WE TRY OUT THE PRESONUS PD-70 — Page 26

RADIOWORLD

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Hybrid Radio and the Royalties Question

Advocates seek to minimize the exposure of stations to higher costs

BY RANDY J. STINE

Developers and others involved in hybrid radio have been working to minimize the possible impact of royalty fees that U.S. broadcasters would pay for streamed audio content that is a popular function of hybrid systems for car manufacturers.

A hybrid radio receiver uses a station's over-the-air signal within the listening area until it is no longer viable, then switches to the station's online stream via cellular data networks, a feature called "service following" or "station following." (The listener can choose whether that switchover happens automatically or with a prompt.

It is an appealing selling point for hybrid radio: The listener stays on the same radio station in a situation when they normally would have switched away. Advocates call this an advantage for both listener and broadcaster — for the first time, terrestrial radio can provide "reception everywhere" akin to what satellite radio can offer.

The technology also can time-align the IP-delivered content to make a full seamless transition between the services, for the best

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Getty Images/Ralf Hiemisch

"Create Synthetic VOs Just by Typing"

What role might services like Descript play in radio?

BY JAMES CARELESS

As heard in movies and on TV shows, the stereotypical computer-generated voice sounds awkward and unnatural. But thanks to artificial intelligence, today's computer-generated voices can sound remarkably authentic and natural, especially if the voice has been generated after analyzing numerous samples of an actual person's spoken words.

This is the approach being used by text-to-voice companies such as Descript. Billed as a tool to help

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FCC Database Transition Nears Completion

Broadcasters and other power users adapt to online LMS e-filing system

BY RANDY J. STINE

The complexities of the transition from the FCC Media Bureau's online Consolidated Data Base System (CDBS) to the Licensing and Management System (LMS) have been well chronicled. But some of the major stakeholders who regularly use the new system told Radio World they generally find it to be more flexible than its predecessor despite some challenges.

LMS is the Media Bureau's latest internet-based system to permit electronic filing of broadcast radio and television application forms with the Federal Communications Commission.

"I think broadcasters need to keep in mind that the transition to LMS is a work in progress and that some patience is needed as the FCC works out the kinks," one veteran consulting engineer said.

"SIGNIFICANT" ADVANCE

The FCC launched its e-filing LMS forms system for TV licensees in late 2014. The LMS transition for radio broadcasters began in May 2019 with the transition of station renewal applications to the new platform. The FCC subsequently transitioned applications for new and modified FM, FM translator and booster, and LPFM stations to LMS.

In November, the FCC announced that applications for assignment and transfer of control of broadcast station licenses and construction permits would begin transitioning from the CDBS and become available in the LMS, though existing assignment/transfer applications will not be moved.

This latest phase "significantly advanced the LMS transition," said a commission spokesperson. The renewal, assignment of license and transfer of control applications are the most heavily used of Media Bureau forms.

The spokesperson said the main items remaining to transition are AM applications and a number of informal filings and less commonly used forms.

"While no conversion is without its issues, we are pleased there have not been major disruptions during the transition," the spokesperson said.

The EEO Program Report, Schedule 396, went to LMS as part of the transition of the renewal application, according to the FCC.

The Online Public Inspection File (OPIF) will remain a separate database. Information filed in LMS, where necessary, will link to OPIF the same way CDBS feeds information to OPIF.

AIMING TO SIMPLIFY

It's important to note that information does not flow from LMS back to the CDBS database. For pending applications filed in CDBS and for legacy information, broadcasters should continue to check both LMS and CDBS to ensure they have complete information.

Also, "Although the FCC conducts extensive testing before we make public releases, there inevitably will be some bugs that we do not catch," the spokesperson said.

The FCC describes the old CDBS database as "extremely complex," containing decade's worth of information that is highly customized. The gradual transition to LMS has been a deliberate process to avoid mistakes when possible, the spokesperson said.

"It also is important to note that the transition is not limited to the public-facing applications and database search features. We also are transitioning the engineering tools we use to analyze applications and the administrative tools we use to process applications. In many cases, transitioning those tools greatly complicates the process and leads to longer transition timelines."

