RADIOWORLD

INSIDE

GENIVI Seeks Open Approach to IVI

NAB is among tech partners of alliance that advocates open infotainment/connectivity platform

▶ CONNECTEDCAR

BY TOM VERNON

The rush of interest in smart speakers has focused the attention of broadcasters on possibly reclaiming a place in the home and office listening environments. But the automotive audience remains a crucial one; and though it has remained relatively stronger and more loyal to radio, maintaining that relationship is vital for radio companies.

In November, the National Association of Broadcasters announced that it is collaborating with members of the GENIVI Alliance on automotive radio technology as part of NAB's Pilot program. This partnership has been highlighted at recent industry events like AutoMobility LA 2017 and CES 2018.

AUTO ECOSYSTEM

The GENIVI Alliance is a non-profit organization that provides standards and an open connectivity platform for in-vehicle infotainment systems, or IVI.

The name combines Geneva, "international city of peace," and the acronym IVI. Members include original equipment manufacturers like BMW, Honda and Volvo; "first tiers" like Alpine, Pioneer and Visteon; numerous software, hardware and service companies; Silicon Valley names like Intel and Analog Devices; and other entities including

GENIVI®

New Mexico Tackles EAS Alerting Issues

Mike Langner on how the state encouraged "a true public-private partnership"

BY RANDY J. STINE

ALBUQUERQUE, N.M. — Mike Langner sounds like a radio programmer when he talks about the Emergency Alert System — he says it's all about the content.

Langner, chair of the New Mexico State Emergency Communications Committee, has been campaigning for improved content quality in EAS alert messages ever since Amber Alerts started appearing in the early 2000s.

A retired broadcast engineer and technical consultant to the New Mexico Broadcasters Association, he has found a

Mike Langner, shown at his home amateur radio station.
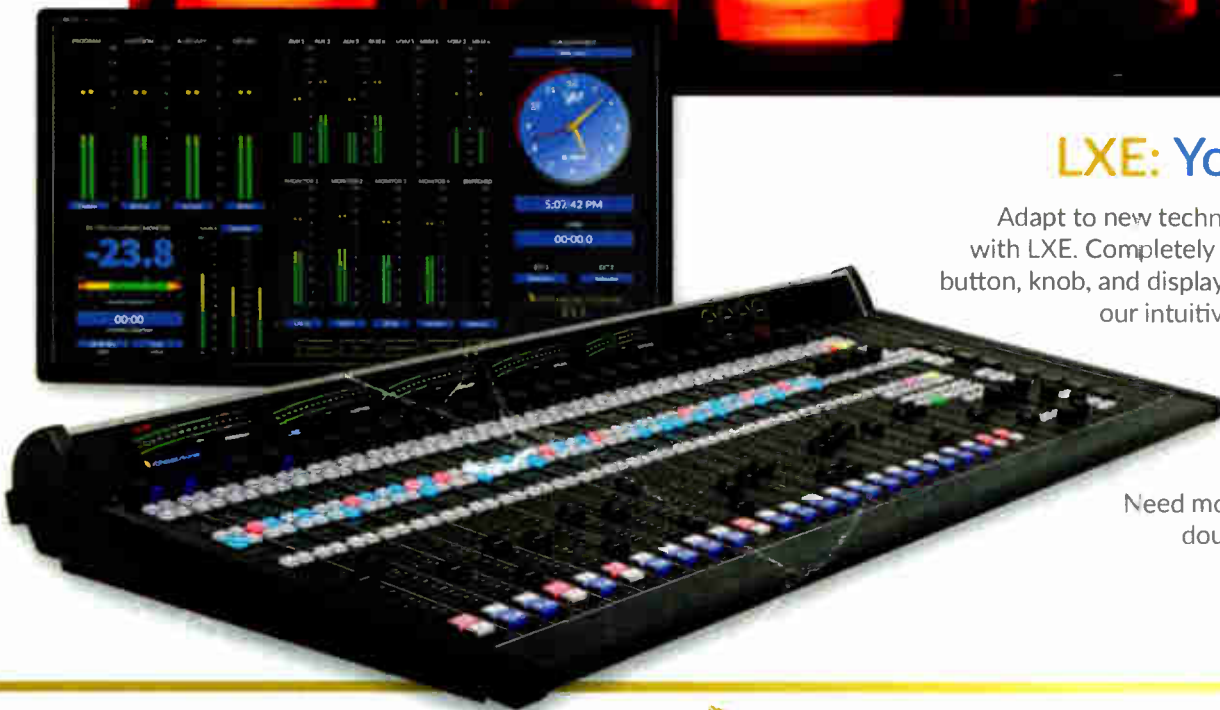
World Radio History

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NewBay

Recovery of Hidden Sounds Is a Daunting Task

These women "said what they thought," but now their voices largely are lost

"The We Say What We Think Club" was heard for two decades in Madison, Wis. This photo by Arthur Vinje appeared in the Wisconsin State Journal in June 1950, captioned: "WIBA radio personalities Selma (Mrs. Cornelius) Sorenson, Sibylle (Mrs. George) Mitchell, Isabel (Mrs. August) Baumann, Grace (Mrs. John) Langer and Ruth (Mrs. Howard) King, collectively known as the 'We Say What We Think Club,' celebrate their 13th anniversary on the air."

BY JENNIFER HYLAND WANG

Call it good fortune, coincidence or a fluke. But the fact that radio historians in 2018 can hear the rural radio voice of Isabel Baumann feels like a miracle.

Baumann (1906–2004), a Wisconsin farm wife and rural clubwoman, spoke to neighboring housewives each month on the radio program "The We Say What We Think Club" for more than 20 years. Despite the series' longevity on Madison's NBC affiliate WIBA, "The We Say What We Think Club" was just the kind of radio program likely to be lost — a local program broadcast from a small commercial station, a live daytime offering aimed at farm wives and a monthly substitution for the regularly-scheduled "Dane County Farm Hour."

True to form, no audio copies of the program had been found in the 60 years since the radio show last aired. And thus, we have presumably lost the voices of five farmwomen dispensing advice and debating rural politics on "The We Say What We Think Club" during its 1937 to 1957 run.

DAUNTING TASK

The recovery work of the Radio Preservation Task Force, a 2014 initiative of scholars and archivists charged with locating and preserving as many histor-

ic radio voices as possible, is daunting.

At the February 2016 and November 2017 conferences in Washington, scholars joined audio preservationists and radio collectors to discuss the challenges and recent finds in our search for old audio.

Like most local radio stations, Madison's WIBA did not systematically record, transcribe or store decades of radio programming. To piece together the fabric of radio history, academics must look in unconventional places. And hope for a bit of luck.

In the case of Isabel Baumann, it took a packrat, a state-sponsored oral history project and a technological innovation to keep "The We Say What We Think Club" alive for radio researchers.

What little is known about the program was discovered accidentally when an oral historian for the Wisconsin Historical Society stumbled upon Baumann's radio scripts while interviewing her about Midwestern farm life. These

Without Baumann's decision to preserve scripts for decades, this local program would have been forgotten.

interviews were influenced by an interest in oral historiography during the mid-1970s precipitated by the availability of affordable portable tape recorders, a growing public interest in genealogy as popularized by Alex Haley's "Roots" and anticipation of bicentennial celebrations. The society established an oral history office in 1974 headed by agricultural historian Dale Treleven as part of this trend.

Treleven sought to make oral history projects on a limited state budget sustainable. Typically, historians had collected memories on reel-to-reels or audio cassettes and carefully transcribed the interviews to produce a written document suitable for archiving. Once the tran-

script was complete, archivists reused the tape and recorded over previous interviews.

This process was time-consuming and expensive, and it destroyed the original audio recording. Wisconsin Historical Society audio archivists George Talbot and Stephen Masar, with Treleven's cooperation, began testing an alternative to transcription in processing oral histories.

Adapting a system used for videotape by James Pilkington at the Vanderbilt

GENIVI

broadcast group Cumulus. Its chairman is Kyle Walworth, VP of Solutions and Strategy, Automotive for Harman Connected Services.

Steve Crumb, executive director of the alliance, said it came into existence to serve the needs of an industry in transition.

"Both automobile manufacturers and their suppliers were accustomed to automotive devices as discrete boxes connected with wires. The software revolution came along fairly quickly to car manufacturers; all parties in the production chain were challenged to deliver fully-functional infotainment systems. Standards needed to be developed so things worked much the same way from one company's vehicles to another's," he said.

"Our current work involves developing open standard interfaces and code that bridges multiple car software domains," says Crumb. "This work is critically important in delivering a unified passenger interaction across different in-car systems such as safety, infotainment and consumer electronics."

Crumb said the partnership with NAB is evolving into a mutually beneficial relationship for broadcasters and automotive industry.

"I had some conversations with NAB this summer. They were interested in ways to introduce themselves to the auto industry and influence future technology. I also saw an opportunity for us to have a conversation with broadcasters."

VISUAL PRESENCE

How can radio best fit into the connected car? Crumb urged broadcasters to put themselves in the place of passengers and think of the experience being delivered. A number of media options are available in the automotive environment.

"All of these footprints need to be integrated into a single experience; and radio is a part of that greater digital experience that a person has." As a practical note, radio broadcasters should compare how their product appears on the dash with other options, especially satellite radio. In that realm, the quality of graphics and visual materials is important.

Steve Crumb

Think of what you can do on an airplane or train; that's the future.

— Steve Crumb

Autonomous vehicles also are closer to reality than many people realize, and Crumb speculated about changes they will bring to IVI systems.

"The distinction that we now make between driver and passenger in terms of 'distractability' will simply go away. We can imagine high-resolution screens showing sporting events and concerts. Think of what you can

do on an airplane or train; that's the future. Another possibility for the car of the future is a mobile office. It can have the same functionality as a brick-and-mortar base of operations."

A lot of this functionality will be made possible by 5G technology, he said.

"You will be able to transfer what you do, as well as how you want to interact with devices. Things like your identity, your playlists and your preferences will travel with you in the cloud and be available wherever you go."

Given that visuals presumably will play a growing role in autonomous vehicles, how can radio best adapt to the self-driving car of the future?

"If radio doesn't adapt, it could be left out," Crumb said. "It has already taken steps to add

In-vehicle infotainment systems such as this prototype X-wave deliver navigation, safety and infotainment media to a car's driver and passengers.

a visual component, and I think it needs to keep pushing in that direction. Radio also needs to keep doing what it does best, including the delivery of emergency information. Right now, it is the only source in the vehicle for weather alerts along with other fast-breaking emergency warnings."

HIDDEN SOUNDS

University Television News Archive, Talbot and Masar attached an audio time track to each processed cassette tape, signaling the time at 5-second intervals. With a detailed abstract linked to the audio track, researchers could find relevant material quickly, eliminating the need for verbatim transcription.

Treleven predicted that the TAPE system (Timed Access to Pertinent Excerpts) would ensure that "thousands of dollars will be saved in processing costs, and countless aspirins and swigs of Maalox will go unconsumed by the oral history coordinator," according to a monthly report of the oral history program in 1975.

For years, this pre-digital system did just that, saving archivists money (roughly half the cost of written transcriptions) and making state-sponsored oral history viable. More importantly, however, this technical innovation preserved the original audio recordings of these interviews, allowing them to be replayed for later researchers.

PRESERVATION INSTINCT

The Wisconsin Historical Society funded their oral history project to 1982, and Treleven interviewed approximately 150 farmers during that time for an agricultural history project.

Treleven contacted Isabel Baumann on the recommendation of another interviewee, spending eight hours in April 1980 recording her remembrances. Baumann spoke about her

childhood, her time as a teacher, her experience as a rural clubwoman and her career on local radio, providing a wealth of information about the histories of Wisconsin dairy farming, women in rural politics and "The We Say What We Think Club."

A few months after their interview, Baumann donated her papers to the Wisconsin Historical Society. This collection included pencil-marked copies of nearly every script broadcast over the 20-year life of the program. To the best of our knowledge, these are the only remaining traces of WIBA's "The We Say What We Think Club."

Without Baumann's decision to preserve scripts for decades, this local program would have been forgotten. Without the development of the Wisconsin Historical Society's oral history

program in the mid-1970s and its focus on preserving the audio recordings of its participants, Isabel Baumann's voice would have been erased from history.

The serendipity involved in preserving Baumann's story of farmwomen speaking to other farmwomen over the airwaves for our ears nearly 70 years later is a reminder of how tentative, tenuous and important our work as radio historians really is. Particularly for radio voices that were historically marginalized, we radio researchers must expand our search for the sounds of radio's past beyond professional audio to oral memories of radio programmers, talent, executives and engineers. How else could we possibly figure out what they thought? Or, more importantly, how they sounded?

NEWS

Looking Ahead

RW has been featuring online Q&As with industry thought leaders asking their prognostications for 2018. Here's a sampling; find full stories and more interviews at the News Makers tab under News & Business at *radioworld.com*.

Graham Dixon is head of radio for the European Broadcasting Union.

Radio World: *What do you see as the most pressing technology challenge facing radio broadcasters in 2018?*

Dixon: Voice activation appears to be a game-changer, not just a passing fad. The good news is that there is evidence that households with such devices are consuming more audio — this is good news for radio!

