog and digital equipment that had grown out of control over the 79 years that we inhabited our previous location.

TIGHT TIMETABLE

The new gear that we purchased included an Axia Fusion with studio engines/power supplies, Axia Pathfinder software, Telos Alliance xNode audio interfaces, Axia SoftSurface virtual console software, Telos VX broadcast VoIP phones and VSets, and Axia iProFiler automated program archiving software. The system allowed us to shed our analog gear entirely in exchange for the flexibility and cleaner signal path of an all-digital system.

The space that we moved into had been a recording studio, and there were certainly challenges in converting it into a broadcast facility. They were miniscule, however, compared to the expense and delay of constructing a new facility or even renovating our old facility. We had to rewire the building to accept all of the Ethernet connections needed to implement the new system, as well as build a tower onsite to beam the signal back to our transmitter via a hop back on campus.

The other challenge was transferring our operations to the new building while the old plant was still online. We promised UK Facilities that we would be out of our old location by April 1 to allow them to repurpose the space for another department. It was tight, but we made the deadline and were broadcasting from the new site by mid-March. Now we get to use our new Axia gear every day for broadcasting and production, and while it took a little time to adjust, the sound quality and convenience of audio anywhere in the building were well worth it.

With a big, new space available, we hope to have many live acts in, as well as forums, fundraisers and other events where people can come and take advantage of the space. We're already in talks to record live shows and we're exploring a possible music festival with local partners.

The new building, combined with the power and flexibility of Axia and Livewire, has allowed us to start to dream big about all the possibilities. The new setup will allow us to hold outdoor concerts and easily bring the audio back inside over one single Cat-6 cable. The new gear also allows us to have virtual studios using the SoftSurface, giving us the mobility to bring a studio into "any room in the house." WUKY is really happy with the new location, and we appreciate the Telos Alliance and Broadcasters General Store for delivering great technology to help us on our way.

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

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TECHUPDATE

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The virtual configuration, Helix Studio, is a large-format virtual console for the 28-inch Microsoft Surface Studio. It can mirror a physical console or operate on its own, enabling its use in control rooms or remote locations. When paired with a Helix physical console, any changes to faders or controls on either device are reflected on the other. Touch-sensitive motorized faders on the physical console ensure that fader settings made on Helix Studio are matched.

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

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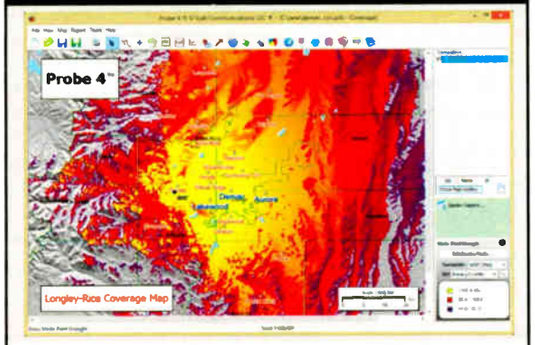

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Engineer Tells FCC to "Wake up and Smell the Coffee"

He urges commission to remember how much broadcasters are doing with limited resources

COMMENTARY

BY RON SCHACHT

Once when I was in eighth grade, which was about two months before rocks were formed, I sat in geography class and as usual was paying no attention to where Egypt or Mesopotamia were located.

Instead, I was drawing out a schematic of the Class B modulator with a pair of 6L6s that I wanted to build for my 40-meter CW rig. Out of a clear blue sky, I heard my name and looked up. The teacher was looking at me with a quizzical expression. It was obvious he had asked me a question. Of course, it had nothing to do with 807s or 6L6s, so I had no idea what would be a good answer.

After a long, sweaty pause, he finally broke the silence with this little gem: "Mr. Schacht, it's about time you wake up and smell the coffee."

That line is again applicable today, concerning the FCC and the C-band debacle.

It seems to me that the agency that licenses and controls all of the radio spectrum would vaguely know what everyone else in the communications industry knows: C-band satellite transmission is the lifeblood of television, radio, CATV and a great deal of data transmissions.

Rather than the commission ask every broadcast station and CATV system to register their antenna (of course, for commercial purposes at an unnecessarily high fee!), the commission should require CATV, radio and television that *don't* use C-band downlinks to register! There probably are very few, with the exception of LPFMs (I take care of a big 100-watter that does have a C-band downlink).

The C-band downlink is the lifeblood of every CATV system, so I am sure the commission knows where every one of them is. Why can't the commission just accept the fact that nearly every broadcast station — TV, radio, commercial and non-com — is using C-band downlinks?

Why can't the commission just accept the fact that nearly every broadcast station – TV, radio, commercial and non-com – is using C-band downlinks?

Now, on to the frequency allocation. Take a look at the RF spectrum as is currently allocated by the FCC. (If you're unfamiliar, you can find it in most radio books and all over the internet.) How much spectrum does "radiolocation" need? Yes, this is radar and the like, but I really think what is listed as "radiolocation" is either unoccupied or being saved for government use. Why not share some of that underused spectrum? There's a whole bunch of it around 3GHz among other places.

Why do we, the broadcasters, have to keeping making concessions for the cellular and broadband people? Other than because money talks, and they have lots of it.

Do you know why the cellular people and broadband people have so much money to bully the FCC around, and the broadcasters and CATV people have so little? That's because while we certainly are in the business of making money, we are also community servants.

PRIORITIZING SERVICE OVER PROFIT

Right now, as I write this, we are under a tornado warning and severe storm warning in Iowa. The local radio stations are tracking the storms and I am listening to live coverage. All they are doing is using their licensed facilities to keep people safe and save lives.

The cellular people do none of that; they just rake in money to provide a telephone and an internet service that works "some of the time."

Sure, they send out alerts. I have two cellular phones from different carriers. I hear severe weather alerts on local radio or television as NOAA trips the EAS system. Anywhere between 10 and 30 minutes later, it might trip one or both of my cell phones. By then, the storm has passed, or I was sucked up in the tornado I didn't know about, or the Amber Alert missing child is now three states away.

No, neither the cell phones nor the internet even comes close to what the broadcasters provide in their communities. Unlike the cell companies or the broadband providers, the broadcasters will do whatever is necessary to keep the public informed in an emergency: stations operating from their transmitter sites when the studio was leveled by a tornado, AMers stringing up long wires when their tower is toppled. Local radio and television will be there when the public needs them.

QUESTIONABLE RELIABILITY

Have you ever tried to use the internet or cell service for a program link? Yes, both radio and television do, but it ain't no match for the reliability or quality you get from a satellite. A few of the stations that I deal with have given up carrying some college football teams because the provider went off the bird and onto the internet, and it just isn't reliable.

Yes, the internet and cell phones are nice, but as toys. If I need to make an important call, I'll always go to a landline; it sounds good, and I won't lose the call. Maybe, rather than give the cell and broadband more spectrum, the commission should require that they make what they have work and not keep reducing the sample rate of the calls to make more money by squeezing more calls onto each RF carrier.

So, to the FCC: Maybe you should look at less used spectrum for the broadband people, or take it away from somewhere else.

You have taken our TV ENG channels, our over-the-air TV channels, you have had your eyes set on our UHF RPU frequencies and now on our major source of programming outside the studio, the C-band.

We are doing our damned best to serve the people of our communities, over the air, commercial or non-commercial, in spite of the big money trying to make us stop watching free TV or listen to free radio and services that keep us safe.

I think it's time for the FCC to wake up and smell the coffee!

The author is a consulting engineer in Kensett, Iowa.

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