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Xperi Seeks Bigger Role in Alerting

Developer tells FCC staff that HD Radio can upgrade and enhance emergency warning

ALERTING

BY RANDY J. STINE

The developer of HD Radio believes its technology can “upgrade and enhance the nation’s emergency alerting capabilities,” delivering alerts with better geographic targeting and dynamic visual images along with other enhancements.

So in March, a top radio technology executive of Xperi Corp. met with representatives from the FCC’s Public Safety and Homeland Security Bureau in Washington to highlight HD Radio’s emergency alert feature. According to a public filing, Xperi described improved text notifications, multilingual audio and geographically targeted messaging abilities.

of the public alerting ecosystem. These include improving geographic targeting, enhancing public alerting systems with multimedia, improving resiliency and redundancy and improving accessibility of alert info.

“While each method of public alerting has particular strengths, HD Radio technology is uniquely positioned to enhance the overall system and fulfill many of the important recommendations made by CSRIC in its December 2018 Final Report,” Xperi wrote in its meeting summary.

The digital data capabilities of HD Radio enable digital broadcasters to “enhance their emergency messaging broadcasts by providing more rich and detailed content, including, for example, alternate languages, message text, pictures and maps,” Xperi wrote.

“Notably, the HD Radio emergency alerting broadcast protocol is completely CAP-compliant, thus allowing dissemination of all the rich content facilitated by CAP;” it stated, referring to Common Alerting Protocol.

The FCC already mandates that EAS participants be able to receive CAP-formatted alert messages. The Federal Emergency Management Administration is responsible for EAS implementation and testing.

ALERT DISTRIBUTION COMPARISON

	Analog Radio EAS	HD Radio Emergency Alerts	Cellular WEA
Alert Method	Audible tones and voice	Radio trigger, audible tones, text and voice	Handset trigger, text
Audio Message	Yes	Yes	No
Text Message	No	Yes	Yes
Language selective	No	Yes	No
Location-based	Listening area	Broadcast area and ZIP codes	Target location
Message history	No	Yes	Yes
Message Types (NWR-Specific Area Message Encoding)	<ul style="list-style-type: none"> • Presidential • Weather • Life or Safety • Amber Alerts • Periodic Tests 	<ul style="list-style-type: none"> • Presidential • Weather • Life or Safety • Amber Alerts • Periodic Tests 	<ul style="list-style-type: none"> • Presidential • Weather • Life or Safety • Amber Alerts
Severity Indication	Only voice	Yes	Yes
Reliability	All technologies complement existing EAS system mandated by FCC and FEMA. No one system is guaranteed 100% at any time or location.		

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A comparison chart from Xperi

The company proposed no major changes to the Emergency Alert System but sought to offer a reminder of benefits it believes HD Radio can bring to the EAS infrastructure, primarily text and future capabilities, such as images and maps.

Xperi also released a white paper, “Upgrading the Emergency Alert System: HD Radio Digital Emergency Alerting,” and shared it in the FCC meeting. The paper lists the current and planned emergency alerting capabilities like wake-up signaling and delivery of visuals.

“UNIQUELY POSITIONED”

Xperi cited a recent report from the FCC’s Communications Security, Reliability and Interoperability Council that recommended upgrading several aspects

FEMA released its own report earlier this year that touched on various themes to improve public warning via the Integrated Public Alert and Warning System, or IPAWS. FEMA recognizes the need to “optimize technical developments and how the nation’s alert and warning systems can take advantage of new capabilities,” according to the report.

At the NAB Show, FEMA featured a demonstration of HD Radio’s emergency alerting functionality at the IPAWS booth. In addition, HD Radio’s emergency alert capabilities are now integrated into FEMA’s IPAWS test bed in the IPAWS Lab in Washington, which is used to provide training and coordination planning with emergency managers, a company official confirmed.

(continued on page 6)

Today's In-Car HD Radio Experience

RW's new ebook shows how stations look in various new car models

Our latest ebook is "Today's In-Car HD Radio Experience." It provides a visual walkthrough of how digital and analog stations appear in numerous 2019 car models.

Radio World and Xperi, sponsor of the ebook and parent of HD Radio, decided to put images of receivers tuned to various stations in various cars side by side. Although we talk often about the importance of knowing how your station is experienced by listeners, few radio managers in fact have really had a chance to take a comprehensive look at how their digital or analog stations are displayed today.

I found the process even more instructive than I'd expected. Flipping through the photos leads me to a few obvious takeaways, and they're not just limited to HD Radio considerations. It's clear to me that:



Here's how iHeartMedia FM station WIHT, broadcasting in HD Radio, appears on the display of a 2019 Jeep Grand Cherokee. The connected platform shown is Uconnect, so this also gives an idea of how WIHT would look in Chrysler, Dodge, Ram and Fiat vehicles, Jeep's siblings in the FCA Group. To see how an analog station displays, check out the ebook.

- For a driver, the experience of finding and tuning into a radio station is far different today than it was even a few years ago.
- The context in which radio stations today are heard — and seen — varies greatly from carmaker to carmaker.
- Radio stations have worried about becoming "just another icon"

FROM THE EDITOR



Paul McLane

among dozens of choices on car screens. It's a valid concern, but I was pleased to see that FM radio is still prominent in most of these models, and that AM, when still provided, is easy to find too.

- However, radio industry leaders must continue to invest time and effort building relationships with car companies in hopes of retaining the highest possible profile on these platforms.
- HD Radio stations show up better than analog ones on today's displays.
- But whether or not your station has chosen to broadcast in HD Radio, you and your management really can't judge how the station is being seen by your listeners without sitting in front of a lot of different dashboards. Engineers and GMs should be visiting local car dealers together and asking to sit in front of various displays. (Make it part of a station sales call at the dealer.)

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THIS ISSUE

MAY 22, 2019

NEWS

What Is Radio's Value in 2019 and Beyond? 1
 Rackley Was Revered in Engineering Community 1
 Xperi Seeks Bigger Role in Alerting 3
 Today's In-Car HD Radio Experience 4
 Tower Technician Appreciation Day 5



FEATURES

Check Out This New Performance Space 12
 The Ever-Evolving Role of Airchecks 16
 A Look at the Mercedes-Benz Comand Infotainment System. 20



STUDIO SESSIONS

Hubbard Radio Consolidates Three Chicago FMS 23

OPINION

LPFM Is Not a Threat to Full-Service Radio 29

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- Radio stations, analog or digital, must pay close attention to what they're sending via their digital or analog data platforms. Longtime readers have heard Radio World preach about this since the earliest days of RDS. Who in *your* operation is assigned to establish *and* monitor how you appear to the public?
- HD Radio stations should consider whether they're taking full advantage of the features that the platform offers. At least be aware of the various ways that your branding, show and talent names, station URL and logos can be displayed and combined.
- If you have invested in HD Radio, the issue of whether to add Artist Experience seems like a no-brainer. The engineering section of *HDRadio.com* has papers on how to implement AE. Xperi reminds stations that they also can use the feature to pair client logos with their on-air promos as a revenue generator.

None of this discussion gets into questions of reception quality, but if you are already an HD Radio station, remember, too, that for your listeners to have the best audio experience, your station needs to pay close attention to its time and level alignment. If you need guidance on that, check out the current National Radio Systems Committee's guideline on that very topic.

Read the ebook at radioworld.com/ebooks. Let me know what you think about this ebook or any other Radio World content. Email me at radio-world@futurenet.com.

TOWER TECHNICIAN APPRECIATION DAY



NATE's annual Tower Technician Appreciation Day was in May. Reader Mike Tosch of Spanish Broadcasting System in Los Angeles extended kudos to Elizabeth Krupka-Bucio, lead climber for Ed Sogge's Com Plus Inc. tower crew of Frazier Park, Calif., for her excellent work on a 950 STL dish serving FM stations KLAX/KXOL. She wrote in an email, "Tower climbing taught me that both physically and mentally, we are all capable of so much more than we could ever imagine."



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ALERTING

(continued from page 3)

"PART OF THE CONVERSATION"

Xperi says there are 2,141 digital on-air broadcasts in the United States, with 90% of the population living within reception distance of an HD Radio station. About 43 million HD Radio-equipped cars are on the road, according to the company.

It says approximately 300 radio stations in 85 markets are transmitting emergency alerts over HD Radio as simple text messages and that about 15% are using some of the other enhancements, said Ashruf El-Dinary, vice president of radio technology solutions, who led the Xperi visit to the FCC along with members of its legal team.

Dinary met with Public Safety and Homeland Security Bureau staff and detailed the potential benefits of using the in-band, on-channel digital transmission system. "It was an introductory meeting, really. To the extent that the FCC has been working on HD Radio, we wanted to make sure other bureaus within the commission were aware of the technology and how it can be applied to public alerting," he said.

"We see it as a very strong application that will advance emergency notification across the country. HD Radio with the enhancements can support these objectives."

Dinary said HD Radio alerting technology "allows for an HD Radio to scan the background looking these alerts, so if just one HD Radio station in a community is broadcasting an alert then the HD receiver should pick it up."

Receiver manufacturers are beginning to turn out more HD Radio receivers enabled with the emergency alert function, Dinary said.

"That's being addressed through a number of after-market car receivers from Kenwood and Pioneer, as well as Sangean in some of the home and portable products. A number of OEM car models are including it now going into

the 2020 model year."

Xperi hopes the FCC will consider HD Radio's emergency alert capabilities as the commission progresses with the next phase of EAS policymaking and regulations around that, Dinary said. But it is not asking for specific rule changes. "We want to be part of that conversation going forward."

receiver manufacturers to catch up with its capabilities, several observers said.

In at least one case, an HD Radio station stopped using the enriched EAS data because some car radios from certain manufacturers didn't digest it properly, according to an observer familiar with that situation. "The auto-on, geofencing and enhanced displays elements

Digital radio technology — through the HD Radio system — can enable these improvements now and should be utilized as an integral part of the collaborative effort to upgrade the nation's public alerting capabilities.

— Excerpt from Xperi's white paper

The company is especially focused on the visual aspect of HD Radio's emergency alert feature, Dinary said, and its ability to display images such as photos of a missing child or adult.

"We are increasingly a visual society. We are visually connected to our devices. Even radio is now visual. These are becoming critical components that radio can offer that it couldn't before. That coupled with geo-targeting and the wakeup feature really allows us to offer a complete alerting package," Dinary said.

He said no additional licensing of HD Radio technology is required for receiver manufacturers or radio stations to participate in what Xperi calls a public service feature.

DETAILS TO WORK OUT

While some HD Radio stations have implemented many of the EAS enhancements, others are waiting for HD Radio

can cause issues for the radio receiver itself."

According to Harold Price, president of Sage Alerting Systems, "I think there are some technical issues and details that need to be worked out. ... Some standards work needs to be done for rich media, including defining supported data formats for the ecosystem as well as tagging images intended for broadcast. For instance, CAP already allows for multilingual data, and it allows images and other rich media to be referenced. Multilingual alerts have several challenges, including who provides the additional languages and how legacy EAS is handled."

Some HD Radio stations would likely have to purchase additional EAS equipment to implement the suggested enhancements if they are adopted by the FCC, said Edward Czarnecki, senior director for strategy and government affairs for Digital Alert Systems.