Here at the European Broadcasting Union we are keen to understand, participate and leverage the opportunities this offers, and have just founded a new working group — VOX — to bring together expertise in this area. …

The convenience that voice activation offers to users is proving highly attractive, and the functionality is spreading to other devices; the Alexa phenomenon now manifests in various guises. This, combined with the possibilities offered by AI, will fundamentally change the relationship between users and their devices.

Jay Tyler is director of sales for manufacturer Wheatstone.

RW: *What does Wheatstone expect based on what you're hearing about cap-ex budgets, project plans or other factors?*

Tyler: In a few years, we might see an entirely different way of operating — regional centers, for example. All that is going to be leveraged off of IP. And, fortunately, one of the benefits of IP audio compared to the traditional system is you don't have to do it all at once. We've never really run our business on broadcasters' cap-ex budgets for this reason.

In the past, broadcasters budgeted hundreds of thousands of dollars for a new project, and then did it all over again when things changed. They don't necessarily have to do that now; they can add onto their existing IP infrastructure. They are hanging onto their equipment longer and making changes as they occur. So, while we are experiencing a second wave of audio over IP project buildouts, we are also adding more and more functions and devices onto those studios that have been IP networked for some time.

Matthew Wesolowski is general manager of WYAB(FM), licensed to Jackson, Miss.

RW: *What technology trends or changes should we be watching for?*

Wesolowski: Many FM licensees are lobbying for on-channel booster (as opposed to FM translator) program origination ability. Though I do not count myself in that group, I am closely watching the situation. FM booster stations do not represent a new technology in and of themselves, but the manner in which they would operate without causing interference to the primary signal introduces a huge technological challenge.

The FCC does not allow program origination from FM boosters at the moment, but such a change is not unthinkable. If the commission were to allow program origination from FM boosters, then that would open up a whole new world of hyperlocal geographic marketing channels within a station's primary service area. Whether or not the industry would take advantage of such opportunities remains to be seen. I do not view this concept as financially viable for most operators, but am a fan of the engineering innovations borne out of the idea.

RW: *Are you optimistic about radio's future? Why or why not?*

Wesolowski: I am particularly optimistic for the future of operators who have no debt load, but still have quite a bit of confidence in those companies which have overextended themselves with untenable financial obligations. In a business sense, broadcast radio is high-margin industry with a sky-high barrier to entry, enjoying billions upon billions of capable, already deployed receivers. Digital media competitors, by contrast, operate in a somewhat low (or negative, on average) margin environment with no barrier to entry, suffering from ever-changing content delivery pipelines. The financial case alone points to broadcast radio being resilient for years to come.

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TRENDS TO WATCH

A recent study by the AAA Foundation for Traffic Safety found that use of some vehicle infotainment systems can lead to distracted driving. How are such concerns being addressed?

"We are moving towards natural language integration, the same technology used in smart speakers," Crumb said. "This type of voice interface is already available in some premium brands and should be more widely dispersed moving forward."

Simulators are also being refined with an eye towards safer driving. "The simulators that auto manufacturers now use to test their HMI interfacing rival what are used for pilot training. With these, they can get some hard numbers to determine the distractability factor and build the best interface possible."

The interface design is being evaluated, he said. "On most current designs, there are two display areas, one for speed and traditional dashboard instrumentation, and another for the IVI system. There are also different standards for the two, with more stringent requirements for the instrument display. We are working to determine the best way to simplify things and put all the information on one display."

Crumb made note of two factors that will bring bigger changes to the connected car soon. "The first is connectivity. There's a lot of content and data in the cloud that we can't bring into the automotive environment right now because we're restrained by bandwidth. When 5G is deployed, that limitation will disappear. There will be a lot more content pushing and pulling that can take place.

"The second is content. With autonomous vehicles, distraction concerns disappear. We can envision some possibilities for entertainment, such as movies and sports, but there are other ways to engage with passengers that we haven't fully explored or even thought of yet."

BROADER CONTEXT

At the annual CES convention each January, alliance members gather at a reception to discuss connected car technology. The alliance also produces a track of panels with SAE International called Connect2Car.

"Cars have always participated in a broader context — think traffic or in-car entertainment — but those contexts are growing and changing as the car is becoming increasingly connected," Crumb said.

"Now, instead of just being another hunk of metal in a traffic jam, cars are now becoming roaming sensors feeding information to smart city infrastructure so that traffic jams can be reduced."

The relationship with NAB Pilot is in its early days but Crumb described those conversations with enthusiasm.

"I enjoyed having NAB actively participate in our member reception at CES 2018. I could see this phase culminating during our respective member meetings in April. But the refreshing thing I see in NAB is the desire to 'just build something of value.' Large organizations can confuse talk with action, but I don't see any of that in my conversations so far." He said joint projects may eventually result from that work.

ADOPTION AND AVAILABILITY

From the GENIVI website:

"GENIVI delivers an essential, efficient and cost-saving development approach. This approach, grounded in open source software, has resulted in the rapid deployment of non-competitive IVI and connected car software for today's vehicles.

"In the fall of 2013, BMW's Entry Media and Navigation system rolled off the assembly line and is found in the Mini and 1, 3 and 5 series product lines. Since then, GENIVI technology continues to be adopted worldwide and multiple major automakers have deployed GENIVI technologies including Alfa Romeo, BMW and Mini, Hyundai/Kia, Jaguar Land Rover, Peugeot-Citroën, Renault/Nissan, Suzuki and Volvo Cars.

"Many Tier 1 suppliers and system integrators have also adopted the GENIVI flexible model of software development and delivery leveraging open source software. Some even consider the advantages (speed, reuse, redeployment) as primary reasons why they have made GENIVI solutions their 'lead' products. Suppliers offer automakers worldwide multiple GENIVI products for current and future series production programs."

NAB Promotes Metadata Best Practices

In the eBook "New Directions for HD Radio," we interviewed David Layer, vice president, advanced engineering at the National Association of Broadcasters. These are excerpts; find the book and full interview at radioworld.com/ebooks.

Radio World: *What is the most important next step for the platform or biggest question we should watch for in 2018?*

David Layer: NAB has been raising broadcaster awareness regarding the importance of delivering a quality "metadata" experience (for example, song title and artist, and album artwork for FM broadcasters) to the digital dashboard. As part of this effort we have been working with broadcasters on doing "station audits" to assess how well individual stations look on the dashboard and to offer recommended practices on what should be done. I am hopeful that in 2018 you will see more HD Radio broadcasters deliver the very best experience they can on dashboards, which will improve the listener experience and will better position radio to compete with all of the other audio services becoming available in cars.

David Layer speaks at a GM hackathon in Boston in September.

RW: *Please update readers about the status of tests into the possibility of "all-digital" operation for U.S. radio.*

Layer: For background, currently the FCC only authorizes the broadcast of "hybrid HD Radio" signals, which include both legacy analog as well as digital components. (Note that I am discussing hybrid HD Radio here, not to be confused with "hybrid radio" services like NextRadio that combine over-the-air radio with mobile broadband content.)

Virtually all HD Radio receivers in the marketplace, however, will work not only with these hybrid HD Radio signals but also with a more advanced, all-digital HD Radio signal that offers higher digital throughput and greater robustness, but is not receivable on analog-only radios. Looking to the future when the penetration of HD Radio receivers in the marketplace is higher than it is today and these all-digital services become feasible, NAB has been working with Xperi and broadcasters to test these all-digital signals and develop a technical record which is a necessary prelude to FCC authorization, and in addition to raise awareness among broadcasters and the industry at-large as to the capabilities and benefits of these all-digital services.

For AM, a series of all-digital AM lab and field tests were conducted from 2012 to 2014. In early 2018, NAB plans to do some limited all-digital FM field testing, and we plan to discuss this test program and share some results at the 2018 NAB Show during the Broadcast Engineering and Information Technology Conference.

The NAB recently published a series of best practices for radio operators with the digital dashboard in mind.

NEWS

Community Broadcaster: Smart Audio's Year

The technology offers community stations, along with other radio outlets, a superb opportunity

▶ DIGITALMEDIA

BY ERNESTO AGUILAR

The author is membership program director of the National Federation of Community Broadcasters. NFCB commentaries are featured regularly at www.radioworld.com.

I received many kind words for a recent Radio World commentary on New Year's resolutions for community radio [*radioworld.com*, keyword Aguilar]. Several weeks into 2018, this is the time when everyone is wavering on their respective pledges, be it to those Christmas gym sneakers or that five-year strategic plan. A good jolt to your grand ideas for community media is taking a look at trends, and few are bigger than smart speakers.

Smart audio is all the rage right now, with Motley Fool among those declaring this to be the new gear's breakout year. The hype comes for good reason. Community radio has a superb opportunity to connect with new fans.

BOOMING SALES

A lot of folks in radio have seen in Radio World extensive coverage of smart speakers and their potential with the medium. A quick explanation may be in order for those who need a refresher on what smart audio means.

If you have used Siri or OK Google with your smartphone, you have no doubt been entranced by the coolness of voice search. Smart speakers, which include the Amazon Echo, Apple HomePod, Google Home and others, take it up a notch. These devices are seeing wide adoption for listening to music and talk, to entertain children, and to link smart appliances like your television and lights. And they are revolutionizing media.

Only two years in, smart speakers are seeing a pace of adoption that is far faster than tablets and your smartphone. The holidays saw big sales of Echoes,

Homes and others. Slate noted it was a best-selling gift. A new report, issued in conjunction with the recent International Consumer Electronics Show, offers many insights for those who care about

community media. The study by NPR and Edison Research presents several surprising findings, including the fact that one in six Americans now has a smart speaker.

Other findings, as summed up in a National Federation of Community Broadcasters newsletter in January:

- 90 percent of owners wanted a smart speaker to listen to music
- 77 percent of owners wanted a smart speaker to get news and information
- 70 percent of respondents are consuming more audio due to their smart speakers

Steven Goldstein of Amplifi Media is among those who have noted the latest figures may look cloudy for radio, where AM/FM tune-in is down. However, he points out, radio listening on devices is high.

Community media sometimes tussles a bit to catch up with the tremendous resources that get invested in new technology. In this instance, the fact that smart audio has only emerged in the last two years means it is relatively easy to get in the mix. If this buzzworthy matter was on your New Year's resolution short list, here's a hand in jumping back in.

EDUCATE THE LISTENER

First and foremost, educating listeners is a must. There's a good chance

your audience members may be toying with a smart speaker they might have gotten over the holidays anyway. This is your opportunity to be part of your longtime supporters' experience.

If your community radio station streams its signal, chances are you already have a presence on the Echo, Echo Dot, HomePod and Home. That's because many of these platforms have relationships with services such as TuneIn. TuneIn, in particular, features station streams on its native app as well as through Amazon's speaker family, by far the most popular smart audio brand. For instance then, you can say "Alexa, play [call letters]" or "Alexa, play [call letters] on TuneIn" and get the station of your choice streamed to you.

Once you determine the easiest way to call up your station on smart speakers, your next task is to educate your audience. On-air spots, website tutorials and social media outreach are just a few ways to teach your listeners how to use their devices to find your station.

Beyond educating your area, there's an important conversation to be had about your long-term planning. Do you want to serve content exclusively to smart speakers? For example, Alexa's Flash Briefing has become a hot conduit for news for everything from Reuters to the Skimm. If your station does its own podcasts, how could smart audio be used to amplify them to those beyond your current base? Nick Quah in a NiemanLab piece last month examined the future of podcasting on smarter speakers that may inform your thinking. Could your community radio station feature local news there? Smart audio is so new, the possibilities are limited only by time and people.

It is projected that about 50 percent of search will be done by voice by the year 2020 and that smart speaker adoption will climb as this year progresses. The entry level for these voice activated devices is ridiculously low, at around $30, so it is certain that more and more of your neighbors and listeners will check them out, if for no other reason but curiosity. Don't let your smart audio future end up beside those gym sneakers.

Comment on this or any article. Email radioworld@nbmedia.com.

▶ IN CASE YOU MISSED IT

A sampling of recent headlines delivered to Radio World readers in their free daily NewsBytes e-newsletter. (Click the Subscribe tab at radioworld.com, then Newsletters.)

➤ **FCC Investigating Missile False Alarm**
An incorrect attack warning was sent out in Hawaii, alarming a number of citizens. The FCC, among many others, wanted to know what went wrong.

➤ **CES Keynote: 5G Transition Will Create "Massive" IoT**
The 5G transition is going to be faster than the 4G transition, and it will create a "massive" Internet of Things, enabling new business models and making autonomous vehicles a reality, industry executives predicted during the 5G keynote session.

➤ **Marketron Acquired by Diversis Capital**
The broadcast business and market software developer and services provider has a new owner, taking over from BlackRock Capital, which retains a stake.

➤ **Elvis Duran to Enter Broadcasting Hall of Fame**
The National Association of Broadcasters will induct Duran at the spring convention in Las Vegas.