> "I think broadcasters need to keep in mind that the transition to LMS is a work in progress and that some patience is needed as the FCC works out the kinks," said one engineer.

MORE ELEGANT

Joe Davis, consulting broadcast engineer and president of Chesapeake RF Consultants, says LMS does present a new way of doing things but that it feels like a more elegant form of electronic filing.

"We've have had to learn what kinds of files could be uploaded, sizes allowed and the easiest way of searching for filings," Davis said, "but it takes time to adapt to the differences."

Davis said one noticeable difference is the abandonment of the FCC's decades-long use of file numbers and prefixes that reflect the nature of an application (for example, BP- for AM construction permit, BPH- for FM construction permit, BL- for AM license and so on), and the date filed of new applications.

"Now in LMS, that filing is just a sequential number given in order of all applications received. It just

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makes it much more difficult to search for applications because you just don't know the date of an application without reading the file."

There really isn't much for station engineers to enter in LMS, Davis said.

"The typical scenario for a station-level engineer might be to query information from LMS. The public access part of LMS allows for people to cull readily available information on any station by entering a call sign," he said. "CDBS had those same query features but they are a bit different now."

The occasional PDF file gets corrupted during the uploading process in LMS, Davis said.

Bob Weller, vice president of spectrum policy for the National Association of Broadcasters, said the CDBS had a lot going for it but did have limitations such as fixed fields that couldn't be easily changed. "Then when the FCC did change something it would break everyone's software," Weller said with a chuckle.

The initial migration was incremental but still "pretty disruptive," he said, "because the underlying database structures that sophisticated law offices and consulting broadcast engineers use are very different from the FCC's graphical user interface. So there were some hiccups with the LMS server, but those seem to have been worked out."

Weller says many consulting engineers still complain about the lack of AM data available in CDBS and now LMS.

"Figures and graphical things unique to medium-wave broadcasting were never added to CDBS. And AM license applications Form 302 are still a paper filing exercise," Weller said. "And in order to look at someone else's AM application filing you need to send someone downtown — Washington — to retrieve all of the paper records from the Public Inspection Room. It's unduly expensive because of it."

The Media Bureau does plan to transition all AM filings to electronic submissions in LMS as part of the change to the LMS system. "Due to the complexities of AM engineering, we expect that to be a significant development effort," the FCC spokesperson told Radio World.

Weller, who previously worked at the FCC, said the commission introduced an online database in 1979, called the Broadcast Application Processing System (BAPS), which processed applications and generated authorizations and Public Notices. BAPS was replaced by CDBS in 1999.

As services are moved into LMS, Weller said, communications attorneys and consulting broadcast engineers again are reminded there is "no backwards compatibility" between CDBS and LMS.

> **We download from the LMS** very early each day to make it available to our users. All of our processing programs had to be rewritten to handle the new LMS data structure.
>
> — Doug Vernier, V-Soft Communications

SOME QUIRKS

Some aspects of LMS are better, said Rajat Mathur, vice president of Hammett & Edison, Inc., a broadcast and wireless consulting firm.

"The LMS forms and schedules themselves have some auto fill and error checking capabilities, which is helpful. For example, when an antenna structure registration (ASR) number is entered in an LMS application it automatically fills in the appropriate data (ground elevation and tower heights) from the ASR database into the relevant field in the LMS form," Mathur said.

Yet there are some quirks to LMS, Mathur said, usually related to starting an application.

"CDBS was straightforward in this regard. You just picked the appropriate form from a list and go. However, in LMS the FCC has transitioned from a form-based system to a largely schedule-based system, and sometimes it can be difficult to find and start the appropriate application," he said.