"This may pose a challenge for any operation that has already maxed out the number of receiver inputs it may have already assigned, such as PEP, LP-1, LP-2 and NWS. Adding an HD input source might in some cases mean the need to drop an existing monitoring source. I'm not sure that is an acceptable tradeoff," Czarnecki wrote in an email.

Despite advances in U.S. alerting, one veteran public warning professional expressed a general concern that the more "sophisticated alerting becomes," the more likely the system could leave some folks behind. Nevada EAS Chair Adrienne Abbott said of the discussion: "My concern is that we are creating a two-tiered society: the Informed and the Less-Than-Informed. The Informed, with their HD Radios, smartphones and next-gen TVs, will not only know that there is an emergency, they will know what it is, where it is and what to do about it, and the message will be reinforced because the Informed will receive similar messages from multiple sources, in multiple formats."

She continued, "While some of the Less-Than-Informed will know, at best, that someone, somewhere, might have a problem, most of them won't know what hit them."

Another EAS observer told Radio World: "Improvements in the ability of EAS to deliver enhanced data to devices that can use it is good, so long as the ability and the desire to send data to simpler devices is not compromised. It's all needed."

In the white paper, Xperi also stated that HD Radio will soon offer support for "first responder alerting." It said the system can send isolated data to specific receivers, allowing creation of a secure data network for police, fire and other first responders to receive targeted situation reports. It expects this functionality to be available in the next two years.

The white paper even proposed a new concept in emergency alerting, one that uses HD Radio technology to alert motorists of an approaching emergency service vehicle. The Emergency Vehicle Warning System would allow for emergency vehicles, equipped with an in-vehicle transmitter, to transmit a warning message on a fixed frequency to nearby cars. The company proposes using 87.9 MHz.

The white paper, an attachment to Xperi's public filing, can be read at <https://tinyurl.com/rw-xperi-3>. Xperi's comments were laid out in a notice of ex parte communication regarding Amendments to Part 11 of the FCC's Rules Regarding the Emergency Alert System, PS Docket No. 15-94, and In the Matter of Improving Wireless Emergency Alerts and Community-Initiated Alerting, PS Docket No. 15-91.

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RACKLEY

(continued from page 1)

home on April 12. He was 66.

The veteran consulting engineer was a champion of AM radio and its revitalization efforts. He worked on high-power medium-wave antenna systems around the world and served as a consultant to USA Digital Radio during the early stages of in-band, on-channel digital testing.

AM broadcast system design and optimization was Rackley's passion, according to colleagues.

He graduated from Clemson University with an electrical engineering degree and worked as a radio station chief engineer and as an antenna designer for Kintronic Labs Inc. In 1983, he co-founded du Treil-Rackley Consulting Engineers, with Bob du Treil, which later merged with A.D. Ring & Associates to form du Treil, Lundin and Rackley.

"Ron was one of the true giants of broadcast industry. Before computer technology became widely implemented, there was real art to the design and tuning of directional AM antennas," said Bob du Treil Jr., principal at du Treil, Lundin and Rackley. "Once computers became more widespread and powerful, Ron was instrumental in developing technology that would allow for numerically calculating the actual drive point impedances. This was a huge leap in capability."

Rackley had announced his semi-retirement from the firm earlier this year.

He grew up in Greenville, S.C., and worked as a duty operator for several local AM radio stations while still in high school. His first job was in 1968 at WHYZ(AM), a 50 kW daytime station in Greenville.

"I had plenty of time to read various engineering reports and study contour maps while on duty," Rackley told Radio World during an interview in 2006 about his receipt of the NAB Engineering Achievement Award, shared with his friend Ben Dawson. "Radio always seemed like magic to me. It seemed less like magic after I took mathematics in college. ... I can't recall a time when I wasn't interested in radio."

Speaking with Radio World in April

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Ron Rackley, right, conversed with Geoff Mendenhall at a recent NAB Show.

of this year, Rackley said he recalled taking apart his family's "big wooden" RCA radio at the age of three.

"Fortunately, an uncle who knew about radio was able to put it back together and get it working. It was probably good that we hadn't gotten our first TV set yet," he said.

Rackley was a pioneer in developing computer modeling methods to improve the performance of AM antennas for stereo and digital transmission and to optimize filtering system designs for diplexing stations to share transmitter sites, according to industry observers.

He was also deeply involved in the FCC rulemaking that established Method of Moments computer modeling as the standard way to prove that AM directional antenna systems work correctly, greatly simplifying the requirements for licensing them.

TOWERS INDUSTRIAL PARK PROJECT

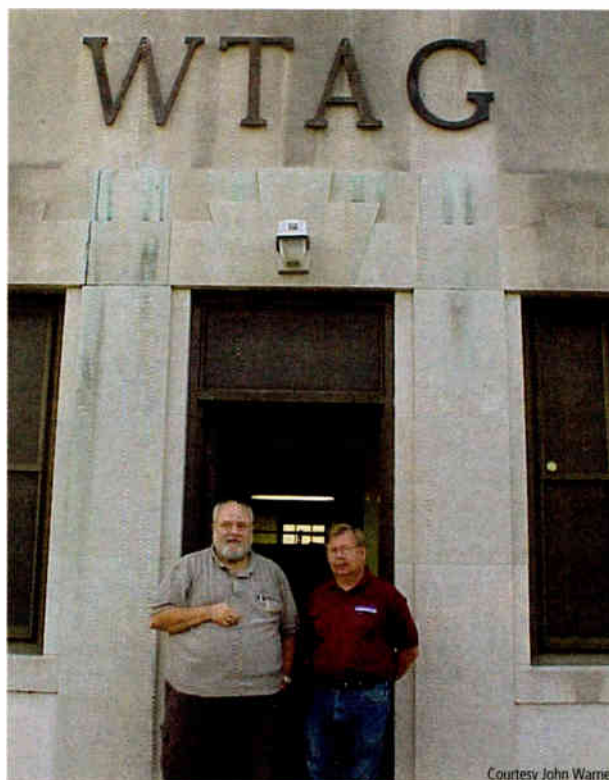
One of many career highlights was his work on a complex AM antenna design in Los Angeles called the Towers Industrial Park project.

"It involved constructing two industrial park buildings totaling something like 500,000 square feet under the five towers of the old KTNQ directional antenna system," he said in the April interview. It required that the buildings be constructed with shielding to protect the areas inside from excessive radio frequency exposure levels and interference to electronic systems while at the same time providing a ground plane for the AM antenna system without disturbing of the KTNQ day and night directional antenna patterns.

"A few years later, I designed a way for the station that is now known as KEIB to move to the site and share the same five towers. The two 50,000 watt stations are now diplexed there," Rackley said.

"HE DESERVED EVERY WORD OF APPRECIATION"

Touching tributes appeared quickly following his death. His daughter Elizabeth posted to her father's Facebook account: "My dad was definitely the most intelligent person I have ever known. He did work in his field of electrical engineering that only a handful of people in the world were capable of, and was renowned for it. I



Ron Rackley and John Warner, VP for AM engineering at iHeartMedia, stand in front of the transmitter building for WTAG in Worcester, Mass., in 2002.

will remember my father as an incredibly wise and loving father, who always knew what was best and who loved and appreciated his family. I have annoyed so many people bragging about my dad, and I have no shame for it. He deserved every word of appreciation," she wrote.

Ben Dawson, president of Hatfield & Dawson Consulting Engineers, wrote to Radio World: "Ron was simply one of the finest people I have ever known. He was kind, thoughtful, generous, honest and self-effacing. And of course he was a brilliant engineer. Because we worked together on projects for many years all over the world, taught classes together, collaborated on comments to FCC rulemakings, and traded ideas and thoughts about all sorts of things besides our engineering work, I can say that I've never had a better friend."

Colleagues said Rackley attended the NAB Show in Las Vegas in April, visiting vendor booths and participating in meetings. He'd been a regular at broadcast engineering conferences, friends said. Even though he was a "self-professed introvert uncomfortable speaking in front of crowds," Rackley delivered countless speeches to radio engineers on how to troubleshoot and maintain AM antenna systems through the years.

"I'll do it if I can help other engineers understand what AM is all about. Professionals are supposed to share information and to share knowledge," he told Radio World at one point.

David Layer, NAB's VP of advanced engineering, said, "It was devastating news that Ron Rackley had passed. I am so glad I was able to see him [in April] at the NAB Show and of course now wish I had spent more time with him. Ron was one of the gentlest souls I've ever encountered, a true gentleman and scholar, his brilliance as an AM broadcast engineer was world-renowned. He will be greatly missed by me and I expect everyone who knew him."

Tributes have come from many across the broadcast engineering community.

"Superb engineer, raconteur par excellence, exemplary Christian," said Karl Lahm, a consulting engineer with Broadcast Transmission Services. "That was Ron Rackley. And to say he was a character would be an understatement." Ron "always had a good story, many involving less-than-optimal technical situations he had encountered over the years."

Dave Stewart, consulting engineer with Moving Target Consulting Works, worked with Rackley on AM projects while at

(continued on page 11)

Cover all Bases with ViA



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

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

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

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

Bill Eisenhamer
Chief Engineer, Entercom San Diego



(((ViA)))

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It also offers an interesting "strengths, weaknesses, opportunities and threats (SWOT) analysis" of radio that's worth reading.

There's a lot there, so I recommend you take the time to read the entire paper, which you can download at <https://tinyurl.com/NABA2019>.

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NABA

(continued from page 1)

via IP (especially mobile broadband) compels broadcasters to accept IP as well.

In doing so, there are two important

a data network over in-band, on-channel digital FM or even the Radio Data System digital subcarrier over analog FM. And, as the paper states, "A significant advantage of digital radio is the ability to simultaneously deliver continuous content of both audio programming and

NABA RECOMMENDS

Among the recommendations of the NABA working group:

- Radio station management should



FEATURES

RADIOWORLD May 22, 2019

Check Out This New Performance Space

Also, who monitors the station's tower lights — and who should?



Fig. 1: Add a performance area to help your station generate non-traditional revenue.

promotion videos or slides, but Armando's reception area took this idea a step further. The 55-inch sets were mounted lengthwise (see Fig. 3) for a stunning impression for visitors.

Engineering working in conjunction with the promotions department is a definite win-win. Send us your own good examples via the email address below.

After several columns discussing station logs, one Workbench reader raised a question.

This engineer's towers and lighting are owned by Vertical Bridge. The company has sophisticated gear on their lighted towers to sense problems and to notify their operations center should a failure occur.

The station does absolutely nothing with respect to checking tower lights on the towers it no longer owns but currently uses. The engineer admits he glances at the lights when he is nearby after sunset, and if there is an issue he will look for a NOTAM just because he

(continued on page 14)

WORKBENCH
by John Bisset

Email Workbench tips to johnpbisset@gmail.com

Creating space for performance studios has become a popular way to generate nontraditional revenue for stations.

Fig. 1 shows space set aside at Engineering Manager Armando Gonzales' Entercom cluster in Dallas. Note the charging stations in Fig. 2, helpful in an age when most every listener has a smartphone. These stations are sponsored by Verizon, another plus.

We've seen smart TVs with USB drive ports that play loops of station



Fig. 2: A sponsored smartphone charging station is popular among listeners.