➤ **World Radio Day Puts Focus on "Radio and Sports"**
Organized by UNESCO, the seventh edition, set for Feb. 13, will promote diversity, gender equality, peace and development through sports coverage.

NEW MEXICO

solution to the problem with the help of the New Mexico Department of Homeland Security and Emergency Management or DHSEM. He calls the result a "true public-private partnership."

CENTRAL ENTRY POINT

"Like many states' EAS systems, the delivery vehicle — the EAS system itself — has worked remarkably well for years. Our problem has been content," he said.

"The creation of Amber Alerts years ago brought the content question with EAS alerts to the fore. Alerting agencies were issuing Amber Alerts with missing information, erroneous information and bypassing the EAS system's norms and protocols. As a result, the early Amber Alerts in New Mexico were not as effective as they should have been."

Langner said part of the problem was the lack of a "central EAS alert message entry point" for message originators.

"There wasn't one, except for calling the State Primary station on the

more and more automated, which can lead to long periods when stations have no staff members in their studios.

"In New Mexico, with the wide open spaces the sparsely populated state provides, an abductor can take a child hundreds of miles in just a few hours, so speedy, complete, accurate and detailed Amber Alerts are essential. The same concern goes for all alerts. I'm talking weather alerts, winter road closings, and coming soon, an event code for Blue Alerts," Langner said.

GATEKEEPER

New Mexico Broadcasters Association President/CEO Paula Maes began the process by holding a number of meetings with law enforcement and other alerting agencies in order to determine the best path and to determine the optimal public serving plan for the future, Langner said. Steve Rooney, chair of the NMBA board
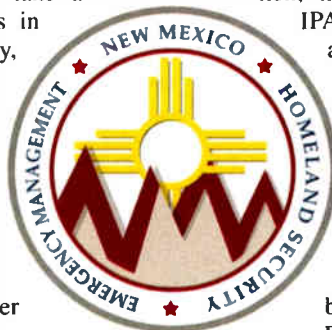
lic serving network of alerting officials.

Brannin was not authorized by his superiors to speak to Radio World about his efforts to improve emergency alerting in the state; but according to a class description, the New Mexico DHSEM IPAWS workshop "increases awareness of the benefits of using IPAWS for effective public warnings, skills to draft appropriate, effective and accessible warning messages and best practices in the effective use of Common Alerting Protocol to reach all members or your communities."

Prior to the gatekeeper model adopted by New Mexico DHSEM, Langner said, each county's emergency manager tended to jealously guard his/her territory and would accept guidance from the state level with varying degrees of interest.

"Now, in order to access the EAS and IPAWS systems, the alerting officials requesting access have to accept training and education in how to best use the system. A number of them were reluctant to participate at first, but Wynn's persistence moved many of them to accept and then to embrace the idea that the more complete they could be educated to effectively craft EAS and IPAWS messages, the more effective they'd be as emergency managers," Langner said.

"CLEAR AND PURPOSEFUL"

There have been a few awkward moments, Langner said, and for a few months Brannin was the only person authorized to launch statewide EAS and IPAWS alerts. Since then other emergency managers have been trained and certified.

"If an agency calls to launch an alert, Wynn or a designated member of his staff will immediately comb the alert so that its language is clear and purposeful for the general public's consumption," Langner said.

Brannin also worked with New Mexico's broadcast stations to strengthen the delivery channels with more robust and reliable dissemination sets of pathways, Langner said.

"One particular problem was delivering EAS alerts to the southeastern corner of New Mexico. The longstanding pathway had been the daisy chain relay of EAS messages originating at KKOB(AM), Albuquerque, the State Primary EAS station, via an Albuquerque TV station and its simulcast satellite station in Roswell, N.M.

"Understandably, the TV stations didn't want to frequently interrupt local programming to carry EAS alerts that may have been important down the daisy chain but that didn't affect those stations' viewers," he said.

Langner found the answer following a generous offer by KKOB(AM) to launch a private audio stream to the PBS TV and NPR radio affiliates in Portales, N.M., KENW television and radio. KENW's radio and TV stations have extensive primary station and translator coverage throughout eastern and southeastern New Mexico, he said, and agreed to carry all relevant EAS alerts.

The state's EAS and IPAWS systems have become far more effective, Langner said.

"By greatly improving the content of EAS alerts, and by equally improving the integrity of the EAS delivery system for state and local emergency messages, the state of New Mexico has solved problems that still beset a number of states," he said. "The success of the New Mexico EAS system is a true public-private partnership with shared responsibilities and willing participation and support by all stakeholders."

Share your own state's story of evolving alerting infrastructure. Email radioworld@nbmedia.com. For information about the New Mexico EAS system, its growth and service, contact Mike Langner by email at mlangner@swcp.com.

> ## Like many states' EAS systems, the delivery vehicle – the EAS system itself – has worked remarkably well for years. Our problem has been content.
>
> ### – Mike Langner

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telephone. This meant that the State Primary station had to decide who was authorized to launch an EAS alert, set up a password system for authentication, record the caller and decide if an actual EAS alert launch was warranted by the caller's message content."

That placed the station in a "gatekeeper" role that could be very uncomfortable at times, he said. Security issues were also a major concern in an age of malevolent hackers and disgruntled employees of public service agencies.

So Langner began lobbying for improved content quality in EAS alert messages and for better public-serving control of who was authorized to request the launch of EAS alerts. In addition, Langner said he recognized the challenges involved as radio stations became

of directors, was instrumental in focusing broadcaster interest and involvement across the state.

However, the biggest positive step, Langner said, was the state Department of Homeland Security and Emergency Management and the New Mexico State Police becoming "gatekeeper" to both the New Mexico EAS and to the New Mexico Integrated Public Alert and Warning System in 2016.

"The state of New Mexico legislature, the New Mexico Broadcasters Association, the DHSEM and the New Mexico State Police, among others, contributed to crafting a set of guidelines for EAS usage by alerting officials, which was adopted and codified into law," he said.

One of the driving forces of legislative efforts to improve the state's EAS system was State Sen. Bill Burt from Alamogordo, owner/manager of a group of radio stations known for dedication to community service, Langner said.

The key to "best practices" in EAS and IPAWS alert content creation is proper education of alerting officials, Langner said. The New Mexico DHSEM tapped Wynn Brannin, DHSEM statewide emergency coordinator, to oversee creation of a coordinated, educated, pub-
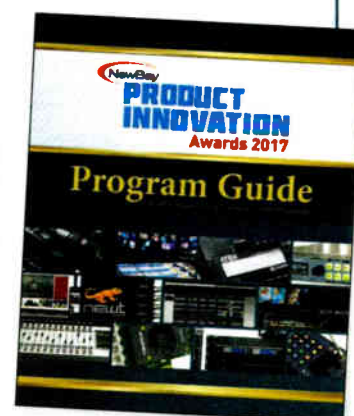
This Is Virtual Radio

Understand and Prepare for Satellite Solar Outages

Also, here's a tip to overcome a potential compatibility issue

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

Twice each year, around the spring and fall equinoxes, there's a period of several days when reception of satellite signals is interrupted briefly. This happens when the Sun lines up directly behind a particular satellite. The result is an increase in solar "noise" that drowns out the relatively weak signal being received from the satellite.

During these outages, which last a few minutes, delivery of live satellite programming or other content is blocked, and you must switch to some alternate means of delivery or utilize programming content that you have on hand and is not dependent on the satellite.

Note the location of the shadow from the feed horn in the accompanying photos: Fig. 1 is about 20 minutes before the outage begins. Fig. 2 is 5 minutes before the outage starts. In Fig. 3, the shadow is just past the center of the dish — the sun is aligned directly behind the satellite that the dish is aimed at — and satellite programming fails. Fig 4 shows the dish 20 minutes after the outage is over.

Share these pictures with your general manager and operations or program directors to help explain the problem and need for solution.

Thanks to New Hampshire Public Radio's Steven Donnell for this informative tutorial. Steve recommends if you are a new operations manager or chief engineer at a station that uses satellite formats, make sure you have an outage plan in place for the next occurrence.

Fig. 1: Twenty minutes before the satellite outage occurs.

Fig. 2: Five minutes before the outage.

Fig. 3: The shadow has just passed the center of the dish.

Fig. 4: Twenty minutes after the outage.

We're always looking for more efficient ways to solve our engineering problems.

In the June 21 Workbench column an important point was overlooked when discussing the use of the Sescom XLR-to-RJ45 adapters.

You may recall the name Excalibur Electronics. The company was best known for the HC-1 Telephone Handi Coupler, the HA-1 Telephone Hybrid Controller and the CDA-1 Composite Distribution Amplifier.
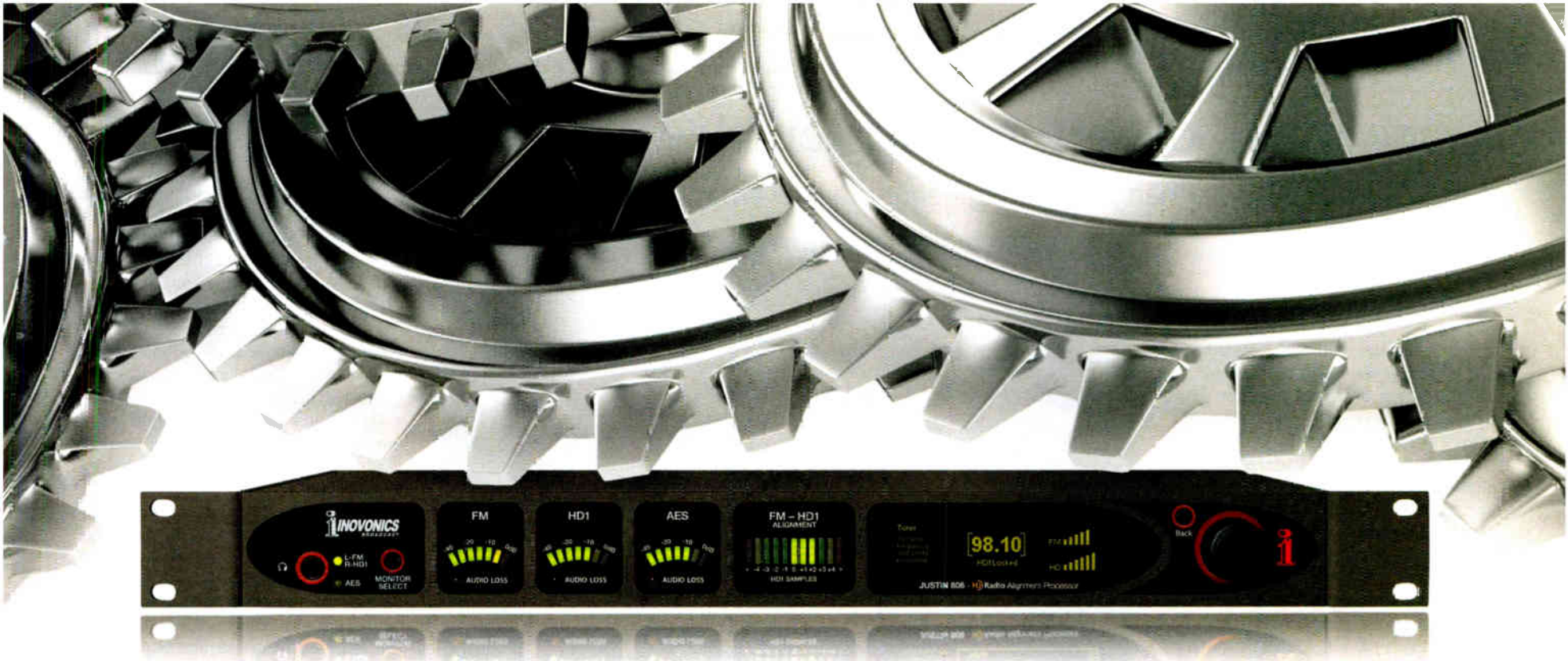
The pinout of the RJ45 is not StudioHub+ compatible. The Sescom adapters will not enable you to *directly* connect a piece of audio gear to, say, an Axia xNode or a WheatNet-IP blade, or anything that uses an RJ45 for audio with the StudioHub+ pinout. As StudioHub+ has become a de-facto wiring standard for many analog and AoIP facilities, this compatibility is important.

This information was provided by William Harrison, owner of Excalibur Electronics.

In addition to pointing this out, he offers a solution. StudioHub+ compatible versions of the adapters do exist and are being sold by Excalibur Electronics.