Doug Vernier, president of V-Soft Communications, said the transition has added to the workload of consulting engineers and broadcast law attorneys

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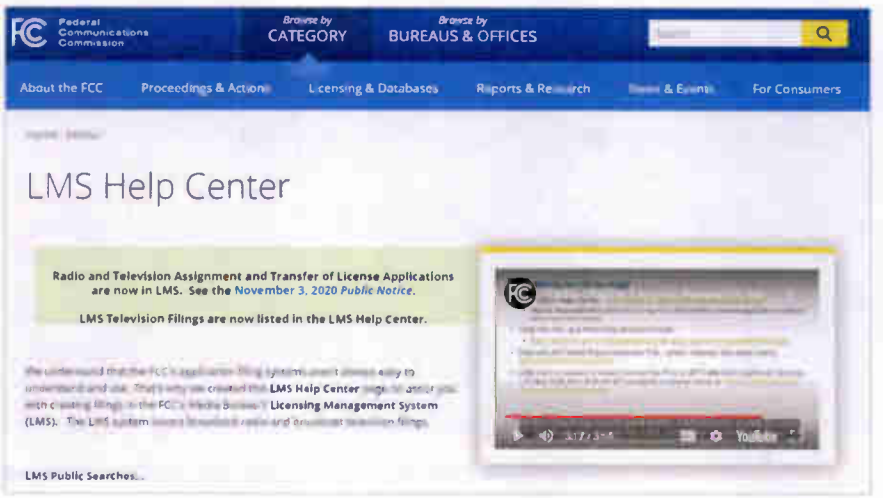

The commission has a web page to help with the new system, at *www.fcc.gov/media/radio/lms-help-center.*

who regularly use the online database.

"We download from the LMS very early each day to make it available to our users. All of our processing programs had to be rewritten to handle the new LMS data structure," Vernier said.

He hopes the FCC makes some final additions before completing the transition to LMS. "The commission could finish the transition by including many useful items left out from the CDBS such as a link from the record to the primary station's translator or translators," Vernier said.

In addition, the LMS still does not have the comments that were posted with the records on the CDBS, Vernier said. "The comment file was particularly useful when it gave information on agreements with foreign stations about the maximum power that can be run in the direction of the foreign stations. This loss is really a big problem when we are working with a U.S. station near the U.S. international borders."

"FAR FROM PERFECT"

Michelle Bradley, president of REC Networks and REC Broadcast Services LLC, said radio broadcasters need to pay particular attention to previous assignments and transfer applications.

"Unlike what the FCC did with modification applications, the existing assignment/transfer applications will not be moved into LMS. Pre-November 18 applications filed in CDBS will not be able to be amended in either CDBS or LMS. The same goes for pleadings in those applications," Bradley said.

REC, which provides advocacy and

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SOME DATA TBD

Users familiar with the database said that as of November, LMS data did not yet contain helpful items such as whether FM stations transmit in HD, the associated facility ID or a link from the record to the primary station's translator or translators.

John Gray, vice president of V-Soft Communications, did a comparison for certain FM technical data in the LMS vs. the CDBS from around the time the transition began in late 2019.

Missing as of November were the "digital status" flag that indicates if a station is using HD Radio; an indication that a station is near a country border and the distance to that border; FM comments that were contained in the CDBS "fmcmnts.dat" table; STA records; and the electrical beam tilt indicator flag (though for this data point, Gray said the LMS field "aant_electrical_deg_ind" in the "APP_ANTENNA" table could indicate this, noting that it does contain some values. He said there was a "bt_ind" field in the old "fm_app_indicators" CDBS table).

"We continue working on improving the information flow from LMS and expect new information to be available as we enhance the database," an FCC spokesperson said.

HYBRID

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user experience.

In the United States, radio broadcasters that stream their content on the internet or mobile apps must pay for music use on those digital channels; SoundExchange is the entity responsible for collecting digital music recording royalties and distributing them to copyright owners. When the hybrid radio platform is playing the stream, those royalties would kick in.

But broadcasters following these developments had expressed concern about possible additional "hidden" streaming fees if the implementation of hybrid radio samples the stream audio in the background in order to align it with broadcast — meaning broadcasters might incur rights fees even when no one is listening.

Developers like Audi and Xperi, which have separate implementations of hybrid radio, have been working on ways to minimize such royalty exposure.

One observer said he thinks anxiety about this particular potential problem will recede as hybrid becomes more established and the reality of usage becomes more apparent. "I think the bigger risk is that by reacting too adversely to the potential of this risk, it undermines hybrid and accelerates a move to an all-IP environment."