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Fig. 3: Vertically mounted monitors grab visitor attention in the lobby.

Cover all Bases with ViA



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

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

Bill Eisenhamer
Chief Engineer, Entercom San Diego



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NABA

(continued from page 1)

via IP (especially mobile broadband) compels broadcasters to accept IP as well.

In doing so, there are two important considerations:

- Distribution costs and quality of service will have an effect on the continuing rollout of IP-based services
- And perhaps more important, “If local broadcasters cede the airwaves, they lose the market limitations imposed by the FCC barriers to entry, and the ability to easily differentiate themselves from the masses of ‘internet radio’ broadcasters.”

After all, radio (and TV) licenses are effectively “franchises” limited by government policy. Even if the value of that franchise diminishes over time, there’s no reason to give it up in the foreseeable future.

To maintain the value of radio (in both physical media), the paper presents several ideas and technologies.

ONE-TO-MANY CONTENT

OTA radio excels in the one-to-many distribution model, and the paper suggests that many new mobile technologies being developed can actually be accomplished in the same fashion.

OTA radio excels in the one-to-many distribution model, and the paper suggests that many new mobile technologies being developed can actually be accomplished in the same fashion.

“While many functions require a bidirectional communications path, a significant portion of the data burden could be off-loaded to broadcast radio by doing what the frequency band does best: delivering one-to-many content,” the paper states.

We already realize that information can be transmitted efficiently utilizing



a data network over in-band, on-channel digital FM or even the Radio Data System digital subcarrier over analog FM. And, as the paper states, “A significant advantage of digital radio is the ability to simultaneously deliver continuous content of both audio programming and data.”

Many mobile infotainment systems employ multiple receivers that scan and aggregate data from multiple broadcasts. “Broadcasters will have the opportunity to leverage station apps in the connected car to derive and ingest listener profiles for automated presets and infotainment preference.”

BEYOND INFOTAINMENT

We also need to look outside of the world of “infotainment.”

“As digital radio’s presence continues to grow, the technology becomes a logical avenue to extend power grid load management, established initially with analog RDS digital FM subcarrier services,” the paper states.

“As the connected car and autonomous vehicles become reality, road infrastructure updates will become a mainstay of one-to-many data delivery. Updates for digital signage, traffic flow, weather, road conditions and fuel prices are great applications of radio-delivered, geographically limited data,” it continues.

“IBOC digital, when compared to RDS subcarrier,

affords significant benefits in throughput, integration capability and signal availability. It could also become an additional revenue source to stations.”

Skeptics wonder why companies would consider “old-fashioned” radio broadcasts when inexpensive unlicensed links abound. According to the paper, “WiFi connectivity is particularly susceptible to localized interference. While not completely immune to interference, digital FM radio has the advantage of higher signal-to-noise ratios, therefore making it more robust. Higher-power signals and digital carrier redundancy afford a higher reliability of service and better building penetration than cellular.”

NABA RECOMMENDS

Among the recommendations of the NABA working group:

- Radio station management should take steps to offer content generated by the station(s) or station groups (networks) through as many technological media forms as possible.
- FM radio stations should at a minimum adopt static RDS tools to enhance listener experience.
- It is the opinion of the work group that radio stations should adopt at least static metadata, but preferably dynamic metadata.
- Stations should strongly consider adopting HD Radio hybrid IBOC mode per the NABA position paper on a Voluntary North American Digital Radio Standard.
- Management of radio stations and networks should support the work of NAB and others in working with automakers to maintain the prominence of radio in the vehicle and to improve radio’s functionality by supporting hybrid radio technologies.
- The management of radio stations and networks should immediately begin supporting internet-based content for use by hybrid radio receivers. Strong broadcaster support is vital for adoption of hybrid radio technology, especially with automakers.

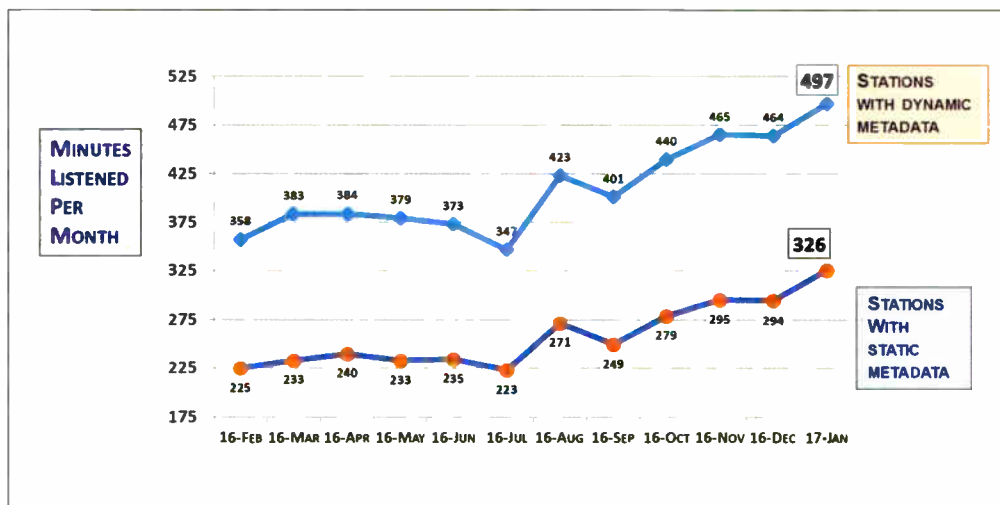


Fig 1: Emmis Broadcasting shared information gathered from the NextRadio app, showing greater listener engagement thanks to the broadcast of dynamic metadata. “Enhanced content means more listening,” the report states.

METADATA AND THE CONNECTED CAR

Metadata includes more than just title and artist information. It is now often the means by which a listener can be presented with graphics associated with programming. Research presented in this paper indicates that enhanced data sharing substantially increases listening hours.

Emmis Broadcasting shared information gathered from its NextRadio platform, showing greater listener engagement related to the broadcast of dynamic metadata (see Fig. 1).

“Listeners spent more time with stations that supplied at least a static logo,

than those that did not. Listeners spent even more time with stations supplying dynamic metadata than those that only supplied static metadata,” according to the paper.

In addition, radio station apps could include “clickable” buttons by which the listener could access additional information about the programming, such as a website, or to sites related to content, providing a new potential revenue source.

Hybrid radio refers to the convergence of broadcast and IP technology, and makes even more thorough use of the connected car. According to the

(continued on page 11)

RACKLEY

(continued from page 8)

Univision Radio. He said, "Ron was great as an expert and great as a human being. He was easy to work with and generous with his expertise. He was decent and principled. There are tips and tricks I use every day that Ron showed us."

Rackley was known for his wit and was often able to infuse complex topics with humor.

Fred Greaves, former DOE for Susquehanna Radio, recalled working on the new directional system at WQBA(AM) in Miami. "We would get back to the hotel early in the morning and the ice machine was always empty. Ron took out a 3x5 card and neatly wrote, 'Please do not urinate in the ice machine' and taped it to the machine. He quietly said to me, 'We'll have ice tomorrow night.' When we got back to the hotel the

(continued from page 10)

paper, the development of hybrid radio provides the following benefits to radio broadcasters:

- Better integration of OTA radio and metadata received via the internet
- Support for "service following," whereby a hybrid radio receiver switches from the OTA signal to a streamed version of the same program as reception conditions permit
- Keeping broadcast as an important media choice in the minds of not only users but of OEM manufacturers

Automobiles that include network connectivity (whether it is native or brought in by a driver or passenger) are thought of as connected cars. The nature of the broadband connection allows users to interact with and select more sources of content; and likewise, broadband affords a means by which the service source can gain data about the listener.

"User-analytics is a large, competitive and important industry that is beyond the scope of this document, but content providers can profit in many ways from information about numbers and locations of listeners," according to the paper.

The paper makes recommendations regarding digital audio, non-broadcast audio, "proximity," hybrid radio, metadata, connected cars and business strategies. See the accompanying box for a summary of NABA's recommendations. It also offers an interesting "strengths, weaknesses, opportunities and threats (SWOT) analysis" of radio that's worth reading.

There's a lot there, so I recommend you take the time to read the entire paper, which you can download at <https://tinyurl.com/NABA2019>.

following night, the ice machine was completely full."

In April, Rackley told Radio World he was beginning to appreciate his semi-retirement. "It feels good being off what I call the billable hour's treadmill that comes along with professional practice that I'd been running on for decades. I'm going to keep enjoying life."

David Elehalt of Telco Communications best summed up the industry's sense of loss when he wrote: "What will AM radio do without him?"

Rackley is survived by his wife Dorothy and four children. Rackley's funeral service was planned for mid-May in Lakewood Ranch, Fla. According to his obituary, a celebration of Rackley's life, which will be open to the broadcast engineering community, would be planned for a later date.



Ron Rackley with grandson Atticus circa 2013-14.

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Check Out This New Performance Space

Also, who monitors the station's tower lights — and who should?



Fig. 1: Add a performance area to help your station generate non-traditional revenue.

WORKBENCH

by John Bisset

Email Workbench tips to johnpbisset@gmail.com

Creating space for performance studios has become a popular way to generate nontraditional revenue for stations.

Fig. 1 shows space set aside at Engineering Manager Armando Gonzales' Entercom cluster in Dallas. Note the charging stations in Fig. 2, helpful in an age when most every listener has a smartphone. These stations are sponsored by Verizon, another plus.

We've seen smart TVs with USB drive ports that play loops of station

promotion videos or slides, but Armando's reception area took this idea a step further. The 55-inch sets were mounted lengthwise (see Fig. 3) for a stunning impression for visitors.

Engineering working in conjunction with the promotions department is a definite win-win. Send us your own good examples via the email address below.

After several columns discussing station logs, one Workbench reader raised a question.

This engineer's towers and lighting are owned by Vertical Bridge. The company has sophisticated gear on their lighted towers to sense problems and to notify their operations center should a failure occur.

The station does absolutely nothing with respect to checking tower lights on the towers it no longer owns but currently uses. The engineer admits he glances at the lights when he is nearby after sunset, and if there is an issue he will look for a NOTAM just because he

(continued on page 14)



Fig. 2: A sponsored smartphone charging station is popular among listeners.