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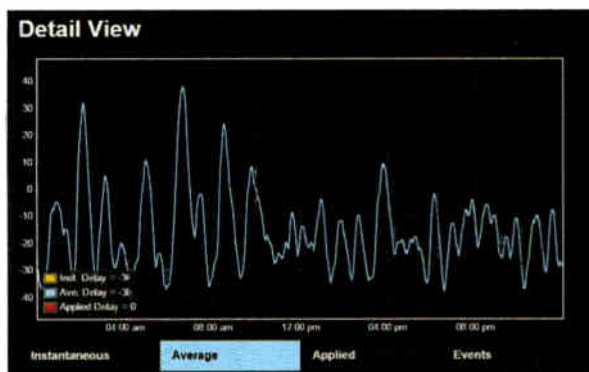
Contact your preferred Inovonics Dealer for more information. Join our TRY-N-BUY program.
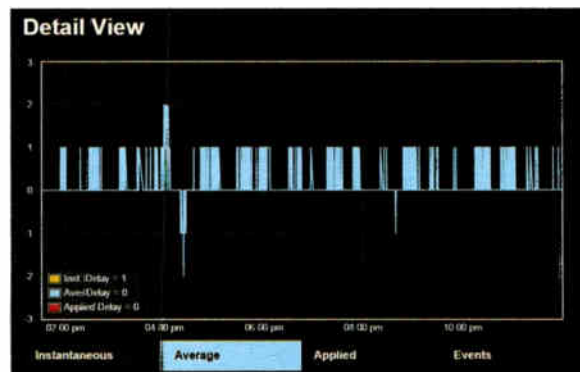
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INOVONICS
BROADCAST

Trace the Evolution of Greater Media's CD Jukebox

This system was more than just an engineering achievement

▶ TECHNOLOGY

BY TOM VERNON

When Philips and Sony introduced the compact disc in 1982, it marked the beginning of a transition for radio from analog vinyl to digital CDs as the primary playback medium.

CDs had many advantages over vinyl, among them smaller size, better sound and more material per disc. But they also had disadvantages, several of which revolved around handling and storage.

Handling a CD with greasy or dirty hands could leave fingerprints on the disc, causing it to skip. Rough handling could scratch the CD's surface, rendering it useless. Not returning a CD to its jewel case could cause it to get dusty, also resulting in erratic playback.

In 1985, Paul Shulins was chief engineer of WBOS, at the time a country-

The display screen for the CD jukebox showed the song playing, what was next and upcoming selections. The row of asterisks indicated amount of time left on the current song. Red and green lettering corresponded to colored pots on the board.

Shulins' original CD jukebox system, circa 1989, as used at WMJX. The same type of hardware was first used at WBOS in 1985.

formatted station in Boston owned by Sconnix. Because there were no commercially-available products to address the CD handling issue, he decided to tackle the problem himself.

"At that time, all our music was on carts. I had been thinking about CD jukeboxes as a solution to the handling issue, and we purchased an Audio-Metrics CDX-1000 to experiment with," said Shulins, who today is vice president and chief technology officer for Burk Technology.

Shulins wrote the code and used a Radio Shack color computer to control the CDX-1000 via its RS-232 port. The jukebox held 100 CDs and had just one play deck. That meant WBOS DJs had

to alternate between songs on cart and the jukebox.

Designing a control interface that could be used by the WBOS DJs was a big part of the project. Bar codes were affixed to the side of the carts, which the talent would scan with a light pen which was connected to the PC via an RS-232 port.

In order to maintain control of the system through the barcode pen, Shulins created a laminated bar code menu, with items such as skip song, rescan and start over. CD selections were also scanned from barcodes on the music log. To keep the interface consistent, both cart decks and the jukebox were started through the console.

In some ways, the project was a proof-of-concept, and it worked quite well.

The next chapter of the CD jukebox evolution began when Shulins joined Greater Media Boston in 1988. He was chief engineer of WMJX and WBCS.

"I pitched the jukebox concept to Smitty [engineering executive Milford Smith], and after discussing the risks vs. benefits, he supported this new venture, and gave it his blessings. At that point, we purchased four CDX 1000s," Shulins said.

By 1988, the early Radio Shack computers were slipping into obsolescence, and IBM PCs were everywhere. Shulins

used one to control his next-generation jukebox system. The four jukeboxes were color-coded, two red and two green. Each jukebox held 100 CDs, with red and green being duplicates. That way it was always possible to segue from CD to CD. The red and green jukeboxes corresponded to red and green pots on the console, and red and green characters on the display screen.

The 1990s brought consolidation to the radio industry, and Greater Media's Boston operation eventually grew to five stations.

"Hard drive storage of music was becoming more common," Shulins said, "but we had concerns about audio quality with bitrate reduced storage, and the cost of storing linear audio for that many stations was too expensive. It was decided to revise and expand the jukebox system, and to use [Broadcast Electronics] AudioVault for storing and airing only commercials."

The Audio-Metrics jukeboxes were replaced with NSM units, which were more compact, had better speed and were built to industrial standards. Shulins designed a TTL circuit to control them, since there was no RS-232 port available.

MORE ROOM REQUIRED

Each station now had four CD jukeboxes, a main red and green, and a backup red and green. With five stations, that amounted to 20 jukeboxes. That many can take up a lot of space, and questions arose as to where and how to house them.

"We decided to put the jukeboxes on display," says Shulins. "We built a room
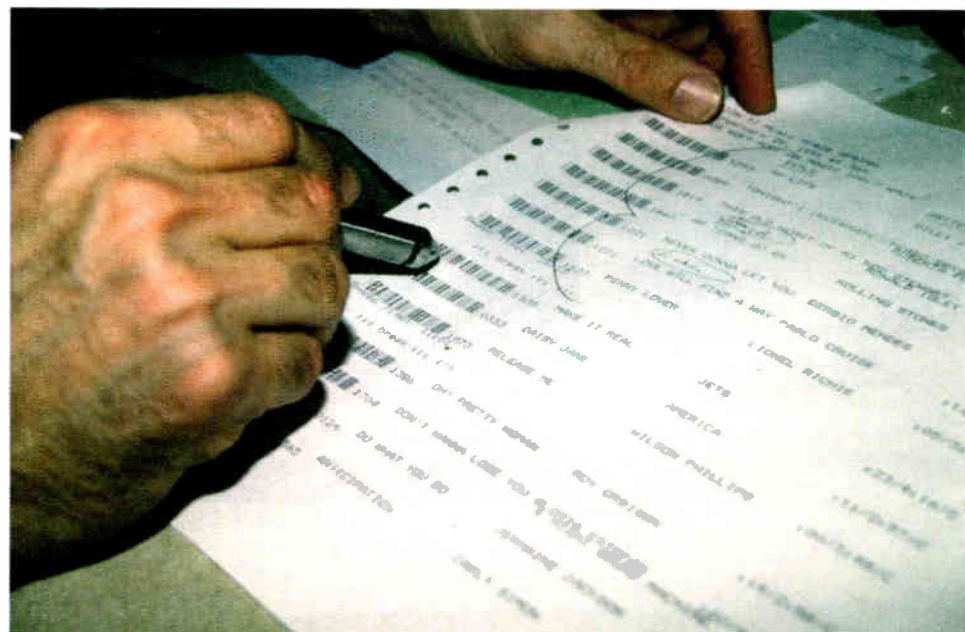
As the CD jukebox system was refined, Shulins got RCS Selector to print out the bar codes for each song right on the music log. The light pen was used to scan in an entire show's worth of music in just a few seconds.

WORKBENCH

The male adaptor is shown in Fig. 5, the female adaptor in Fig. 6.

The adaptors also enable a user to connect an AES input or output to any StudioHub+ compatible device, such as a WheatNet-IP blade or an Axia xNode. They can also connect left channel analog audio, such as you might find on a phone hybrid. And they can plug directly into a microphone so that it can be connected to an RJ45 mic input with a shielded CAT-5 cable.

I like that William has silk-screened

Fig. 5: The male XLR-to-RJ45 adaptor by Excalibur Electronics.

Fig. 6: The female version — note the silk-screened pinout on the adaptor.

the pinout on the connector — no hook-up confusion this way!

The adaptors are available for $8 each and are distributed by Broadcasters General Store (www.bgs.cc).

The Excalibur website is under construction but more information can be obtained by emailing William Harrison at info@excaliburelec.com.

Longtime broadcast engineers may recall the company name. Excalibur Electronics was started decades ago by the late broadcast engineer Bill Ashley and sold to William Harrison in 2009.

The company was best known for

the HC-1 Telephone Handi Coupler, the HA-1 Telephone Hybrid Controller and the CDA-1 Composite Distribution Amplifier. All of these are still in production. Excalibur Electronics is also co-creator of the iRoute Livewire Axia Controller with Fred Gleason of Paravel Systems (www.paravelsystems.com).

Winston Hawkins finds some of the coolest YouTube videos. His latest submission is a collection of tool hacks. How about accurate tape measurements using a pencil and binder clip, or emergency wire strippers using a

pencil sharpener and clothespin?

Watch it online at *https://tinyurl.com/n3uzphb*.

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 and is a past recipient of the SBE's Educator of the Year Award.

JUKEBOX

with a large picture window in the hallway, and had custom furniture built to house them. A video monitor displayed the song currently playing on all five stations."

The next step in the jukebox evolution happened when Shulins got RCS Selector to print out the music logs with the bar code next to the song. That meant there were no more bar code labels on the sides of carts, and all music entries were made with the light pen on the log sheet. Eventually, the system worked with text files, which were exported seamlessly from the music scheduling program. At that point, the bar codes were no longer necessary.

A sixth studio was built so that the control rooms for any of the five stations could be taken down for maintenance, or serve as an emergency backup. That raised the problem of how the new studio could access and control the jukebox system for any of the stations. Shulins designed and built a custom switching matrix which made that possible.

It wasn't just the jukebox technology that was being revised. The way that the CDs were utilized as a storage medium also evolved over time.

"The CDs we received from record companies were not the most efficient way to store music. Most of them had one, or at the most, two hit songs," Shulins said. "The rest of the tracks were not on the station's playlist, and this amounted to a great deal of wasted space. To make the storage more efficient, we subscribed to Hit Discs, which was a service from TM Century 21 in Dallas. They sent out CDs with 18–19 hit songs, most of which were on our playlist."

CD-Recordable technology evolved quickly during the '90s, and Shulins soon built a dubbing station in a roll-around rack. It had a portable mixer, CD deck and CD-R recorder. By recording their own CDs for the jukeboxes, the Greater Media stations ensured that virtually 100 percent of a CD's content was on the playlist.

The system performed well but was not without its problems, Shulins recalls. "On rare occasions, a CD in a jukebox wouldn't cue, usually due to a

A special room was built at Greater Media's Morrissey Blvd. facility in Boston to showcase the CD jukebox array. Custom furniture was made to house the players. The TV in the upper left showed what was playing on any of the five stations.
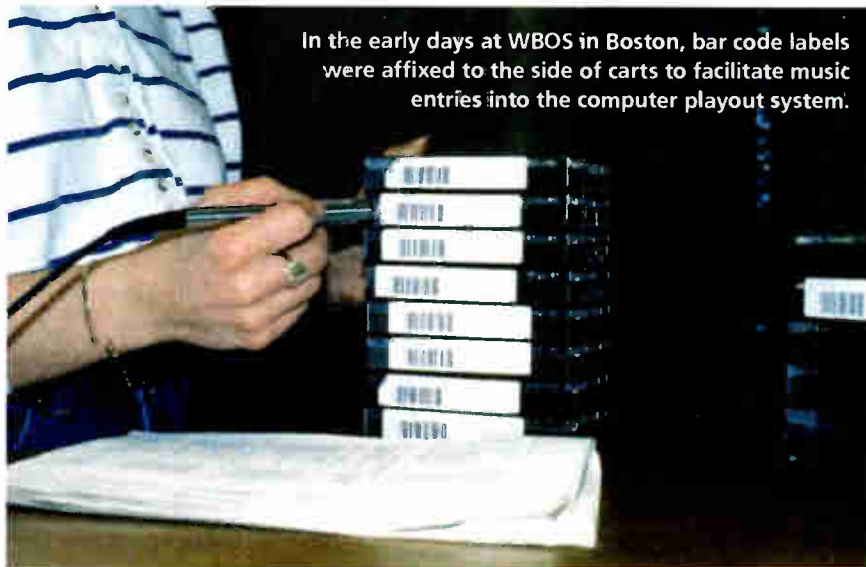
In the early days at WBOS in Boston, bar code labels were affixed to the side of carts to facilitate music entries into the computer playout system.
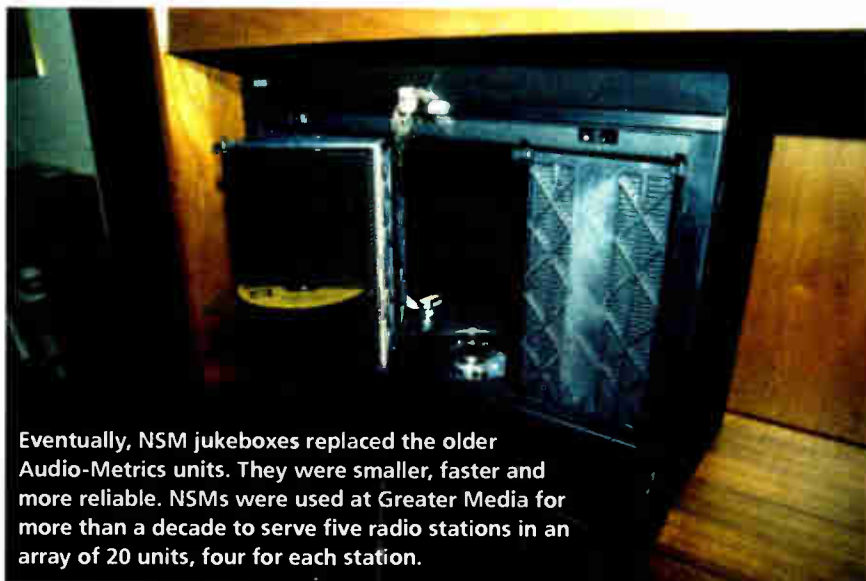
Eventually, NSM jukeboxes replaced the older Audio-Metrics units. They were smaller, faster and more reliable. NSMs were used at Greater Media for more than a decade to serve five radio stations in an array of 20 units, four for each station.

bad copy. It would try for 30 seconds before giving up. During that time, the DJs could do nothing, which was very frustrating."