"INCREASED ENGAGEMENT"

A number of large radio groups have expressed interest in hybrid radio, and the National Association of Broadcasters has been active in promoting its progress in the United States.

iHeartRadio is collaborating with Audi of America to bring the capability to drivers of connected cars in the United States. Meanwhile in December, Entercom said its Radio.com digital platform is now part of the DTS Connected Radio ecosystem, citing benefits of "increased engagement, expanded reach and turnkey management and control of content for each of our local broadcasters," according to a press release.

Neither broadcast group commented for this story.

Advocates note that the royalty issue is less of a concern in markets like Germany where broadcast stations do not have to pay additional fees for an online stream if it is an exact simulcast.

Getty Images/Ralf Hiemisch

Observers say hybrid receivers have their own unique characteristics and that, ultimately, auto manufacturers will be the ones deciding how seamless the transition from OTA to IP stream is going to be.

But in the United States, a communications attorney familiar with digital media and hybrid radio said limiting exposure to any streaming royalties in connected cars is crucial to support the interest of radio entities.

"Obviously, (broadcasters) won't want to pay more than necessary. They don't want to pay for listeners that are not there on the stream. That would be a disincentive for the industry to support hybrid radio," the attorney said.

"However, broadcasters pay fractions of a cent in streaming royalties, so unless its use becomes widespread, it might not be that much of a financial burden. Much of this will depend on the adoption of the technology and how many use it."

Two sources involved in these developments emphasized that the time involved in alignment is only a couple of minutes of streaming in the background, and hoped the issue would not discourage other manufacturers from pursuing hybrid radio.

LOCATION-AWARE

The discussion of sampling in the background to work out alignment for seamless switching is separate from whether streaming should be used at all where good broadcast signal exists. Some broadcasters have worried that manufacturers would be tempted to put in poor quality radio receivers on the assumption they can freely fall back to streaming in bad reception.

In a 2020 Radio World article, David Layer, VP of advanced engineering for NAB, was quoted saying that a possible solution to such concerns is for broadcasters to provide geographic information to a receiver about where the station's OTA signal should be strong enough to not require streaming audio.

"The receiver, which is 'location-aware,' would not use the streaming signal while within that strong signal area. This would help to reduce the amount of hidden streaming," Layer said then.

One hybrid radio insider told Radio World that such a process would be like "geo-fencing, in a sense," though the inverse of the typical application. "Such technology could prevent the stream from even being found within a sta-

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professional filing services, recommends broadcasters send an e-mail to FCC staff to request a manual amendment of those applications. "Consummation notices from granted CDBS assignment/transfer applications will continue to be allowed in CDBS," Bradley said.

Lawyers often use the Media Bureau's databases to complete the legal sections of forms that were started by consulting broadcast engineers, who provide the technical data. One veteran communications attorney told Radio World the new LMS system is "far from perfect."

"The FCC's adoption of LMS for its radio broadcast station application work is afflicted with similar shortcomings that affected the original adoption of CDBS several decades ago. That shortcoming is that the FCC's staff did not invite public comment from its most prolific users of the system – the legal and engineering community – prior to putting the LMS foundational aspects in place," this Washington-based attorney said.

"This lack of user input, and the deficiencies in LMS as a result of no input, will likely cripple the usability of LMS for years to come."

He continued: "CDBS, as it has been modified through the years, is an extremely efficient and a quick way to search out just about any facility information or application filed regarding a broadcast station. Conversely, LMS is sluggish, and buries information behind multiple non-descript headings. I do not know whether it is pride, or simply bureaucratic intransigence, that kept the FCC staff from involving the public and prime users of LMS in the design of it."

That does not seem to be the consensus view, however.

"We have not had any issues with the carrying over of databases, including call signs or FRNs [FCC Registration Number]," said Reid Avett, communications attorney with Womble Bond Dickinson in Washington.

"Some of the improvements, such as having the ability to create a special use FRN for ownership reports within the LMS form are very helpful. Generally, it's more user-friendly for filers. For example, LMS can model an ownership report off of a prior ownership report, so it takes less time to complete."

However, there are still nuances of varying degrees between CDBS and LMS, Avett noted.