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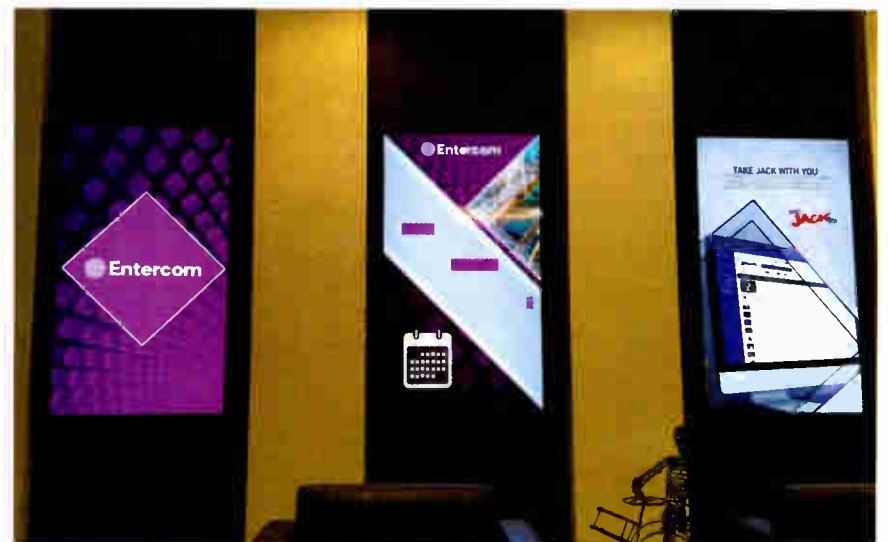
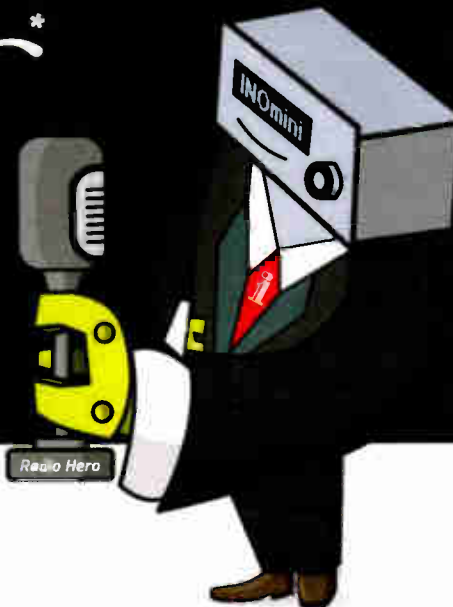


Fig. 3: Vertically mounted monitors grab visitor attention in the lobby.

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RDS Sign Driver

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WORKBENCH

(continued from page 12)

cares about the pilots, though nothing is recorded in the station log.

The question is, “What is the engineer’s or station’s responsibility here?”

For the answer, I turned to Ed Trombley, an engineer with Munn-Reese Broadcast Engineering Consultants.

Ed responded that the question was a good one. Up in Michigan, where the firm is located, they experience their share of unstable winter weather with both freezing rain and ice. This kind of weather puts the tower light monitoring question to the test several times each winter.

Tower light monitoring from a central location is now a common practice, with many group owners setting up a central command post staffed 24/7/365. Most of this monitoring requires the internet to be up and running. Although Ed can’t speak for your wireless provider, he writes that in Michigan they seem to have the signals bounced off every farm silo, grain elevator and ham radio tower!

The barn storming wireless network is like the old telephone party line. Get an ice day where the school is closed, and the wireless network turns to mud! So what happens when the ice

takes down Reddy Kilowatt and the wireless internet goes poof? Did the backup generator start? If it did, there is a good chance the tower lights are on. Otherwise the lights may be out, the wireless may be down, and the guy at tower light central may not know.

What happens when the ice takes down Reddy Kilowatt and the wireless internet goes poof?

So in the case where a station is leasing vertical real estate on a tower where the lights are monitored from some central location, Ed directs us to part 17 of the FCC Rules:

§17.6 Responsibility for painting and lighting compliance.

(a) *The antenna structure owner is responsible for maintaining the painting and lighting in accordance with this part. However, if a licens-*

ee or permittee authorized on an antenna structure is aware that the structure is not being maintained in accordance with the specifications set forth on the Antenna Structure Registration (FCC Form 854R) or the requirements of this part, or otherwise has reason to question whether the antenna structure owner is carrying out its responsibility under this part, the licensee or permittee must take immediate steps to ensure that the antenna structure is brought into compliance and remains in compliance. The licensee must:

- (1) *Immediately notify the structure owner;*
- (2) *Immediately notify the site management company (if applicable) ...*

The FCC rule goes on for several more sub-statements, but from here it is intuitively obvious to the most casual observer that if your company rents space on a tower and you observe the lights are dark, you need to call the tower owner for confirmation.

That emergency number should be posted on the gate. Ten minutes of your time may keep somebody else alive.

And as for the “automatic monitoring,” Ed shared a true story:

At breakfast with a good friend and

fellow broadcast engineer, the subject of towers was discussed. Some folks at an adjacent table heard the discussion, and explained that they lived near a tall tower on a big hill in southern Michigan. They said that the tower’s lights had been out for four months. A few questions later and Ed had confirmed the tower location, and got the gentleman’s phone number. Ed told him the lights would be on by the time they got back home, about a four-hour drive.

Ed made a phone call, and three hours later, he got a return call, explaining that a failure had indeed left the tower lights dark, even though the remote control showed normal status; the lights were on and blinking.

Being vigilant with respect to tower lighting — even if it’s not your tower — may save a life. Thanks, Ed, for your insight with respect to this important matter.

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

Author John Bisset has spent 50 years in the broadcasting industry and is still learning. He handles western U.S. radio sales for the Telos Alliance. He is SBE certified and is a past recipient of the SBE’s Educator of the Year Award.



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World Radio History

The Ever-Evolving Role of Airchecks

They have become important historical records of the industry's legendary deejays and broadcasts

ROOTS OF RADIO

BY JAMES CARELESS

Anyone who has deejayed in radio in the past 60 years knows about airchecks. They are as much a part of top 40 radio's legacy as spinning Led Zeppelin's "Stairway to Heaven" and exploiting its 8:02 running time for a much-needed bathroom break.

In top 40 terms, "an aircheck is an off-air recording usually intended to showcase the talent of an announcer or programmer to a prospective employer," said Rick Burnett, former radio deejay and owner of *TwinCitiesRadioAirchecks.com* in St. Paul, Minn. "Additionally, the airchecks were used for self-critique and evaluation by radio management and for legal archiving of content that is broadcast over the air."

This is how airchecks from radio's rock'n'roll era are generally understood today. But this definition hasn't always held true: The earliest airchecks were "transcriptions" meant to capture live shows for rebroadcast at other times and on other stations. Due to technology limits, using them to find jobs wasn't usually an option.

THE ROOTS OF AIRCHECKS

Like many firsts, it is difficult to know when the actual first radio aircheck was recorded. This confusion is muddled by the fact that certain early broadcasts — like KDKA Pittsburgh's Nov. 2, 1920 coverage of the Harding/Cox presidential results — were recreated and recorded after the event, then touted as authentic airchecks.

According to the National Archives, a 1923 Armistice Day Broadcast by former President Woodrow Wilson made by phonograph technician Frank L. Capps "is the earliest surviving sound recording of a regular radio broadcast." It was transmitted over WEAJ in New



Legendary rock'n'roll deejay Alan Freed's airchecks are available on various fan websites today.

York, WCAP in Washington and WJAR in Providence, R.I.; and can be heard online at <https://tinyurl.com/y44yon8h>.

Wilson's speech is among a handful of airchecks from radio's early days. This is because "in the early 1920s, everything was live," said Donna Halper, a noted media historian, radio consultant and radio broadcaster who is also credited with having discovered and promoted the band Rush when she was music director at WMMS(FM) Cleveland in 1974. "So we have few, if any, original recordings from about the first 10 years of radio."

The lack of early airchecks is due to the fact that "there was no easy way to make radio recordings," said Halper. "You could use a Dictaphone [that scratched audio waves into wax cylinders], and a few people actually did that. But there was no way to record live audio for later re-use."

AIRCHECKS EMERGE

In 1929, the National Radio Advertising Co. Inc. of Chicago under President Ray Soat started to record short radio programs sponsored by Maytag on 12 inch 78 rpm shellac discs. These 78s were

sent out to radio stations in hopes that they'd play them on air — and many did.

However, it took the invention of "transcription turntables" in the 1930s for live radio recordings to take hold. Such recorded programs — which were known as transcribed broadcasts — involved engraving the live feed directly onto a lacquer-coated 16 inch 33 rpm disk. This transcription method could also be used to record local commercials and other often-played content, but it was a gamble: If someone blew their lines, the disc had to be scrapped and the whole process started again from the top.

Despite the risks involved with transcribing broadcasts to discs, they were a popular way for broadcasters to syndicate shows to other stations. "Long distance phone lines were very expensive," said Halper. "So transcribing shows to disc was an economical way to record and distribute radio programming."

Today, the classic radio shows made by Jack Benny, Fred Allen and other greats of Radio's Golden Age (the 1930–50s) that are available to hear online owe their existence to 16 inch transcription discs.

TAPE MAKES THE DIFFERENCE

Although the transcribed discs of the 1930–50s are airchecks by definition,

(continued on page 18)



The earliest airchecks were live radio programs recorded to 16 inch discs, with no ability to be edited.





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AIRCHECKS

(continued from page 16)

they do not fit the current definition of the word. This didn't happen until magnetic tape recorders made their way into radio following World War II.

Crooner and ABC Radio star Bing Crosby led the way. He was introduced to magnetic reel-to-reel tape by Ampex in 1947.



Crooner Bing Crosby was a pioneering user of Ampex tape recorders to record his show for later playback, rather than going live.

Impressed, Bing ordered 20 first-generation Ampex 200A recorders (and wisely bought stock in Ampex); allowing his "Philco Radio Time" show to be re-recorded, edited and tape-delayed by time zones in 1948. This mattered, because going "straight to air" had forced Crosby to do two live shows on the same day, one for the East Coast and one for the West later on.

"Bing, being a rather laid-back individual, knew he had difficulty enough getting through one show error-free, so repeating it three hours later would be next to impossible," according to the AES paper "History of The Early Days of Ampex Corporation." "Obviously, being able to record and edit was a necessity."

AIRCHECKS AND ROCK'N'ROLL RADIO

It took a few years for reel-to-reel tape recorders to find their way in

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Today a media historian, Donna Halper was the first female deejay at WNEU Northwestern University.

American radio stations. (Compact cassette tape recorders didn't take serious hold until the 1970s). Once "reel-to-reels" arrived, even the smallest of radio stations could record, edit and re-record audio themselves. Suddenly, anyone who wanted to "aircheck" their own shows could do so.

A speed of 7.5 inches of tape per second was fast enough for decent quality audio, with a 10.5 inch reel able to hold 64 minutes of content. Stations also "logged" 12 hours' worth of on-air broadcasts for regulatory purposes (e.g. to address listener complaints and FCC queries) by running one 10.5 inch tape reel at a painfully slow, low-fidelity rate of 15/16 inch per second.

Reel-to-reel's arrival coincided with radio's rebirth as a top 40 music medium (following the migration of its traditional content to TV in the 1950s and early 1960s). Once deejays and program directors alike got access to this technology, they started "airchecking" shows on a regular basis.

"When I was a disc jockey, I would make my own airchecks and work on them at home for fear of the station finding out I was looking for another job," said Mel Phillips of *MelPhillipsRadioViews.com*. "When I was looking for talent there were two ways I acted: Either listening to airchecks sent to me or what turned out to be the best way; taking a trip and listening to the radio."

TWO KINDS OF AIRCHECKS

As airchecks caught on, two versions evolved. The first were "unscoped airchecks," in which the entire show was captured complete with music and ads. The second were "scoped airchecks," which only captured the deejay speaking.

"I remember several scoped aircheck systems I've done over the years," said

airchexx.com, *archive.org* (aka the Internet Archive), *ReelRadio.com* and *TwinCitiesRadioAirchecks.com*, among others. These aircheck sites let listeners hear famous deejays like Alan Freed and Wolfman Jack, plus local stars from their own cities and states — voices pulled from radio's past brought into the here and now.