Overall though, the final evolution of Shulins' jukebox system performed very well, and it remained in service for nearly two decades.

Ultimately, it went beyond an engineering achievement. The "Magic CD Jukebox" was also referenced on air daily in promos, helping to brand the radio station, and the light pen beep heard as the music was being loaded was part of the imaging.

Share your memories of gear that made up daily life in radio. Email radioworld@nbmedia.com.

Tom Vernon wrote about the Hallicrafters SX-42 in the Dec. 6 issue.

Build up your revenue streams with a mix of media — tap tangential, non-traditional revenue sources like search engine marketing, video or website creation.

Pixabay/Gerd Altmann

▶ **COMMENTARY**

Increase Radio Revenue With Mixed Media

Non-traditional revenue opportunities can help keep you in the black

BY CLIFF ROBBINS

Radio client ad dollars continue to flow to digital media.

MarketingCharts.com says radio advertising is expected to increase marginally from $18.2 billion to $19.1 billion by 2021 (*https://tinyurl.com/yc973qvf*). In the same time period, online advertising is forecasted to grow by 9.9 percent every year, to $116 billion.

Part of the reason for online advertising's growth is that radio drives online search. In a study done over the summer of 2017 (*https://tinyurl.com/ya589aaj*), researchers found that radio drove an average 29 percent lift in Google searches among those categories advertised a mere minute or two ago. And those searches result in additional ads viewed and clicked online.

So how do you maintain or even increase revenue, in light of this? I suggest exploring non-traditional revenue sources in the digital realm.

Let's look at some revenue streams you can add to your portfolio and offer to clients, getting your salespeople working again. These ideas may seem difficult to execute at first, but with a bit of determination and research, you can successfully add to your radio station's revenue.

SEARCH ENGINE MARKETING

Search engine marketing utilizes Google AdWords to advertise your clients to specific markets based on keywords, geography and demographics.

You can assist your radio ads in driving calls to your client or traffic to their website, as well as keeping them "top of mind, top of search." The ability to target coincides with your local clients' desires, as you can ensure the ads appear to only local people.

AdWords starts with the searcher "Googling" for something. Then, Google kicks into high gear with its algorithm, trying to match that query with keywords in the AdWords advertiser keyword pool. Since there's only room for four AdWords advertisements at the top of search results and two at the bottom, the algorithm chooses up to six ads to display.

Your salespeople or account representatives will help clients choose appropriate keywords and create ads linking to their website or phone number.

WEBSITE CREATION

There are plenty of businesses out there that still don't have a website. These days, creating basic websites with a logo and contact information is a cinch, but can be a great source of revenue from those clients who just need to be found online.

WordPress is the most common website content management system in the world. This CMS has many free themes and tutorials available to help you learn how to build a simple one to five page website.

Building websites takes some practice, and the most efficient way to do that is by having clients pay you to do it. If a client needs a simple WordPress landing page with their address, phone number and list of services, it's time to take a test drive and prove you can do it.

RADIO CAN MORPH INTO VIDEO ADS

One of the biggest areas for growth in advertising is in online videos. In fact, by 2021 video is forecasted to be the largest share of online advertising spending. It's time to get in on the action and build an additional revenue stream for your station.

With a rudimentary understanding of video creation and a free tool, like Windows Movie Maker, you can begin making simple, 30-second videos for your client.

> **One of the biggest** areas for growth in advertising is in online videos.

You already have the audio in place from their radio ads — now you need to find visuals to match. These can be still images or videos. These videos can then be used on the client's website, or as part of a social media ad program, YouTube ad program or run on other local media outlets or websites.

Options include:

- Purchasing stock images or videos online
- Finding free (Creative Commons Zero) images or videos online
- Taking or having a professional take photos or videos of the client's business or products

Another option is partnering with a video production company.

Radio continues to be a strong option for advertisers, but the industry can only strengthen its hand by offering multimedia options.

Cliff Robbins, co-founder of website design and hosting company Trustdyx, is a graduate of the computer science program at Regis University in Denver. He has focused his post-U.S. Marine Corps career in technology sector, including software development and digital strategy.

Solid Precision, Raw Metal to Heavy Metal

(or pop, jazz, classical hip-hop, AOR, CHR, top 40, oldies, talk, etc)
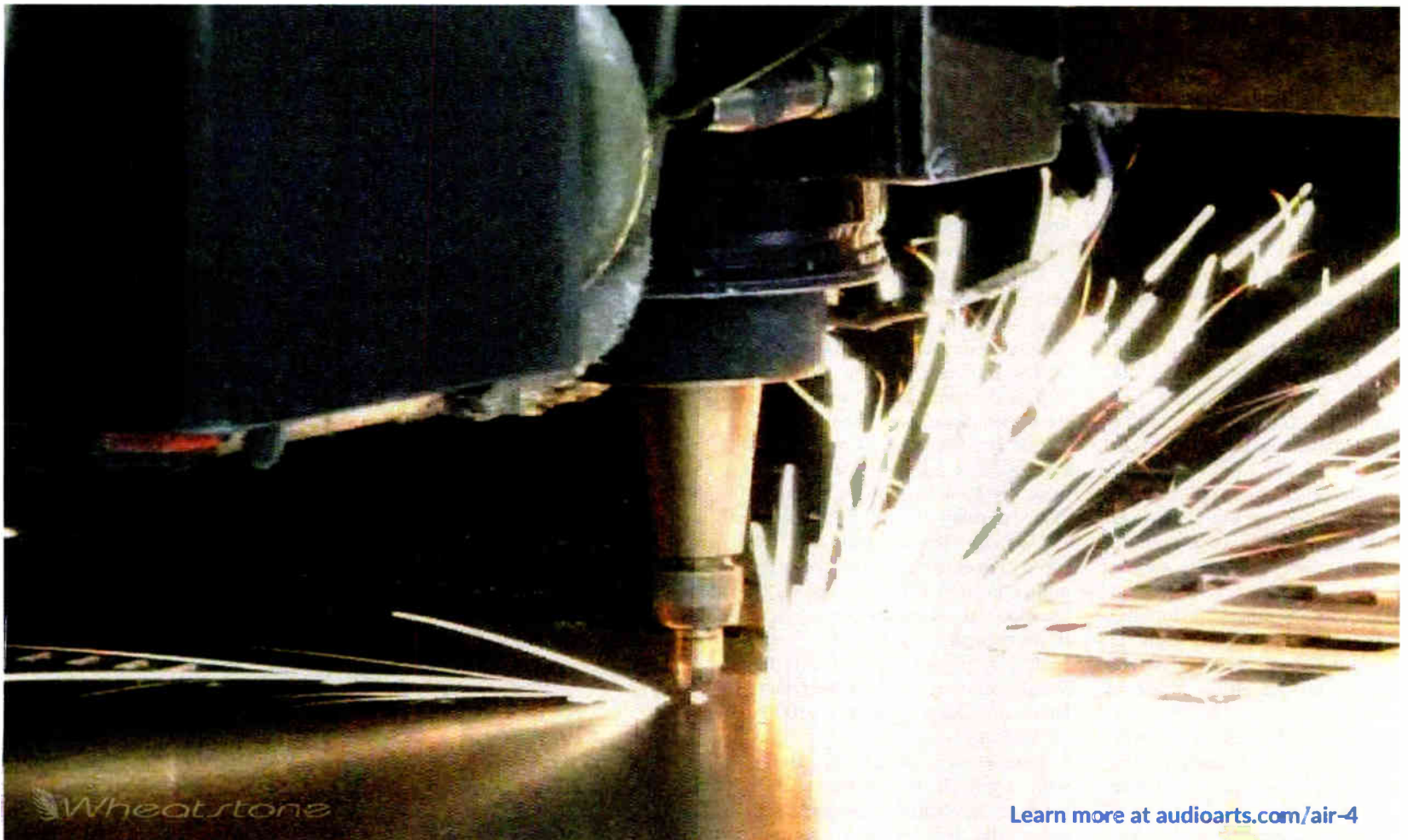
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GM JOURNAL

Chatbot + Text Messaging = Instant Connection

This connection builds a solid base of loyal listeners for your station

PROMO
POWER

Mark Lapidus

I recently came across a blog post that explained, step by step, how a young man could use his phone to speak with his girlfriend. Doing so, the author explained, might help build a better relationship. At first, I thought this was a joke article written by The Onion. It wasn't.

A quick Google search revealed that there are actually lots of articles and advice on this specific "challenge" and that, apparently, learning how to utilize a phone to actually speak with a person, is a thing.

Upon reflection, I, too, talk less on the phone than I used to. I rarely answer either my home or office phone because anyone who knows me has my mobile number.

Speaking to many others and looking at declining stats about using a phone for a voice call, I suppose it's not all that surprising that talking on the phone is *so* last century.

Is this reality reflected in the way you interact with your listeners? Let's explore how we might provide better communication options.

Facebook Messenger reaches over 1.2 billion people. It's a safe bet that a substantial number of your listeners leave it open all day and are constantly using it. What does that mean to you? It's called opportunity.

CHAT ABOUT A BOT

Consider building a customized "chatbot" for Facebook Messenger that your listeners can use to ask pretty much anything they want of your station, 24/7. Move fast to offer this service, featuring entertainment information and it's possible that you just might capture the "first-in" advantage in your market and get locals used to coming to you for details about lifestyle entertainment information help from concerts to

movies, to events.

Begin building your chatbot by coming up with at least a hundred questions that you either receive now — or believe you will receive in the near future — and then determine how you're going to serve the answers. Will you just answer the question, or send them to a website?

Decide if you want your bot to have a name and a personality. Should your bot have attitude? Will it tell jokes? Is it male, female or alien?

Discussing these topics will help you get ready before you start the exploratory work of finding the right bot designer. Fees vary considerably.

Yes, you can build your first chatbot for free. Just search for "free chatbot" on the web and you'll see a list of options.

For larger stations, or groups who can invest in enterprise level development, for $50k to $100k you should be able to develop a highly customized bot.

Consider having your bot sponsored to generate revenue. Combine the online mention with on-air plugs: "Got questions about entertainment options in Sacramento? Try our new Facebook Chat Bot, sponsored by Citizen's Bank. We also running a contest for a name…. Name our chatbot and win $200 from the Citizens Bank vault."

Chatbots are increasingly designed with artificial intelligence, so they learn as they gather more information about what users want to know. Also determine if you want your Facebook Messenger chatbot to work on your website, because some bots can be configured to do so.
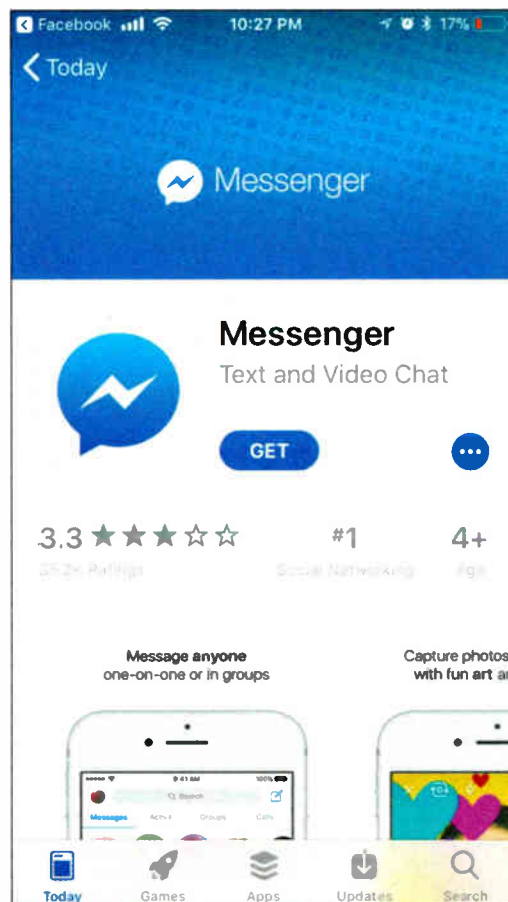
A station chatbot on Facebook Messenger can be your next personality.

GO OLD(ER) SCHOOL

A chatbot is one way to go beyond the busy signal or unanswered phone. Another option, I've mentioned in pre-

vious articles, but because it's rarely adopted, I keep plugging this simple solution: text messaging.