"We find that some of the searching can be trickier. For example, a facility search will include the same information as an application search, but be formatted differently," he said.

And Avett has one final request of the FCC: "A filer must search several sub-menus to find all of the reports that can be filed. For instance, we do not understand why a link to start an EEO report does not appear on the first or second page. Instead, a filer has to click on 'facilities,' then click on a facility ID, then click on 'file a report' and then select EEO report."

The FCC says LMS users are encouraged to contact the Audio Division with feedback about problems they encounter and should remember they can consult the LMS Help Center for instructions and other assistance.

tion's listening area, so there would be no threat of the hybrid radio receiver tapping into the audio stream unless it is outside the station's listening area. It creates a barrier."

However, the person continued, a geo-fencing system might not be able to take into consideration the varied nuances of hybrid receivers in a variety of connected vehicles. "That lack of a unilateral approach to solving the transition process is creating some concern among broadcasters."

"ONLY WHEN NECESSARY"

On the alignment issue specificaly, one way to limit fees is by maximizing the reception of a radio station's over-the-air signal.

For instance, Audi — which has been in the forefront of hybrid radio deployment and introduced its first car model with the feature in 2017 — uses multiple FM antennas with the "latest broadcast radio receiver chipsets" to hold the signal stable as long as possible, minimizing situations where streaming is justified. Audi then utilizes an integrated 4G LTE Wi-Fi hotspot to maintain a station's service when out of range of the signal.

Audi of America has introduced hybrid radio technology on some vehicles available in the United States with the new MIB 3 infotainment suite. With an annual subscription to Audi connect Prime ($365) or Plus ($499), listeners get hybrid radio along with features like Amazon Music integration and a WiFi hotspot.

According to one source, this system can compensate in most cases for up to around 10 seconds of delay in stream vs. the broadcast signal. "When it does not have the time for a perfect alignment, it will switch to stream when the broadcast signal is lost."

Observers say hybrid receivers have their own unique characteristics and that, ultimately, auto manufacturers will be the ones deciding how seamless the transition from OTA to IP stream is going to be and how often the receivers sample the internet streams.

The amount of delay between OTA and the internet stream can vary, too, depending on connectivity variables built into the receivers. Different latency levels also will develop depending on the cellular network capabilities, such as the delivery speeds of 4G and 5G platforms. And then there is the application infrastructure used by broadcasters for their streams.

"The lower the delay an online stream has compared to the FM signal, the better seamless 'station following' works," the observer said, noting that in the past, broadcasters generally haven't had to worry about synchronizing the online stream with the OTA signal. "We've seen stations in Europe changing their delay to the better after they were introduced to hybrid radio. It's about awareness."

"LOW-LATENCY"

Xperi's DTS Connected Radio platform is rolling out in a partnership with Daimler and its luxury Mercedes-Benz passenger vehicles. The technology is part of the Daimler MB User Experience (MBUX) system. The carmaker is including hybrid radio on some Mercedes-Benz S-Class 2021 models that were set to arrive in the United States by the first of the year.

An Xperi official told Radio World some broadcasters supply the company with "custom audio streams" that are more tightly aligned to the over-the-air signal to minimize any streaming delays.

Joe D'Angelo, senior VP of radio at Xperi, said it's not the company's practice to use the audio stream in the background to create a seamless time alignment for the hybrid radio environment.

"It will not be totally seamless, but it will be a low-latency switch," D'Angelo said. "A totally seamless transition could be a very expensive process for broadcasters. We are working with broadcasters to minimize their costs."

D'Angelo said the issue affects the U.S. and Australian markets because of the structure of streaming royalties there, but that it is less of an issue in Europe.

"We are trying to maximize that radio broadcast signal usage and allow stream access only when it is in the broadcaster's interest," he said.

Hybrid radio is basically a collective term for technologies intended to enhance traditional broadcast with an internet connection; and "service following" is not the only benefit.