A case in point: Tom Gavaras, who previously worked at Minnesota radio stations, including WCCO(AM), launched his own Twin Cities aircheck website 15 years ago. Using his own airchecks and those provided by more than 100 fans, Gavaras' *RadioTapes.com* lets people hear more than 2,000 recordings of Minneapolis/St. Paul radio stations from 1924 to the present. These clips include local deejays and reporting on major events such as the Kennedy assassinations, the Apollo space flights and Watergate.



One of the consumer-grade cassette tape players that engineer Grady Moates turned into an aircheck recorder.

Grady Moates. A former radio engineer, he owns LOUD & Clean, a Boston firm that designs, installs and maintains radio broadcast facilities.

"All it took was connecting a \$10 relay across the 'On-Air Light' voltage feeding the On Air Light on the wall by the studio door, and connecting the 'normally-open' contacts of that relay in series with the little motor in the cassette recorder so that the motor turned on only when the light was on," he said. "With air-monitor audio connected to the record input jacks, all an announcer had to do was insert a blank cassette into the machine when their show started, press the Record button, go do their show, press Stop and retrieve the cassette."

Today, airchecks are recorded digitally as MP3s, but the science remains the same.

AIRCHECKS AS TIME MACHINES

Over the years, deejays and fans alike have recorded a vast number of airchecks. Many of them can now be heard online at web sites such as

"In some cases, people don't have a way to digitize the reel-to-reel or cassette tape airchecks they own," said Gavaras. "I have enough of these machines plus computers to digitize three contributed airchecks at a time."

Now operating a radio aircheck site can come with unexpected hassles. For instance, *ReelRadio.com* removed unscoped airchecks from its online site, following a copyright complaint from the Recording Industry Association of America in 2014.

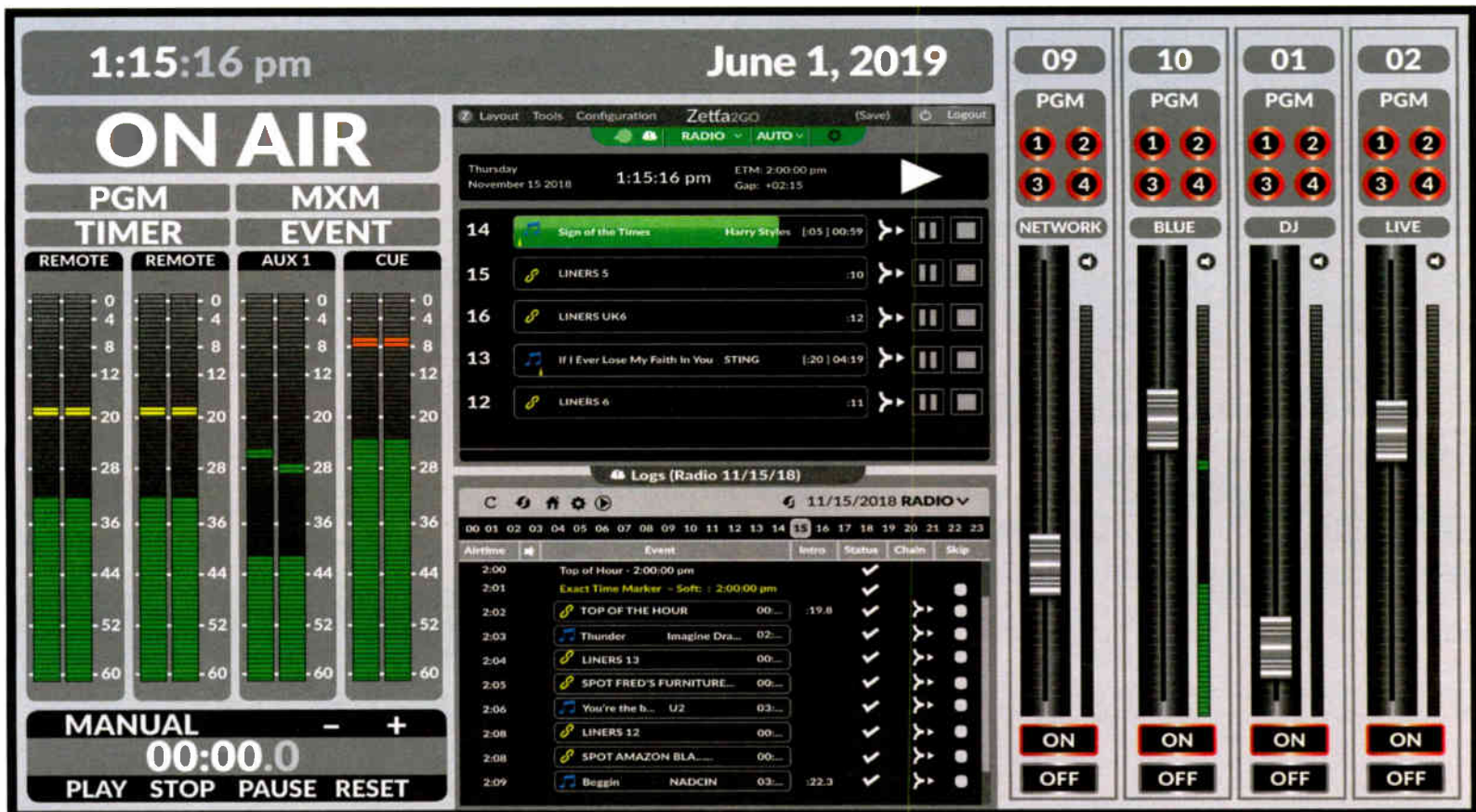
Still, airchecks abound on the internet. Just type "radio aircheck" into Google or YouTube, and you'll come across thousands.

Airchecks can even be searched by deejay, year, station or city. So if you want to relive your youth by listening to the actual radio you grew up with, airchecks can make it happen for you. With online radio airchecks, time travel is only a mouse click away.

Share your own aircheck stories. Email radioworld@futurenet.com with "Letter to the Editor" in the subject field.



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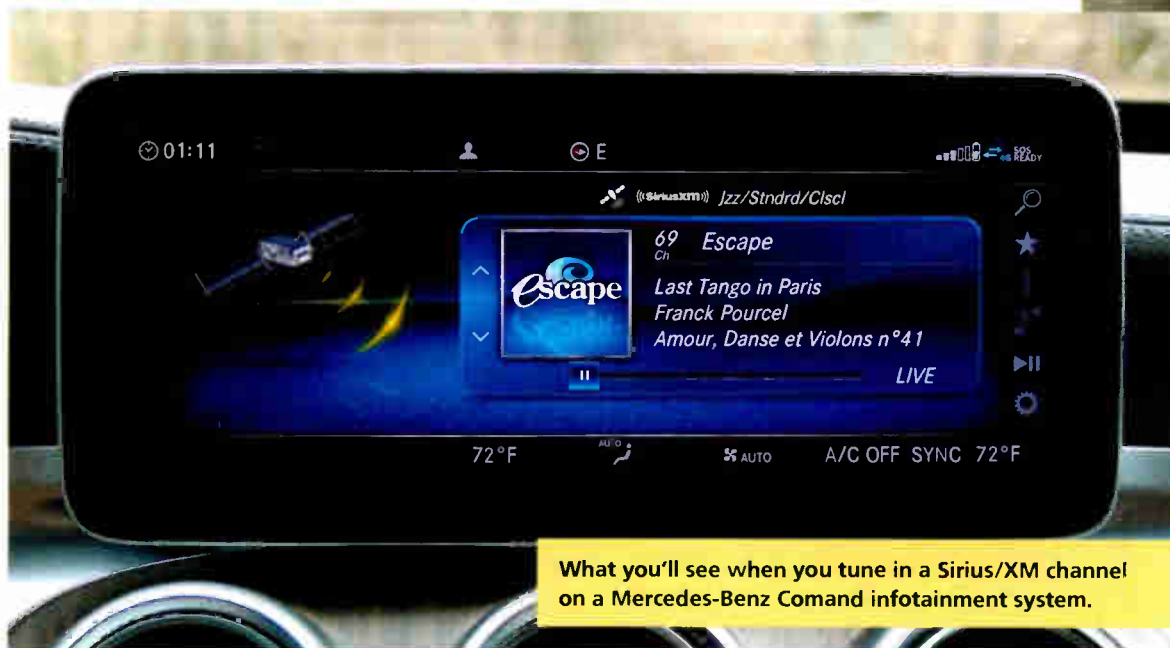
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A Look at the Mercedes-Benz Comand Infotainment System

It's a full-featured platform but has a steep learning curve



What you'll see when you tune in a Sirius/XM channel on a Mercedes-Benz Comand infotainment system.

display had HD resolution (1920 x 720), with smooth graphics and artist art. RDS information, when available, appeared.

In the test vehicle, the optional Burmester sound system had a tuner that received AM/FM, AM and FM HD and satellite radio. The standard M-B sound system will also receive HD Radio signals. The standard Comand system 7 inch display also has HD-like video resolution (960 x 540).

CONNECTIVITY

The Comand system in our C 300 was enabled for Android Auto and Apple CarPlay connectivity, as well as Bluetooth audio connection for the phone and audio.

(continued on page 22)

CONNECTEDCAR

BY PAUL KAMINSKI

This is one in a series of articles about how consumers experience radio and audio in today's new car models.

Mercedes-Benz is one of the world's oldest car makers. They've been responsible for a number of automotive innovations; since the late 1990s they've had some form of an infotainment system in the center stack of their leather wrapped dashboards. We learned what M-B has to offer during a recent test of the C 300 4 Matic sedan and the Comand) system for our "Radio-Road-Test" program.

TWO TOUCHSCREENS AND A JOG WHEEL

It took me 20 minutes with the owner's manual before I was confident enough to operate the system. In the model I drove, the Comand system had not just a touch screen, jog wheel and buttons. In the center console was a mini touch screen/ touchpad which gave some initial confusion.

The raised surface fooled me into thinking that the assembly moved like a game controller. It didn't. After some trial and error, I was able to navigate quickly between the vehicle control, navigation and audio system screens and make the proper choices with the console touchpad.

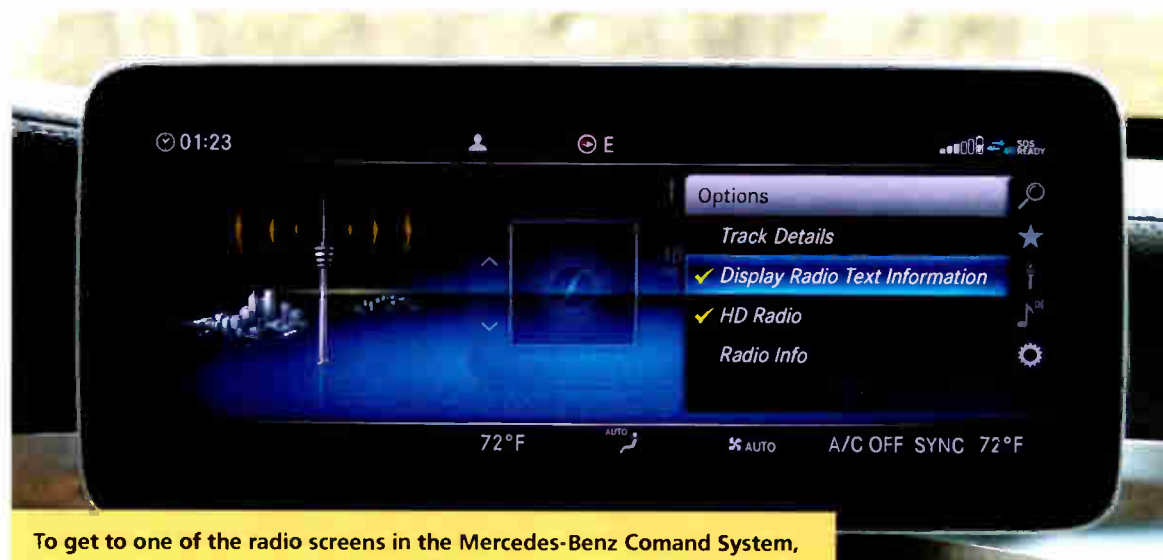
The standard Comand system also has a jog wheel and dash-mounted touch screen for control. Good thing. There are many, many choices that need to be made before one settles down to listen to audio, be it terrestrial broadcast, satellite or online streaming.