Just a few days ago, my local rock station was giving tickets away to a hot, sold-out concert. The station was, as usual, asking for caller number nine. This approach, which probably started in 1942, severely limits participation. One person gets through, while hundreds — or even thousands — of other excited contestants get a busy signal, which is horrible customer service.

Ideally, stations should want to create the largest possible contest universe (as many players as possible). I'm a huge fan of texting (SMS) because it's so easy for listeners, plus all the enterprise systems I've used allow an auto-response. This auto-response gives you a chance to send a custom message, thanking them for entering and then promoting the next time to listen for tickets, or anything else you want.

If you want to add another way to enter, you can also use Twitter, What's App or Facebook Messenger. I don't think explaining how to do that is worth the on-air time, but at least these platforms permit mass participation and that's the name of the game.

The more listeners you contact regularly, the greater the likelihood you can build connections, authority and trust.

The author is president of Lapidus Media. He can be reached at marklapidus1@gmail.com.

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Does President's Newsworthiness Trump Conventional Wisdom?

Morning shows normally steer clear of politics; should they if he is a pop culture icon?

21ST CENTURY PD
by Dave Beasing

Politics has long been considered a "third rail" of morning radio, a topic so divisive that hosts have rarely dared to touch it in conversation. Recently, though, President Donald Trump has created quite a dilemma.

Love him or hate him (and there doesn't seem to be much in-between), there's never been a political figure who so consistently dominates everyday conversation. Outside the news/talk format, how are music radio's "fun" morning shows — the ones supposedly about pop culture — dealing with the era of Trump?

"We ignore, ignore, ignore," says Woody Fife, namesake host of "The Woody Show" on Alt 98-7 KYSR(FM) in Los Angeles, syndicated by Premiere Networks. "It's not about avoiding Trump specifically as much as it is about politics in general. I'm over it, burned out."

Woody thinks he's not alone in that sentiment. "I don't waste any time with things like 'Look how small his hands are'" or 'He drinks water funny, with two hands.' Yawn."

Personality coach Steve Reynolds has a similar philosophy. "We have to keep in mind why listeners use us: To have fun and take them away from the stress of the world. For many, Trump = Stress."

Furthermore, Reynolds warns morning shows that taking sides is dangerous.

"I do not want to hear what [morning hosts] think of Trump or his tweets. No opinions. If they think he's a moron, an

Picture courtesy of Woody Fife, host of Premiere Networks' "The Woody Show."

Steve Reynolds, president of Reynolds Group Radio. "We are very tribal as a country, so the moment you reveal that you might be from a different tribe, that's polarizing."

idiot, adore him, think he's a breath of fresh air, whatever… no opinions on him or what he's doing. We are very tribal as a country, so the moment you reveal that you might be from a different tribe, that's polarizing. The part of the audience that disagrees with you will run."

As any program director who answers her telephone can tell you, the president's fans can be vocal. "There's no way to comment on the president without alienating the extreme elements," says Dave Rickards of "Dave, Shelly and Chain-

Dave Rickards of KFMB(FM)'s "Dave, Shelly and Chainsaw."

saw" on KFMB(FM) in San Diego, Calif.

Asked if he cares about alienating some listeners, Rickards says. "I absolutely care, but I believe the majority of people are more tolerant and open-minded. They fall somewhere in the middle, between the extremes."

Emmis President of Programming Rick Cummings.

At Emmis Communications' stations, President of Programming Rick Cummings hasn't asked talent to avoid discussing Trump completely, but how much they do so depends on the audience and the talent.

"The ratings and feedback seem to indicate that when Trump says something outrageous and Ebro comes on Hot 97"[WQHT(FM) in New York] and suggests he should 'Shut your bitch ass up,' most of his listeners are good with that. On the other hand, we don't touch it much if at all on our mainstream AC station [B105.7 WXYB in Indianapolis] or on a station like KSHE [classic rock] in St. Louis."

Cummings says those stations are primarily used for "at work" listening and are "more of a refuge from that kind of noise."

If morning shows do talk about President Trump, Reynolds recommends finding a unique approach.

For example, at Power 106 in Los Angeles, "We made a Trump piñata and invited listeners to come take a whack at it."

The morning team on KLBJ(AM) Austin has come up with one of Cummings' favorite bits, dubbed "Trump Tweets." Hosts Todd and Don read three outrageous Trump tweets. "The caller guesses which one of the three is made up," said Cummings, "but all three usually sound like they could be [genuine]."

Back in 2016, during the presidential primaries, Woody sent his producer "Sea Bass" to fit in with Trump

Celebrity impersonator Eric Harthen.

fans outside a Republican debate at the Reagan Library. To this day, local TV reporters may not have realized his true identity. They included him in their coverage, dressed in a suit and tie, saying things like, "I don't mean to be disparaging, but Donald Trump's supporters look like me, and everyone else [pointing at anti-Trump demonstrators] looks like that."

For morning shows that believe Trump is more topical than toxic, impressionist Eric Harthen has been, as he puts it, "bigly, yuuugely busy." Unless directed to, Harthen doesn't dwell on divisive policy issues. Instead, he derives laughs from Trump's "boastfulness, obsessiveness, narcissism, dismissiveness and 'over-exaggeration' of facts."

Harthen says almost everyone can laugh at that, even someone who voted for Trump and would again. "I think my conservative show hosts have just as good a time with it. In some cases, they laugh harder than the liberal hosts."

Harthen's take on Trump could be compared to insult comic acts like that of the late Don Rickles. "I think Trump is funniest when he's making up those nicknames for people, so some of my call-in bits sound like a roast of other people in the news or of the morning show cast."

Political jokes don't appear to have hurt late-night TV talk show ratings. In fact, some analysts credit Stephen Colbert's satirical criticism of Trump as having helped him surge past Jimmy Fallon.

Of course, the network TV guys have expensive comedy writers, but who needs them? Trump's original quotes are usually enough, says Rickards.

"We play lots of [Trump's] sound bites during the news. More often than not, I find myself laughing. For me, that's entertainment."

After 9 1/2 years programming L.A.'s "100.3 The Sound" and 12 years consulting Jacobs Media client stations, Dave Beasing is about to break ground on studios for his on-demand audio startup. Follow @DaveBeasing on Twitter.

From L.A. to Belgium in an Instant

Keeping it cheap and simple, native Belgian
does visual radio from Southern California

▶VISUALRADIO

BY PETER VERHOEVEN

LOS ANGELES — Don't get me wrong — this was visual radio on a budget. But it got the job done.

I'm a Belgian radio host/producer living in Los Angeles and I hosted my weekly live radio show "#PeterQSA" out of L.A. for listeners in Belgium. The shows were broadcast by Belgian's most popular commercial radio station Qmusic and on their national digital TV channel until the end of 2017. I'm now doing a morning show for Qmusic's sister station, "Joe," but the visual radio lessons I learned are relevant for anyone in radio — maybe even me and my future endeavors.

I've been working in radio since 1987, Q and I have been partners for 17 years now. For the first 14 years Belgium was my arena, but in 2014 I decided to move to Los Angeles and do my shows from out there. It was a move that earned me, surprisingly, a lot of respect in the national radio community, not only because doing a weekly live broadcast from abroad was — and still is — unheard of in Belgian radio, but mainly because at the same time it was also a TV show.

BANDWAGON

A few years ago Qmusic jumped on the visual radio bandwagon and started their own TV channel, not only giving viewers a 24/7 peek backstage into their studios, but also playing music clips and airing special concerts like the Qube, where artists are playing for a select crowd of fans. I realized that for my broadcast out of L.A. I could not simply show fans in Belgium a "Live From L.A." billboard on their TV screen. At least I had to show them some kind of live footage from the studio.

Because I was personally paying for everything, this made the investment in studio equipment exponentially more complicated and more expensive. It also forced me to be more creative budget-wise. Moving to a different country on itself, which means securing a work visa, renting an apartment, buying furniture and getting everything, could easily drain one's funds. On top of that I had to come up with a concept to glue radio and TV together in a way that both could be operated at the same time by me.

The heart of my radio studio is a 12-fader Studer 1500 digital mixing board that routes all of the audio. With today's AoIP mixing boards and future-proof equipment, my small setup might be considered kind of old school by some. For the show I used the 1500 mixing board mostly for mobile purposes, but for me it fit my limited budget needs perfectly and it still does the job without any hassle. The Nano S-Core of the Studer handles all the audio inputs and outputs: three Shure SM7 mics; audio from radio automation software, jingles and music clips; Skype; a telephone hybrid and a multi-input switchable device for all other external audio.

To play music and jingles I use OmniPlayer, a Dutch playout software package for radio. The choice for OmniPlayer was a well-thought-out one because the program feels intuitive and user friendly, yet it is strong in architecture. It is not cluttered with technical settings and keeps the necessary parameters at your fingertips. The GUI is a dream to work with, smooth and fast, but extremely stable. The people of M&I Broadcast Services, the developers and distributors of OmniPlayer in Europe, installed the working software package remotely from The Netherlands on my computer in L.A. in less than two hours. I've been overjoyed with it.

On the video side the central nervous system of my video studio is a Blackmagic Design ATEM 2 M/E Production Studio 4K camera switcher that has taken in all the video sources and five camera feeds. I operated it manually during the show by myself. I'm stubborn in that way. I often made things more complicated than they should be by having two, sometimes three video sources active onscreen at the same time. I believe it made for a better viewer experience.

Let's say for example, when I was about to do a Skype conversation, I'd create some anticipation onscreen by showing multiple video sources on-air at the same time just before the interview: a music clip playing, a Skype window with the guest and my own radio studio, so viewers could see what was coming up. To utilize these types of scenes with multiple video sources quickly, several templates were created in a program called JustMacros. Using those scripts JustMacros can operate the ATEM camera switcher remotely. With

the help of an X-keys XK-24 24-button keypad I had 24 templates or scenes at my fingertips.

To play music clips I used Serato Video, a software mostly used by DJs in clubs and at festivals. I'm aware that there are other solutions to play music clips in a visual radio environment, but for me Serato Video was the most cost-effective and simplest way. Serato is superfast in handling and it enables users to pin multiple cue points on a video file so they can be accessed quickly.

"LOCAL" CALLS

Hosting a show in L.A. for listeners in Belgium is one thing, to get the audio and video signal in real time over the Atlantic in a cost-effective way without spending thousands of dollars and with minimal delay is an entirely different story.
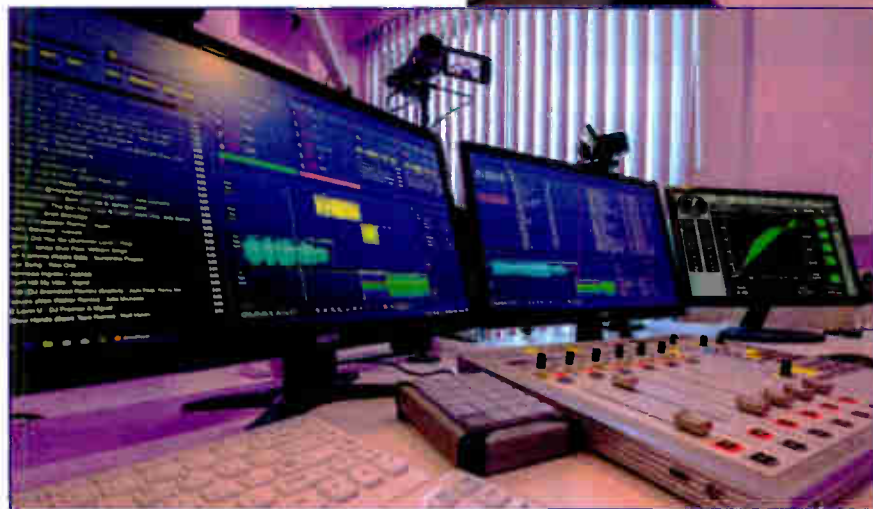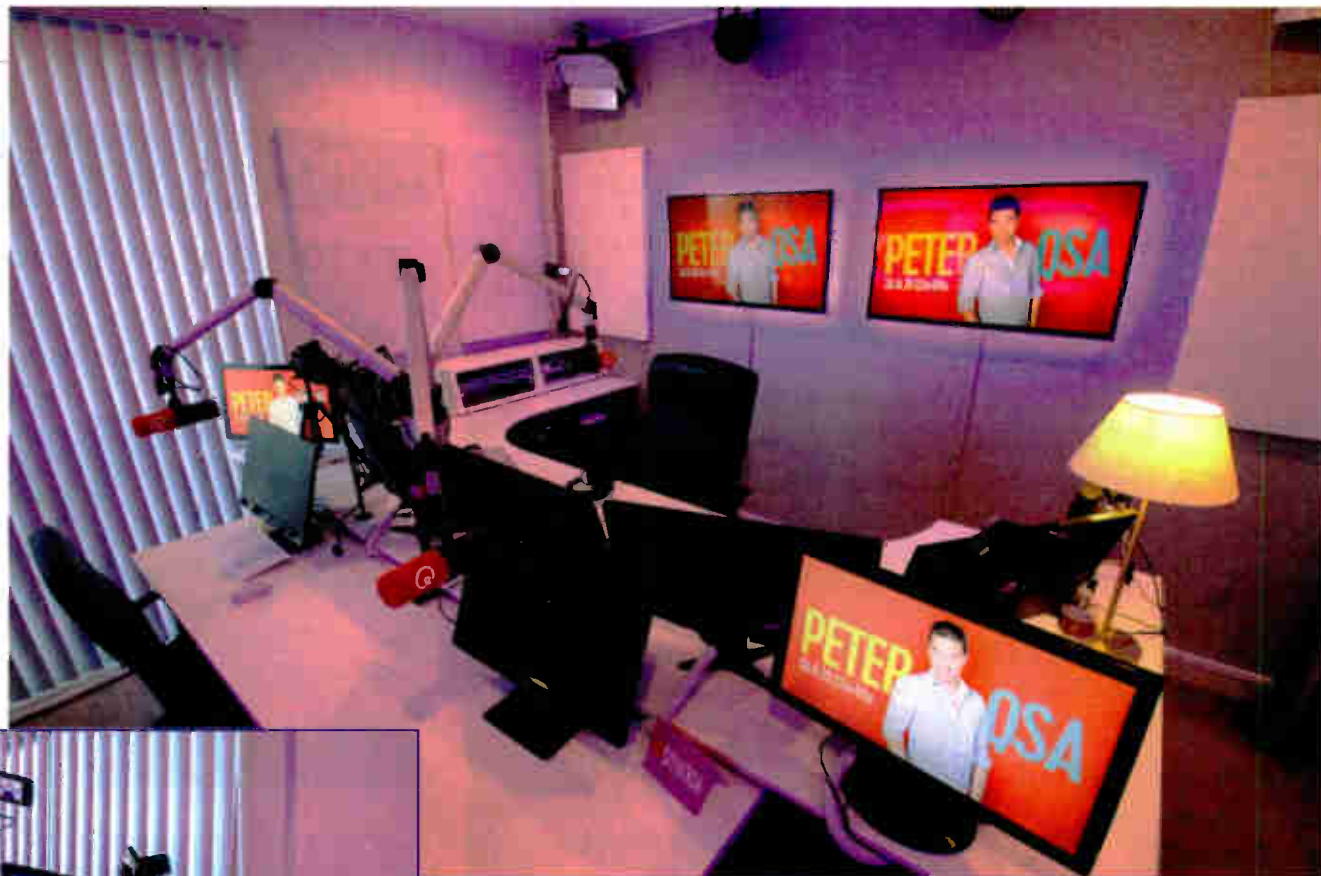
The center of the action: Studer 1500 mixer, OmniPlayer software, X-Keys XK-24 keypad for triggering video templates.