For instance DTS Connected Radio

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AI VOICE

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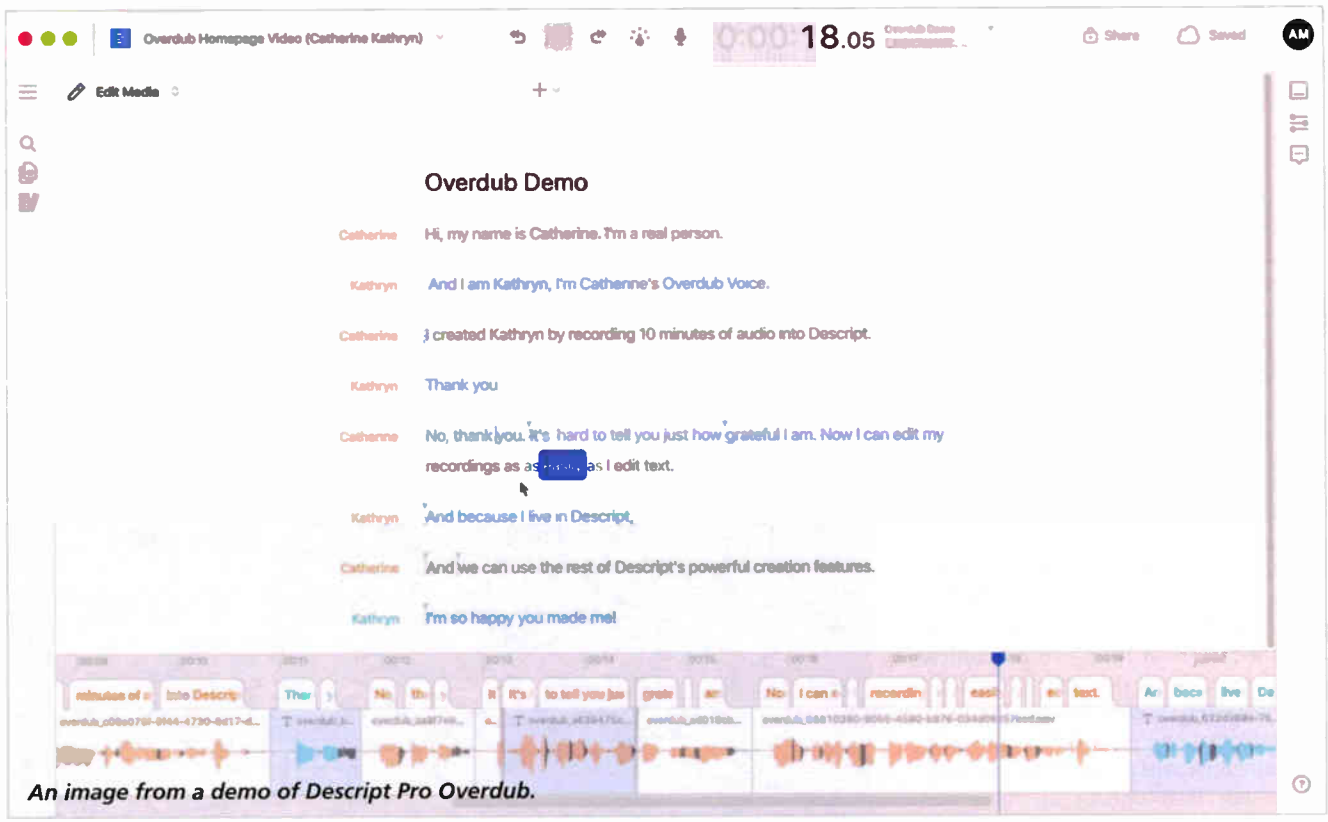
podcasters edit and generate new speech simply by editing text transcripts, Descript starts out by having its clients read text samples into the company's database, so that its AI-based text-to-voice engine has accurate sounds to work with.

"You can even create a range of delivery styles using samples of your voice," said Jay LeBoeuf, Descript's head of business development. "You could have one file labelled 'Excited,' a second labelled 'Contemplative' and so forth. Then when you input text that suits a particular style of read, you can tell our system which delivery style to use."

The ability to create voice tracks from text, without actually stepping up to the microphone and speaking into it, has tremendous implications for the radio and voiceover industries.