HD SCREENS AND HD SIGNALS

After the initial learning period, I dove further into the audio menus and found that the optional 10.25 inch



An HD2 signal is displayed. Note the illuminated HD Radio logo.



To get to one of the radio screens in the Mercedes-Benz Comand System, you have to do some menu diving.

Introducing The Über-Node.

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

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

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

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

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

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

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



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

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



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

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

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

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

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

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

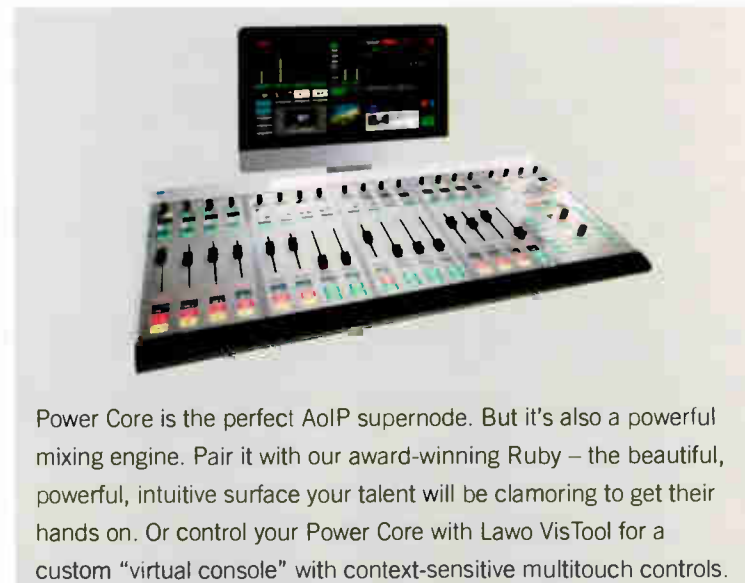
Dual-redundant power, of course. Our hardened internal auto-switching power supply is backed up with an inlet for external power too.

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

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

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

Power Core. The Über-Node has arrived.



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

MERCEDES

(continued from page 20)

Our model had the TuneIn app loaded. Subscription-based internet access through AT&T is offered.

HIGH TOUCH, HIGH END

Owners of these and similar cars expect an experience with great attention to detail and a focus on quality. Compromise on these items does not occur often, if at all.

If your station has a commercial relationship with a M-B dealer, attention to detail is what's needed on the station end if you expect to reach and keep owners of these connected cars as a part of your audience.



The radio/audio entertainment system home screen, from which all radio choices are selected.



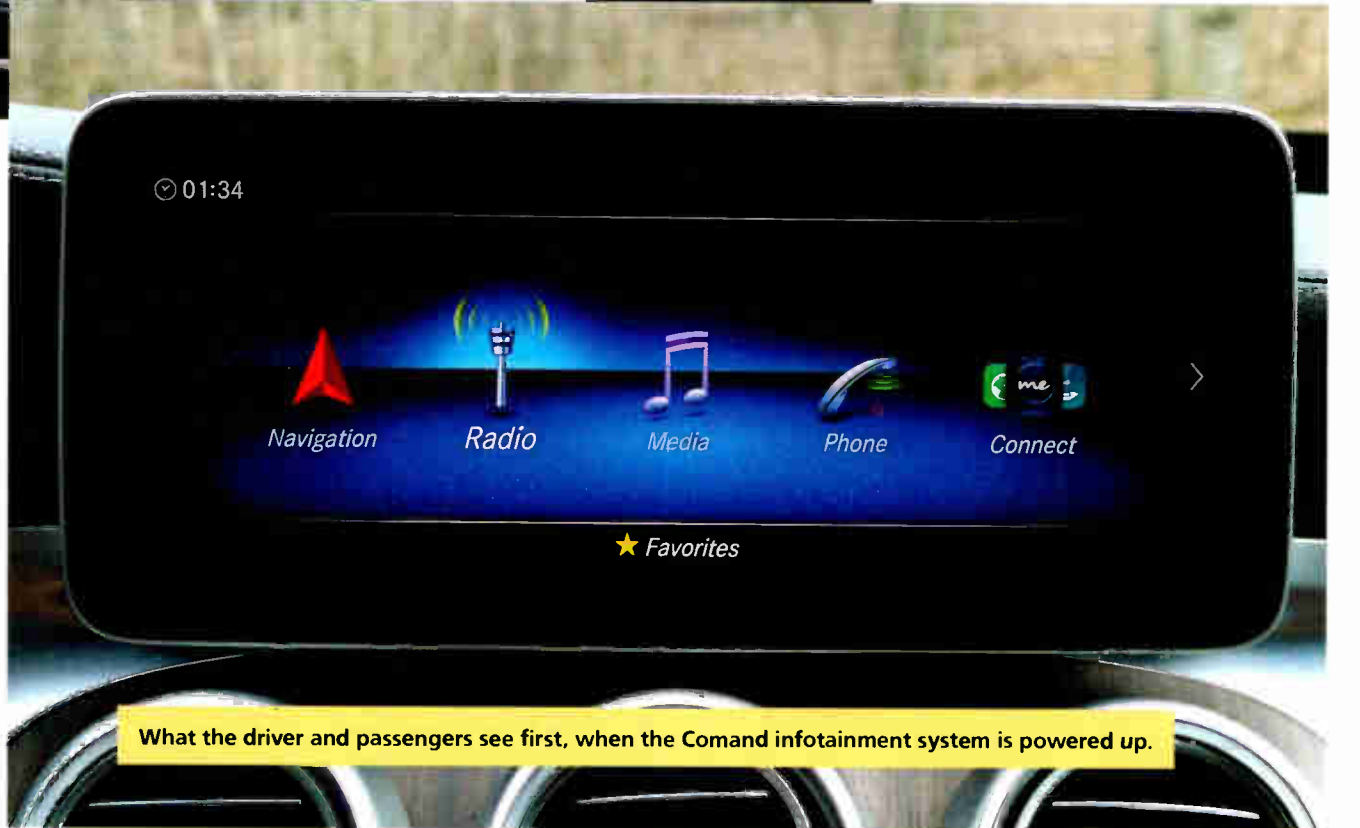
The optional center console touchpad on the Mercedes-Benz Comand infotainment system. Touch the top to move between choices. The assembly is stationary in the console.

DAS BESTE, ODER NICHTS

The Mercedes-Benz advertising slogan (translated from the German above) is "The best or nothing." And nothing is what owners of these cars will spend with your advertisers, if they encounter a signal from your station that does not echo the quality of the vehicle in which they drive.

Paul Kaminski has been a Radio World contributor since 1997. He produces and hosts the msrpk.com programs Radio-Road-Test and the Radio-Road-Test Minute. His Twitter handle is @msrpk_com; his Facebook page is PKaminski2468.

That attention to detail and subsequent focus on quality includes the basics checking RDS inputs and functionality; ensuring that the audio is processed to standard; ensuring that the signal is as robust as possible (whether on the main channel or an HD channel) and all metadata is entered accurately and completely, in a timely manner.



What the driver and passengers see first, when the Comand infotainment system is powered up.

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Hubbard Radio Consolidates Three Chicago FMs



Time crunch, tight spaces and efficiency govern new studios for WDRV, WSHE and WTMX

Front lobby of the newly combined WDRV, WTMX and WSHE facility of Hubbard Broadcasting in Chicago

FACILITY PROFILE

BY DOUG IRWIN

Those of us who have participated in one know that a station move can produce the most stressful times in our careers, regardless of market size. Recently, Hubbard Radio took on such a project for its Chicago radio stations, consolidating FM stations WTMX “The Mix,” WSHE and WDRV “The Drive.” The project was directed by Kent Lewin, chief engineer of the cluster, and facilitated by integrator RadioDNA, headed by Rob Goldberg.

PHYSICAL AND TIME CONSTRAINTS

As with so many projects of this sort, the end of a lease precipitated the move. In this case, WDRV was coming to the end of its lease at the John Hancock Center building, while WTMX and WSHE were already located about a mile away at the Prudential Building.

Hubbard Director of Engineering Dave Garner said, “The Drive was on



One of the three call screener/producer studios, each with direct line-of-sight into its associated air studio.

a very short fuse as far as its existing lease, and it had to be out by the end of last April [2018] so it was a real tight schedule. That was the moving force, and the timing was such that we had to work all the other renovations around moving the Drive into Prudential.”

The company decided to completely revamp the Prudential facility. Before WDRV moved over, a series of tempo-

rary moves needed to be accomplished.

“It was really like musical chairs,” said Garner. “They took a large office and moved The Mix into that area; and after that, the rebuild project was kind of like dominoes. We got The Drive in there, and it was just moving things around — moving studios from one station to another — in order to accommodate them. We actually created pro-

duction rooms in some new offices. In other words, somebody’s office — like a programming office, for example — became a production studio, and that happened numerous times during the reconfiguration.”

All the pieces came together. Through careful planning and timely execution, the team completed the project on time, with just a few days left on the calendar to spare.

“It was, to say the least, quite a project,” Garner said.

NEW CONSOLES AND ROUTER SYSTEM

As part of the entire revamping of the Chicago facility, the three stations were re-equipped using the Wheatstone AoIP system WheatNet. For this project, radioDNA built out 13 studios: on-air studios for WSHE, WDRV and WTMX plus a back-up on-air studio that can be used by any of the stations; three large-scale production rooms; three dubbing studios (i.e., less-capable production rooms); and three call-screen/producer booths.

The four on-air studios have Wheatstone’s 37-channel LXE frame, with motorized faders. “It’s just a monster,” said radioDNA’s Goldberg about the console. “It was pretty cool unboxing that huge coffin, as you can imagine.”

The air studios for WSHE, WDRV and back-up on-air are fixed-position, stand-up designs. However, according to

(continued on page 24)

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HUBBARD

(continued from page 23)

Goldberg, the console in the WTMX on-air studio has a unique setup, designed and built by Studio Technology.

"It actually is a motorized countertop, so the whole thing can go from basically sit-down to higher than stand-up. A lot of extra engineering went into that — as you can imagine, the huge countertop for a multi-person morning show and a 37-channel console. The countertop is big and heavy. It has eight motorized legs to lift and stabilize the thing, which is pretty cool."