The studio

The format had to be 1080i/50 Hz for European television standards and also the audio had to be good enough quality to broadcast. I ended up with a WMT SL-25 from Mobile Viewpoint, a one-unit live encoder that can send H.264 HD video and AAC audio at 256 kbps across the globe with a delay of 2 seconds over the public internet. I fed the SL-25 video with the embedded main audio signal over an HD-SDI connection. I received return audio from

the studio in Belgium with a 0.5-second delay so I could listen to the cue to start my show. I also used an IP audio encoder as a backup to transfer full quality audio in .WAV format to Belgium in case the WMT connection breaks down.

The idea of doing a live show from 6,000 miles away frightened some of my colleagues. They argued that it would isolate me from listeners' interactions. However it has turned out that

VISUAL RADIO

it's the other way around.

From my studio in L.A. I have more ways to communicate with fans than in the main studio in Belgium. Via a VPN connection I was tapped into the telephone network of Qmusic in Belgium so I could literally make "local" calls out

dow full screen on a second extended desktop of my computer and sent it to the camera switcher. People watching the show could end up together with fans relaxing in Central Park in New York, in the streets of Lisbon, Portugal, next to someone jogging or lying in the sun on a beach in Brazil. I loved making the show as international as possible and giving it a "global" feel.
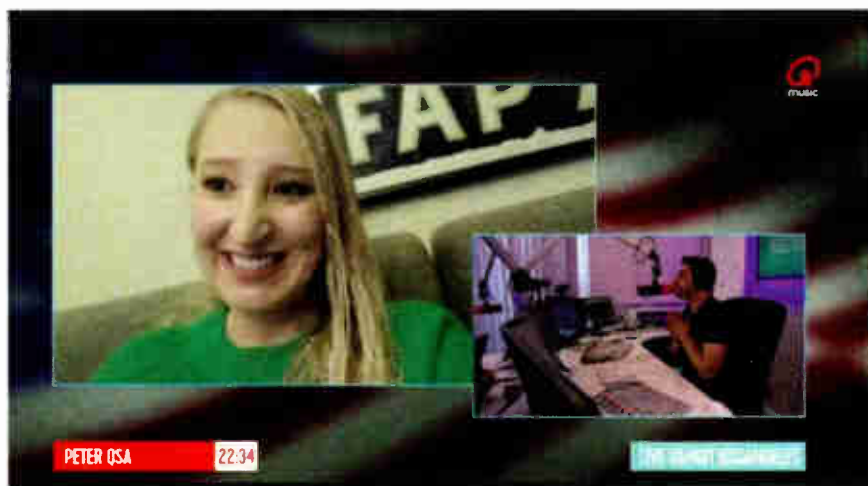
Skype at work on the finished product — airing in Belgium.

The Blackmagic Design ATEM camera controller tops the rack equipment.

of L.A. to listeners in Belgium. I also used Facetime, Whatsapp and Facebook Messenger to talk to people on the air and I encouraged them to do video chats showing me their environments on the air. With today's communications technology this couldn't have been any easier: I just put a Skype video chat win-

Though "#PeterQSA" was put on hold and I switched to a morning show for my employer, I still make use of the studio's video tools on occasion.

What I learned however, is that hosting a show with music, interactions with listeners, playing video music clips and doing the camera switching at the same time can feel like driving two cars at the same time … in rush hour traffic. It was very challenging at times, because I was wearing all the hats at once, from producer to on-air host, to playlist creator, to camera switcher and technical assistant. After a show I'd be generally exhausted, but I feel that if you're not worn out afterward, that if you haven't tried to push the boundaries out of love for the medium, you didn't give it your all.

▶ FROM THE **PROS**

THE SOFT SIDE OF WESTWOOD ONE

What are some radio program pros using in their everyday production duties? Westwood One lets us know what some of its producers use.

I use Avid's Pro-Tools Version 12.7, I also have the Waves Gold Bundle, which I use for processing image production. They allow me to smoothly and seamlessly produce imaging for our numerous 24/7 music formats.

*— Scot Kirk, VP Production,
Music Formats/Snows/
NBC Sports Radio, Westwood One*

I use Adobe Audition because it's stable and the industry standard; Q-Go-Live for its best in class remote app; Luci live for its Comrex Access compatibility; BSI skimmers, the best in class multichannel audio recorder; CentOS operating system for its stability; WireReady is a great company that does custom software automation and services for us with great support; Telos VX Producer because it can be tailored to broadcast; and Windows 10 LTSB because there is no bloatware Windows 10 install.

*— Zachary Akey, Director, Broadcast
Engineering and IT, Westwood One*

I've been using Adobe Audition to record, edit, mix and master radio productions ever since it was called Cool Edit back in 2000. Coupled with Apple's Logic, I'm able to handle whatever radio production that is sent my way.

Now that we are pumping out podcasts day after day, I use these

products to produce all of our original content. I also use an Apogee Element 24 as my audio interface. For the price, you can't beat the quality, and with the new Thunderbolt connection, it's as fast as I need to go when it comes to loading up sessions and editing fast. Great quality for sure! My main computer is a Macbook Pro, and this set up allows me for on the go production as well.

*— Joey Salvia, Producer, "A Better Life with Sanjay Gupta,"
"ACE Rewind," "Nash News Now," Real Country Network Production,
Westwood One Podcasts, Cumulus/Westwood One*

I've been using Avid Pro Tools and Apple Logic Pro since 1996 for music, imaging and video post work. Pro Tools is ubiquitous in the audio industry because of its smooth workflow and project portability. Logic is great for music creation and mixing. I use plug-in processors from Waves, iZotope and Steven Slate Digital as my main tools for getting the sounds I want to achieve.

*— Barry Young, Producer/Composer/
Engineer, TM Studios, Westwood One*

Let us know what you use in your daily radio tasks. Email *radioworld@
nbmedia.com*.

Broadcast Engineering Software
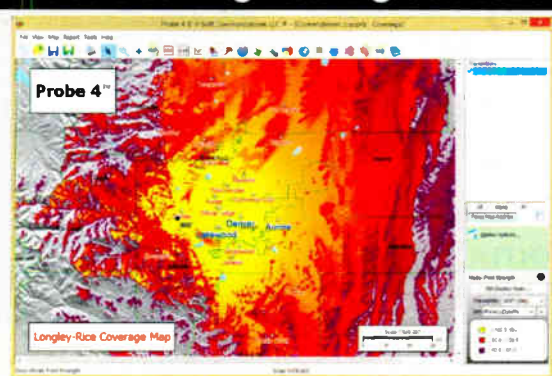
ACOUSTICS

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.

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 drastically slashed or make offer. 315-287-1753 or 315-528-6040

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 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.

MUSIC LIBRARY

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.

Dealing With the Multipath Phenomenon

Here's a suggestion for a workaround that reduces the annoyance

▶COMMENTARY

BY JEFF KEITH

The author is senior product design engineer for audio processing for Wheatstone.

Thanks to Glynn Walden for his questions in last month's Radio World Reader's Forum (Jan. 3 issue) regarding KSDS' multipath findings using the multipath limiter in the AirAura X3 audio processor.

As background, Glynn responded to KSDS engineer Scottie Rice's claim in a Radio World User Report that he was able to reduce the effects of multipath by using the processor's Multipath Limiter, a Wheatstone algorithm that manages L–R modulation under tightly defined, program-dependent conditions.

Glynn's first question asked how modifying the L-minus-R could have such a profound effect on reception given the multipath reduction algorithms in *radios* today.

It's important to remember that, technically, multipath is a physical phenomenon where reflecting objects, such as buildings and mountains, cause a receiver to "see" a station's signal from more than one direction.

The only *real* cure for multipath? Remove the reflecting objects. (Got a bulldozer?)

One of the reasons multipath is so annoying on stereo receivers is that many aggressively blend to mono during multipath, creating large fluctuations in volume as the stereo sound field collapses. The wider the stereo image, the more obvious the blending, and that's why "stereo enhancement" earned the reputation of *creating* multipath.

But stereo enhancement doesn't create multipath; it just makes it seem worse because blending then has to squash down a much bigger stereo sound field.
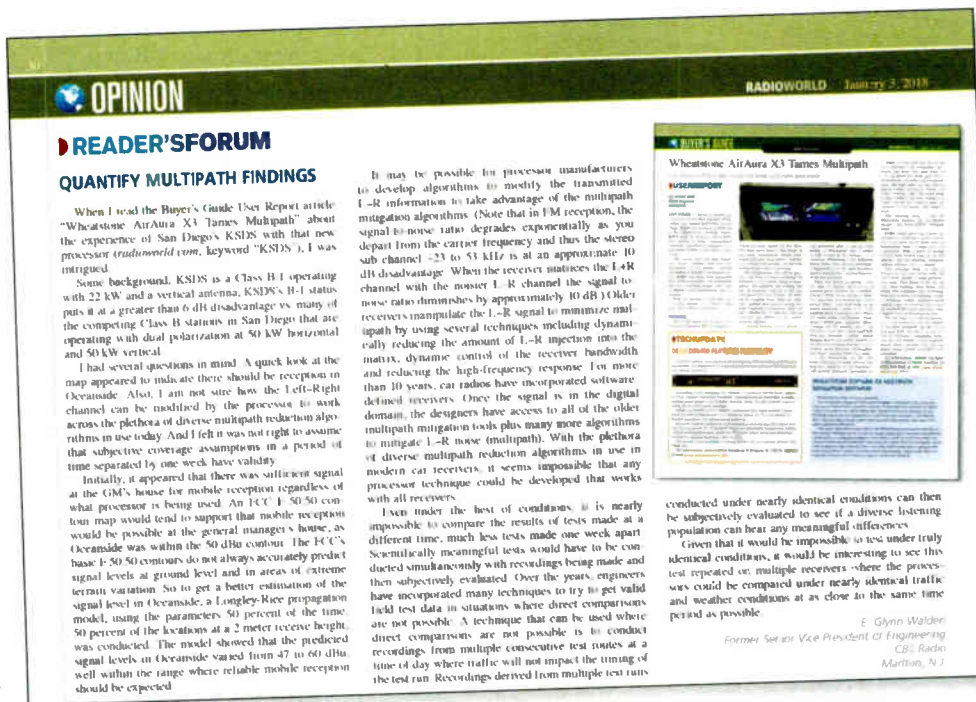
Transmitting in mono would remove the stereo sound field collapse due to blending, leaving just the noise and distortion effects. Stations that transmit in mono get two benefits, then: no stereo pilot means that most receivers aren't *looking* at the L–R subcarrier for audio; and there's no blend to mono, so volume fluctuations due to multipath are absent.