In particular, the ability to create audio content from AI-generated "stock voices" (rather than cloned from individual human voices) could turn the market for human announcers upside down.



An image from a demo of Descript Pro Overdub.

HOW GOOD IS TEXT-TO-VOICE?

This article was prompted by a Descript email received by Radio World with the subject line "Create Realistic, Synthetic Voiceovers Just by Typing." It included a link to an audio file named "Descript Stock Voices." It featured some of the 10 distinct AI-generated female and male voices that Descript offers to its text-to-voice clients for free. (A link to the audio file is at the end of this article.)

The file featured these non-human voices bantering back and forth, to illustrate how natural they sounded to the actual human ear. Again, their spoken words were generated directly from text.

In the subjective assessment of this writer, the AI-generated voices generally did sound authentic, although the need to leave distinct spaces between each of their words added a slight unnaturalness to the delivery.

Overall, the interplay between Descript's AI-generated voices was impressive. In a short commercial or an on-air announcement consisting of two or three sentences, they would have been good enough to pass muster with most listeners.

AIMED AT HUMAN ANNOUNCERS

Despite its mention of AI-generated voices, Descript says its services are aimed at human announcers/producers who want to make changes to their recorded content without having to go back to the studio.

There's an increased trend towards short radio ads and more of them in a given campaign, which is ripe for AI in my opinion.

— Rolfe Veldman, www.Voice123.com

"The most common use case for our Overdub voice cloning service is editorial corrections of human-delivered audio content," said LeBoeuf. "It allows producers to make changes to this content as needed quickly and accurately."

Sam Sethi is a U.K.-based radio presenter heard on Marlow FM, BBC Berkshire and several other radio stations. He also podcasts and does voiceovers, and uses Descript Overdub as part of his production process.

"I read Descript's prescribed text to train their system for 30 minutes, and then Descript created my unique Overdub voice," said Sethi.

"In a blind listening test, my wife of

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HYBRID

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combines OTA radio with internet-delivered content and aggregates the metadata, such as on-air radio program and talent information and artist and song information. And hybrid radio will offer broadcasters real-time analytics on listening habits and crucial data for advertisers.

But radio broadcasters watch the cost of content closely, D'Angelo said, along with the cost of consumption.

"Those elements need to be considered when designing the system of over-the-air to streaming. With our platform we are very aware of this switch for broadcasters. We have done a lot of engineering work and implementation work to make sure we minimize the time spent streaming while still ensuring a great user experience.

"Our platform is constantly looking at RF signal quality, and then we ensure the switch to streaming only happens when it is absolutely necessary, and we switch back to broadcast as soon as possible. In our system we are literally talking about seconds for the alignment process where it is sampling the IP stream."

D'Angelo continued: "Car radios all have very different RF performance characteristics. It's important to consider this nuance to allow you to constantly assess the on-air signal quality."

He said Xperi research indicates listeners will accept audio in hybrid radio mode that is not totally synced up.

PERIOD OF UNCERTAINTY

RadioDNS is an open standards organization that promotes technical standards for hybrid systems and encourages sharing of information sharing between broadcasters and manufacturers "to lessen the uncertainty of implementing hybrid radio." iHeartMedia, Cumulus, Entercom, Cox and NPR are among the members of RadioDNS.

Project Director Nick Piggott said the initial integration phase of hybrid radio does create a period uncertainty for broadcasters since they can't estimate the amount of extra streaming it creates.

"What I think we can say at this point — taking into account the speed at which vehicles are coming to the market and the number that support seamless switching — [is that] it's unlikely to have a material impact [on streaming fees] in the short term," Piggott said.

He said there is "no requirement for auto manufacturers to make hybrid radio seamless," even though "that seamlessness is a specific approach to the implementation, which of course makes it seem magical to the driver."

But broadcasters should support manufacturers' ambitions to provide the audio experience that drivers want, he said.

"The risk of reacting too quickly to this concern is that it pushes manufacturers and drivers towards an all-IP approach, which is certainly less appealing than a hybrid approach."

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AI VOICE

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20 years couldn't tell with 100% accuracy which was the synthesized voice and which was my own. I was genuinely amazed by that. Since then I have used my Overdub voice to make small edits or add additional audio quickly by using Overdub."