The big production studios use Wheatstone L-12s. Goldberg said, "Each of the large production studios has Pro Tools and Wheatstone's VoxPro — actually every studio in the new facility has VoxPro, so there are 13, all told. We also included near-field monitoring using Genelec speakers."

The call-screen/producer studios use Wheatstone L-8s, and each studio has direct line of sight to its associated on-air studio.

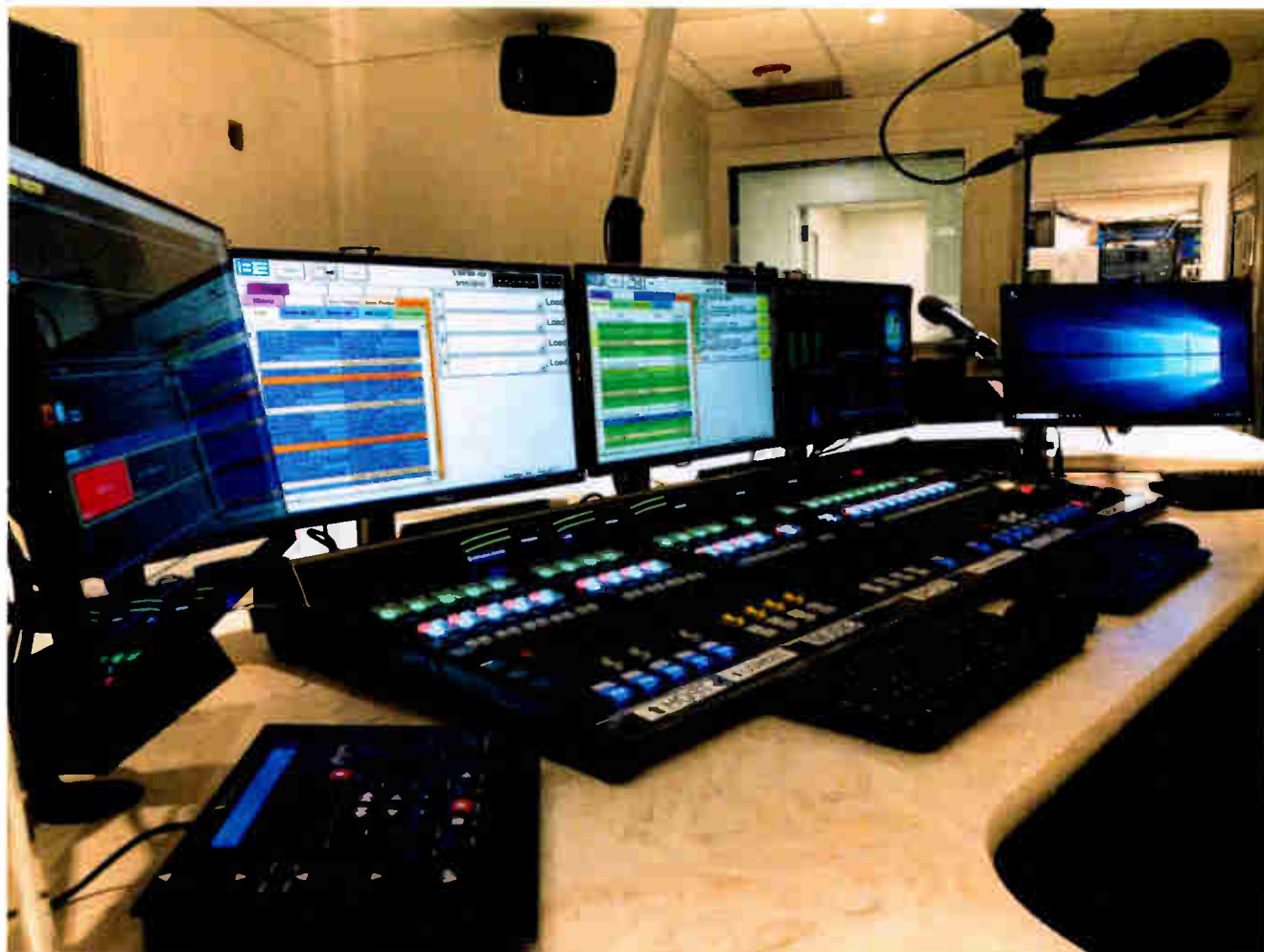
"We just didn't have the room (in the group of the three smallest studios) or the countertop space to put a control surface. There just wouldn't have been any work room; they're very small. So we built the control surfaces on a Microsoft Surface Touch Pad, using Wheatstone ScreenBuilder." ScreenBuilder is a software tool that lets the end-user build control, routing and monitoring interfaces on a PC or touch-screen tablet to create virtual surfaces.

"There's a boom arm that holds some monitors, a mic boom and mic status [by way of a visual indicator], and they have a VoxPro, BE AudioVault and an Adobe editor machine in this small studio. We had to do things efficiently. ScreenBuilder works great."

CUSTOM FEATURES

As with any studio build, this one includes custom features.

"For WTMX, we have two screener/producer studios and both have talkback in to the main studio, and they can talk to each other as well," Goldberg said. "We added logic to indicate if a studio's live or not — and there's a lot of talking back and forth, with five people in all, including the screeners and the co-hosts for WTMX. We also have another



WSHE's new air studio, complete with custom furniture with motorized countertop by Studio Technology. Also shown are the 37-fader Wheatstone LXE, VoxPro, BE AudioVAULT, Genelec powered speakers, and Yellowtec mic and monitor supports. The backup on-air studio is outfitted identically to the three main air studios and can be used by any of the three stations.



The newly completed WDRV air studio.

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one of the little booth studios, which can also function as a screener studio, that has talkback capability as well, for phone screening and whatnot.”

The screener/producer studios also have separate indications for when local mics are live on-air, or just live in the room. “We did little things like that, to just make it nice and easy for the operator so they can know when they’re live and when they’re not,” said Goldberg.

He added that Hubbard’s Market Chief Kent Lewin had a stringent set of requirements with respect to system redundancy.

“As radio engineers, we all are into backup systems and redundancy. Kent really takes that to the next level with everything. With the AudioVault, every audio output coming into a control surface comes from a different audio server — so you could actually completely lose one server, and all that would happen is that one channel would be missing.

“In addition to that, he actually breaks it out so the music comes from one control machine and the stop sets come from another. This created unique challenges in how we were going to control those machines. Previously they used custom relay boxes that did some neat things from their old boards and talked to the automation system. We did it all through programming directly from the surface to the AudioVault for all four music decks and all four spot decks. We programmed the cue button so that when you press it, it starts the first 30 seconds of the song; when we turn the cue off it stops the deck and cues it back up.”

HUBBARD CHICAGO EQUIPMENT LIST

- 25-Seven Systems PDM
- Avid Pro Tools
- Benchmark SPM-2 program meters
- Broadcast Electronics AudioVAULT automation software
- Denon DN-700R SD/USB networkable SD/USB recorder
- Fostex RM-3 powered rackmount audio monitors
- Genelec powered monitor speakers
- Studio Technology custom furniture
- Tascam 500B CD players
- Wheatstone WheatNet AoIP system
- Wheatstone LS-8, LS-12, LXE-37 consoles
- Wheatstone VoxPro audio software
- Yellowtec m!ka mic booms, monitor arms

One of three dubbing studios, built using Wheatstone ScreenBuilder, with the UI on a Microsoft Surface Touch Pad, and equipped with VoxPro, Genelec powered monitors, and Yellowtec mic and speaker mounts.

THE RACK ROOM

Due to time constraints, a rebuild of the stations’ rack room will be revisited later.

“Time was a little bit tight with all the moves, so we didn’t finish the rack room,” said Goldberg. “We’re actually going to come back and revamp it with all new equipment racks, and we’ll be taking out old gear to make room

(continued on page 26)



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HUBBARD

(continued from page 25)

for the new.”

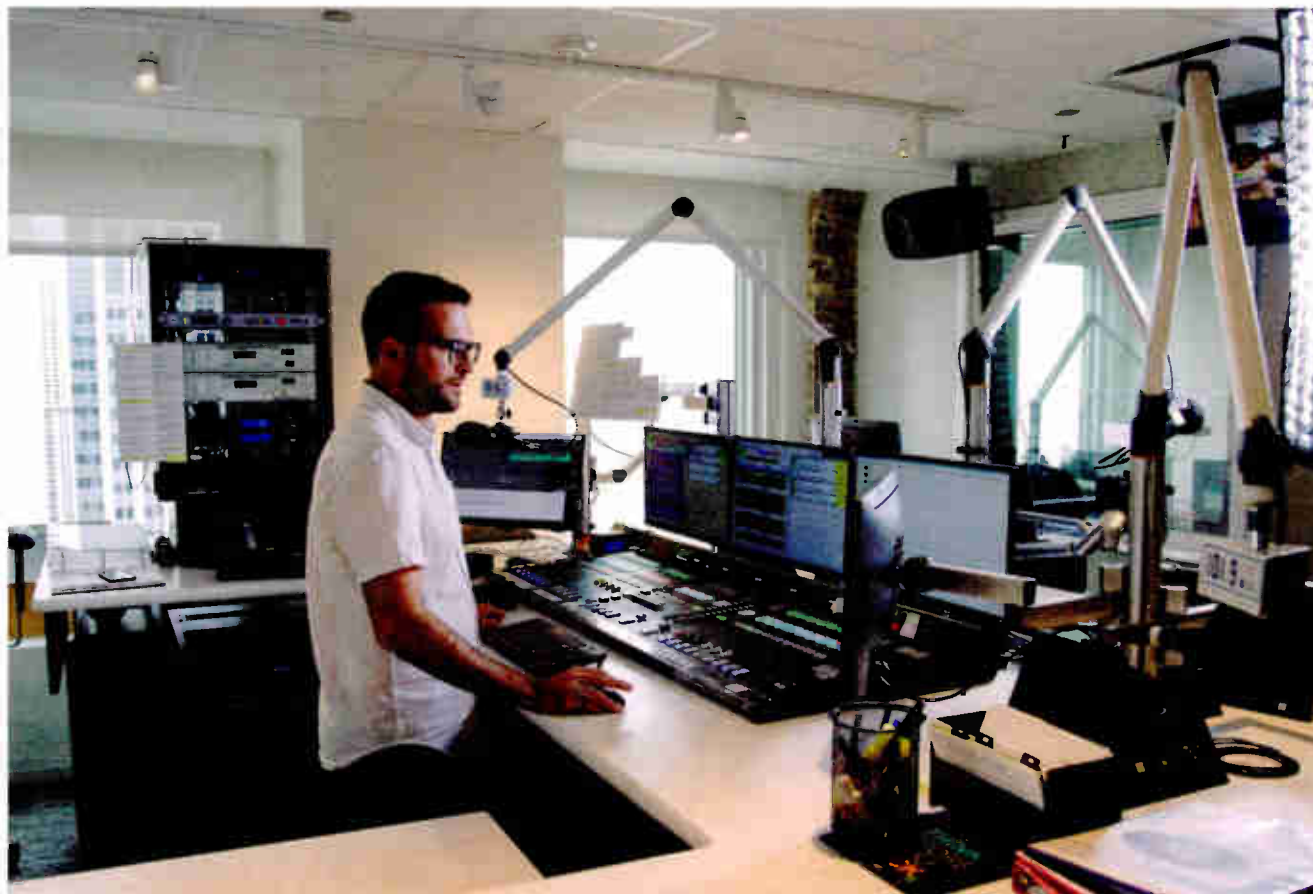
The blade count, as it stands now, is in the upper 70s, according to Rob.