MULTIPATH LIMITER

But what if you could transmit in stereo and still get *some* of the benefits of transmitting in mono? That's where Wheatstone's Multipath Limiter comes into play.

What our Multipath Limiter does is reduce the magnitude of volume fluctuations due to multipath-induced blending by managing a program content's L+R/L–R ratio under very specifically controlled conditions.

By intelligently allowing only enough stereo information to fool the ear into believing it's a full stereo signal, the audibility of blending is reduced. The

psychoacoustic result, then, is that multipath has been reduced and *perceived* coverage improved, cautiously noting that *perceived* stereo coverage is only loosely related to the station's RF field strength.

I should mention that interesting things have been learned from field research during the development of our FM-HD tuner-based diversity delay correction. One is that newer DSP-based receivers seem *more* prone to multipath effects, even though most have mechanisms to supposedly minimize it. Others are that those receivers lack the modulation headroom of older technology, and definitely don't behave well with non-standard stereo multiplex signals (like single sideband) or a dirty MPX spectrum (think composite clipping). In fact, the latter is precisely why our FM processors have both a composite clipper *and* a lookahead MPX limiter; the user can choose which algorithm works best for *his* scenario.

The bottom line is this: Clean up the MPX spectrum and intelligently manage the L+R/L–R ratio and prepare to be surprised, as was KSDS and others, how *perceived* stereo coverage (not signal strength!) goes up.

Speaking of signal strength, Gynn's observation about the predicted signal within KSDS' coverage area is right on the money, but coverage *predictions* are only part of the story.

Those of us who tinkered with synchronous AM in the old days quickly learned that *how* a receiver *responds* to our signal and then demodulates it is wholly dependent on *what* we actually transmit.

So when customers say that something reduced multipath on their station and nothing's been bulldozed down, what they're really saying is that the *perception* of multipath has been reduced. Our processors accomplish that by intelligently modifying what stereo receivers do when they detect multipath and how they sound while doing it. Nothing more.

Glynn said that even under ideal conditions it's

impossible to compare tests made at different times and that he'd like to see the tests repeated on multiple receivers. It just so happens that those tests have not only already occurred, but are being repeated over and over again every day. KSDS's experience is right in line with myriad comparisons made over more than a decade of trials in the U.S. and Europe.

Do our multipath and lookahead MPX limiters reduce the effects of multipath for every station? Nope. Nothing does, and there are a *lot* of variables. But they've been repeatedly evaluated and compared in countless ways, and more often than not, they do.

Those interested in reading about my original research can find my NAB 2013 paper here: *goo.gl/o3C8FC*.

The Multipath Limiter algorithm itself is typical "problem-solving broadcast engineer," and its roots go way back to the '90s, when I was CE of WMJI in Cleveland.

More than 20 years later and in markets where our FM processors and the Multipath Limiter are in use, we're seeing the same kind of correlations we saw at WMJI.

Here's a video about how and why I developed the algorithm and then accidentally discovered its completely unexpected benefit on perceived multipath: *https://youtu.be/1sdzoZooS5o*.

▶READER'SFORUM

C-SPAN

Responding to "C-Span Radio Marks 20 Years of Covering Public Affairs" (radioworld.com, Nov. 9):

Congratulations to Brian Lamb and the crew at C-Span Radio.

Another aspect of Lamb's legacy worth mentioning is his support for statehouse coverage. Here in Colorado, we have gavel-to-gavel video and audio available of the House and Senate floors on Colorado Channel. From TVW in Washington state to CT-N in Connecticut, citizens are more informed thanks to the model C-Span established and the professional support Mr. Lamb has offered to the state networks.

Thanks to Susan Ashworth for the feature story, and thanks to Brian Lamb for the vision and leadership.

Gavin Dahl
General Manager
KDNK(FM)
Carbondale, Colo.

▶READER'SFORUM

HOMEBREW

I enjoyed reading Mark Persons' nice article on "handmade" equipment ("Yes, You Can Build Your Own," RW Nov. 22).

When I began work in the broadcast industry in Oregon in the late 1950s, in Portland there were 12 AM stations in the core market. Six of them had handmade transmitters (although one was the aux and not the main). And of those 12 stations, six had handmade main studio control board equipment.

There were five on-air FMs (and one which had gone off), and three of them had locally made antennas. (They were Pacific Tower manufactured Cel-Ray "chicken wire" pylons, electrically identical to the RCA pylons, of which there were two as well.) There are still three of the Cel-Ray antennas in existence, on AM towers in smaller cities in the Pacific Northwest, although none in operation.

When I went off to the wicked east to go to college, I was surprised to learn that none of the Boston stations had handmade transmitters or main studio audio consoles. Although my student station WHRB(FM) did have handmade main studio consoles and a handmade ~100 watt carrier current AM transmitter, it did have a Raytheon FM transmitter.

Ben Dawson
Electrical Engineer / President
Hatfield & Dawson
Seattle

TRANSLATORS & REVITALIZATION

The article "Commission's Translator Actions Are Paying Off" featuring Chuck Anderson in the Nov. 22 issue gives voice to the fraud that FM translators are part of AM revitalization.

Anderson is quoted as saying, "one broadcaster suggested that many AM licensees would gladly surrender their AM license if they received a protected license for the translator." Bingo!

I've been saying this for years: FM translators are a dagger in the heart of the AM broadcasting service, not its savior. May that protected status never arrive.

FM translator owners are FM station wannabes.

Regrettably, Commissioner Ajit Pai is complicit in this fraud, having championed FM translators as a component of AM revitalization. I don't fault Mr. Anderson for earning a living at this, but I do fault the commission for the outright misrepresentation that FM translators boon the AM service. Quite the contrary. That's the biggest sham since the Emperor's New Clothes fairy tale.

James B. Potter
Owner & CEO
Cutting Edge Engineering & The Little Spot Shop
Kimberling City, Mo.

Responding to "AM Revitalization, Still Not Getting the Main Idea" (radioworld.com, *Oct. 17*):

Bravo y'all! Larry Langford's practical, listener-oriented thinking aims at the actual problem for half of AM broadcasting: Proper transmissions cannot be decoded adequately for a majority of legacy gear listeners.

I seldom listen to AM on the road. I have well over a dozen AM/FM receivers in my home, all tuned to KCAP, our main AM survivor. With three or more on at one time, the differences are remarkable, and not solely due to receiver orientation. Some are just crap (with a front end you can drive a Mack truck through); they appeared in thrift store with good reason, though all were likely FCC type approved.

Exporters need the U.S. market more than we need them. It is an excellent bargaining position if we choose to use it.

Barry Potter
Retired Field Service Engineer
Helena, Mont.

FIRST PHONE

In a Reader's Forum comment in the Oct. 11 issue, a reader stated that the reason one needed a First Class Radiotelephone Operator's license was to change power.

Actually, the reason was to take hourly meter readings at *directional* AM stations because of their critical patterns, especially during nighttime skywave conditions. Usually, power change was part of the procedure, but to change antenna "pattern" a more knowledgeable operator was required by the FCC. FM and non-directional AM stations (with only one tower) did not require First Class operators, and the less-technical Third Class license was sufficient. As newer equipment became more reliable and stable, meter readings eventually were relaxed to every three hours.

My First Phone got me several jobs in my early career: My first radio job was at WIMS(AM) in Michigan City, Ind., then a 5,000 DA day/500 DA night three-tower array, and I *know* I got the job because of my First Phone. Then on to WJOR(AM) 940 in South Haven, Mich., a 1,000 W DA daytimer with two towers, and then WTRU(AM) 1600 Muskegon, Mich. 5,000 W DA-2 with four towers. After that, all stations where I was an operator were FM or non-directional AM. A few AM/FM combos where I have worked with an AM array that *is* directional have their own operators to take readings.

A couple ways to get a First Class license included passing the test based on knowledge learned from electronic technician courses, but there were other shortcut courses that helped students pass their government tests in as little as six weeks. I admit I took the Elkins Institute "cram" course but working at directional AMs gave me a better understand of the technical operations of stations that I use to this day.

J.R. Russ
Consultant
J.R. Russ Programming & Research
Ocean City, Md.

HIGH CAPACITY
EVENT STUDIO TRANSMITTER LINKS

Moseley

outdoor unit

Moseley **EVENT 5000**

indoor unit

TAKE ADVANTAGE OF WIRELESS HIGH PAYLOAD STL/TSL CAPACITY

Moseley EVENT STL/TSL systems provide up to 155 Mpbs combined IP, T1/E1 payloads. Multi-station clusters can convey multiple linear uncompressed audio pairs for a truly cost-effective STL/TSL link. Connect your existing T1/IP audio hardware directly into the EVENT system, or use Moseley Rincon for your audio payloads. An optional DVB-ASI module is available for full duplex video.

EVENT systems are fully bi-directional including a Software Defined Indoor Unit (SDIDU) and Outdoor Unit (ODU), eliminating the need for costly waveguide hardware. The ODU is available in the license free 5.8 GHz band, or licensed 11, 18, or 23 GHz bands. Appropriate external antennas are selected based on path length.
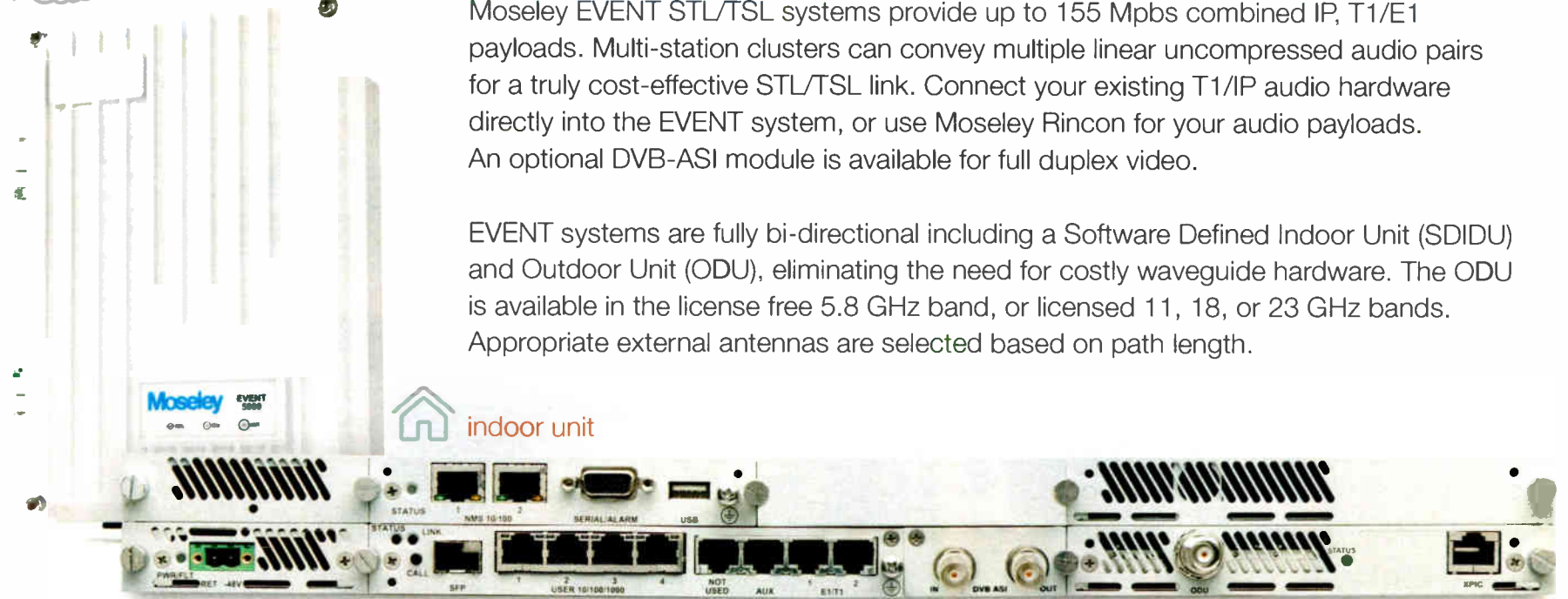
INTELLIGENT SYSTEM DESIGN

Spectrum-scalable digital radios with user-selectable data rates enable broadcasters to have greater flexibility in STL planning and future growth. The integrated T1/E1 and Ethernet interfaces allow for a combination of T1/E1 and IP packet data.

IP APPLIANCES AND APPLICATIONS

Offer IP transmitter control, surveillance security, and site monitoring to reduce downtime, and protect valuable station assets while saving travel time to the site.

REMOTE MIRRORED SERVERS

From the transmitter site, offers backup of business records and programming content to get you back on the air quickly in the event of a studio outage.

EMAIL AND INTERNET ACCESS FROM THE TRANSMITTER SITE

Saves engineers time accessing manuals or technical support from manufacturers during maintenance sessions.

SIMPLE NETWORK MANAGEMENT PROTOCOL (SNMP)

Full SNMP package with GUI provides easy monitoring and configuration changes.

Contact The Moseley Sales Team to Custom Configure Your EVENT STL/TSL Today!

moseleysb.com