“There’s plenty of growth — we didn’t use every I/O from each blade. We like to put blades where gear is. For example, Studio Technology builds these nice roll-around racks that come out from underneath the furniture. We have minimal cable going to these roll-out racks and we like to keep all of the audio interconnects within that rack if at all possible, not having to go out of a rack and then back.

“Our goal is to keep things organized and neat, so when you pull out the rack you have everything that was installed, or anything that needs troubleshooting, right in front of you.”

Though big studio projects like the one Hubbard has accomplished in Chicago can produce the most stressful times in your career, the upside is that, afterwards, you’ll likely have had some of the proudest moments of your life. Projects such as this offer a rare — perhaps once-in-a-career — chance to make a real difference in an operation or in a company.

Doug Irwin is the VP of engineering for the Los Angeles Region of iHeart-Media.



Former WTMX host Chris Reese working in one of the new air studios.

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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; 12' satellite dish on concrete base; prices drastically slashed or make offer. 315-287-1753 or 315-528-6040

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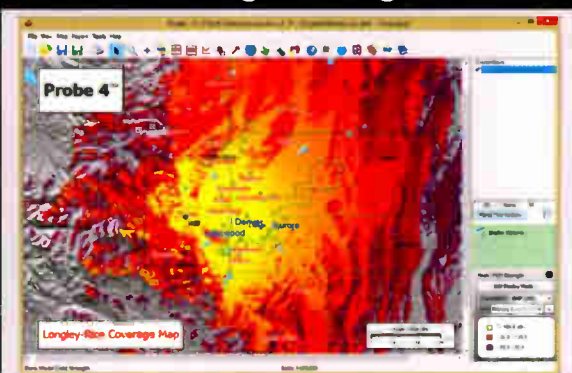
2" plastic "spot" reels 6.5

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.

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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

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

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Looking for a broadcast excerpt of a San Francisco 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.

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

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LPFM Is Not a Threat to Full-Service Radio

As low-power FM nears its 20th anniversary, let's agree that the true threat is from "non-radio"

COMMENTARY

BY MICHELLE BRADLEY

The author is founder of REC Networks.

Greetings from Riverton, Md.

Twenty years ago, the comment period for the creation of a new low-power radio service (otherwise known as LPFM) was open, and people from all walks of life were making comments.

These included comments in favor of bringing new community voices, and they also included comments of concern from broadcast interests over fears of increased interference and in some cases, increased "competition." There was an aggressive opposition from both the National Association of Broadcasters and National Public Radio.

The Kennard-era FCC took a huge gamble by crossing into uncharted territory through proposing and eventually adopting a new FM broadcast service without a requirement to protect third-adjacent channels.

Radio has the power to build and move a community, and it can be used by anyone, regardless of their socioeconomic status or availability of broadband services.

In the aftermath of the Jan. 20, 2000, adoption of the original Report and Order to establish a new LPFM service, the opposition to the new service by the establishment grew stronger.

The broadcasting lobbying efforts led by the NAB gave a CD to members of Congress that included "simulations" of what interference by LPFM stations on third-adjacent channels to full-service stations would sound like. This led to the Radio Broadcast Protection Act of 2001, which reinstated the third-adjacent channel protections and resulted in the dismissal of hundreds of applications that could not meet the new requirements.

It would not be until a few years later that a study, mandated by the 2001 act, would show that, based on field studies, there would be little to no interference caused by LPFM stations on third-adjacent channels.

The Local Community Radio Act was signed by



A page 1 story in Radio World from February 2000 covered reactions to the FCC's approval of a new low-power FM service. "It's a sad day for radio listeners," NAB President/CEO Eddie Fritts was quoted saying.

President Obama in January 2011 to reinstate the third-adjacent channel exemptions, in most cases.

Following the LPFM filing window in 2013, many new LPFM stations that would have otherwise been third-adjacent channel short spaced came on the air. I am not aware of any third-adjacent interference issues being caused by any of them. Real-world use of low-

New Stations Ahead

Apart from LPFM, the FCC is poised to open a mini-flood of FM allotments. Barry Umansky explains.

See Page 35

Cash Makes the News

Here's the time processor that got Rush Limbaugh so upset. Could your station benefit?

See Page 24

FCC Says Yes to FM Low Power

by Paul J. McLane and Leslie Stimson

WASHINGTON Within months, the first of at least 1,000 new low-power FM stations could be on the air. The FCC voted Jan. 20 to create a new radio service in the United States. Current broadcasters are not allowed to participate. The NAB called it a sad day for listeners and immediately vowed to "review every option to undo the damage caused by low-power radio." The FCC will create two power classes. One would be authorized at

It's a sad day for radio listeners.

— Eddie Fritts

50 to 100 watts, providing an approximate service radius of 3.5 miles, called LP100. The second range is 1 to 10 watts, called LP10, with a radius of 1 to 2 miles. Both have a maximum height above average terrain of 30 meters or 98.4 feet. Licenses will be awarded throughout the FM band, not in one dedicated piece.

'Social engineering'

Broadcasters, led by NAB, have opposed low power on grounds that it would create unacceptable interference and hamper the rollout of digital radio. NAB President and CEO Eddie Fritts said, "Every legitimate scientific study indicates that additional interference will result from LPFM." The NAB suggested the vote was driven by political over technical standards. "The FCC has chosen low power."

Public Radio Stations Shop for New Gear

Pubcasters Gain More Than \$2 Million From PTFP Grants

by Leslie Peters

Public radio station managers and chief engineers are shopping for equipment replacements and technical upgrades, thanks to federal spending money.

The funds come from an annual grant under the Public Telecommunications Facilities Program, operated by the National Telecommunications and Information Administration of the Department of Commerce.

PTFP offers public radio and television stations and nonprofit educational and cultural organizations the chance to compete for grants that can cover up to 75 percent of new service construction, or up to half of their technical replacement or

See PTFP, page 8



Bobby Bennett hosts the 'Burner' on WPFW(FM), Washington, D.C. The station will use its PTFP grant money for a new transmitter.

Sirius Satellites This Year?

Former cellular telephone entrepreneur David Margolese has been working on satellite-delivered digital audio radio for 10 years, since the chairman and chief executive officer co-founded what was originally called CD Radio in 1990. Now re-named Sirius Satellite Radio, the company is poised for its first satellite launch and executives say the Sirius subscription service will be operational by the end of this year, ahead of its competitor, XM Satellite Radio.

With the latest infusion of \$200 million from Blackstone

See SIRIUS, page 5

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LPFM

(continued from page 29)

LPFM. While the NAB did come to the table to pass the compromise LCRA legislation, the association continues to oppose any positive actions being requested by LPFM. This includes REC Networks' petitions for rulemaking RM-11749 and RM-11810.

[Ed. note: RM-11749 asked the commission to allow for service contours of up to 7.1 km for LPFMs; extend the distance that an LPFM station can move as a minor change; impose second adjacent channel protections to LPFM stations by FM translator and booster stations; and sought relief in the local origination pledge for time-share LPFM stations. In RM-11810, REC focused on addressing "unnecessary overprotection of other broadcast facilities by LPFM stations as well as disparity in the relationship between LPFM stations and FM translators."]

Ironically, during the RM-11749 proceeding, a few state broadcaster associations even came forward to admit that they had LPFM stations in their mem-

bership and that those stations were not as bad as some had thought in the past. Some have gotten over the fear of the unknown and have moved on from their pre-LCRA fears.

I must note that, while there was resentment of NPR because of its actions in the early days over interference fears, resentment lingers because of NPR's alleged involvement in decisions made by individual college stations to remove student programming and to adopt a mainstream public radio model. That is a conversation for another day.

WHAT POP CULTURE SAYS ABOUT RADIO

On the Sunday during this year's NAB Show, Fox aired an episode of the television show "Bob's Burgers" titled "Long Time Listener, First Time Bob." The episode was about a former local DJ who lost his job at the station when the corporate owners switched to automation and voice tracking (because "no one wants to hear a DJ who talks too much and plays whatever they want") and ended up working at a bowling alley. This episode touched on a few things

many of us could definitely connect to regarding the state of radio and got me wondering if the airing of this episode during NAB Show was intentional.

In one scene, set at the bowling alley, family patriarch and titular character Bob Belcher tells the DJ that he would like to hear him back on the radio again. Then he asked his kids if they would like to hear them on the radio. First, the edgy daughter Louise answered, "I like this guy's style. I hope I burn half as many bridges at his age." Bob's son Gene enthusiastically answered, "I want to listen, too!" But then whispers to his sister, "What is a radio again?"

What Gene Belcher asked in this episode was not far from reality. We have a new generation that is not being exposed to radio. In addition, we have earlier generations that are turning away from radio. This is because of a threat that is much bigger than a few 100 W (and eventually 250 W) LPFM stations could ever be. That threat is "non-radio" — streaming services that do not require a broadcast license and are available anywhere and at any time.

That threat not only impacts the NAB members and other full-service stations, but it also affects LPFM. Despite what some may say, fewer people are turning on the radio than in the past. We are in a time when radio's future of prominent presence on the dashboard is under threat in favor of streaming services.

Radio has the power to build and move a community, and it can be used by anyone, regardless of their socioeconomic status or availability of broadband services. A subscription is never required.

PROGRAMMING IS THE KEY

The way I see it, radio — both full-power and low-power stations — needs to provide compelling content, not to bring listeners to a specific station but to get people to turn the radio back on again.

If a community-based LPFM station starts presenting programming that is not available elsewhere, this is going to get someone to turn the radio on. While they are there, they may check out the other stations on the dial. A full-service station carrying local events and information that is tailored to their community may be what it takes to get more listeners to push the "on" button and start listening again. We need people, especially our younger generations, to recognize that they have always had one of the greatest "apps" for listening to music, news and other entertainment. They don't need a smartphone, just a radio.

We are coming up on LPFM's 20-year anniversary. There have been many success stories from this service over that time. Stations like KBUU(LP) in Malibu, Calif., which was on the air in the aftermath of the southern California brush fires carrying localized information and was still operating on a generator months after because power had not been restored to the transmitter site. Then there's KWSV(LP) in Simi Valley, Calif., which is actively involved with its community through their storefront main studio and popular high school football coverage. Just down the road from here in Cambridge, Md., is WHCP(LP), which is also very connected to its community and the local arts scene.

There are many other successful LPFMs across the nation. If this is what it takes to get people to discover (or rediscover) radio, then it is something we need to do.

With that, I feel that it is time to stop this animosity between the NAB and LPFMs, and we need to work together to keep the word "radio" first on the minds of anyone looking for news, information and entertainment. This can only happen if *all* of radio is working together. Otherwise, we will all fall prey to the same common threat.

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CORRECTION

The image printed with the Tech Update "MultiCAM Enhances Visual Radio Solution" on page 25 of the May 8 Buyer's Guide was incorrect. The correct image is shown at right.



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