POSSIBILITIES

As useful as Descript's Overdub voice cloning is to human announcers and products, it's the economical AI-generated voices that might get a cost-sensitive radio manager thinking.

Using a text-to-voice portfolio of AI-generated voices, a network could create individualized news, weather and sports casts for each market. The text would be generated by humans at a central location. Stories would be sorted and stored in online folders for each station, organized by playout order and then fed to a text-into-voice system that would generate market-specific audio broadcasts for each location. No announcers required.

In the same vein, station identifications and other branded content that are being created by human voiceover artists could be produced using text-to-voice. (To offset any cadence issues, the station could openly acknowledge that it is using a text-to-voice system: "Hi, I'm Bob, your friendly AI announcer.")

Meanwhile, local ad campaigns could be changed constantly as required using text-to-voice, allowing stations to provide an unprecedented degree of custom messaging to sponsors.

Fans of human creativity in radio are shuddering right about now. But these scenarios certainly seem credible in an era when big media companies have been known to cut costs.

According to Rolfe Veldman, CEO of *www.Voice123.com*, an online marketplace for voiceovers, AI-generated voices are already turning up, mainly in advertising.

"There's an increased trend towards short radio ads and more of them in a given campaign, which is ripe for AI in my opinion," Veldman told Radio World.

"Meanwhile, the quality of AI-generated voiceovers is improving. Six months ago it was horrible and today it's already more than okay. So you can only imagine how good it may be in a year from now as the AI-enabled text-to-voice systems continue to improve."

Veldman says he isn't concerned about AI-generated voices displacing human announcers in general. But he does worry that the low cost of AI voices will further depress rates for human talent.

"There are already more voice actors available today than there is available work," Veldman said. "Adding AI to the market will only make things challenging."

LIMIT TO THE TECHNOLOGY?

Now that AI-generated voices are here, it seems unlikely that they will disappear. But can a voiceover generated by an AI software program ever match the very best work done by a human?


Joan Baker

Selling to people ... requires cutting through a very dense layer of cynicism and apprehension. This is why the 'conversational, natural, non-announcery' style of voice acting has become so popular.

— *Joan Baker, Society of Voice Arts and Sciences*

Gary Kline is a veteran engineering consultant and contributor to Radio World. He's not convinced that AI can do the job.

"The AI voices are good enough to use for weather, sports, emergency alerting, giving the time of day, and other short-form informative material," Kline said.

"But I do not think that they are ready to replace your AM or PM drive host. I don't think they will be voicing commercials either, at least not yet. It remains to be seen if anyone will actually use the technology for true air-talent replacement and if they do, if listeners will accept it."

Joan Baker is vice president of the Society of Voice Arts and Sciences, and she is similarly skeptical of AI-generated voiceovers.

"I can see this technology being useful to producers who think they can't afford the minimal cost for hiring skilled voice talent, and are working on projects where there is no real need to appeal to the emotions and needs of the intended listener," said Baker.

"Selling to people, however, requires cutting through a very dense layer of cynicism and apprehension. This is why the 'conversational, natural, non-announcery' style of voice acting has become so popular.

"Beyond selling, it is also tough to communicate critical issues about public safety, health and many personal concerns over which consumers — the public — are looking for inspired solutions and advice," Baker said.

"In these cases, only real people can tap into the nuances of emotions that are symbiotic in how people think and feel during one-to-one communications with each other. Can a robotic voice know the difference between saying 'I love you' at a time when a person is feeling romantic toward his soulmate, and when he is comforting a friend on their deathbed?"

It is hard to imagine that an AI-generated voiceover could surmount the communications challenges outlined by Baker and Kline. That said, not so long ago it would seem unimaginable that AI-generated voices could pass for human. You can assess for yourself how close the Descript Stock Voices audio file gets. Listen at *https://tinyurl.com/rw-descript*.

(The full URL is *https://share.descript.com/view/472449ab-ba4c-4736-94bc-79d015d529af*.)

NEWSWATCH

CHRIS TOBIN: Colleagues mourned the sudden death in December of radio engineer Chris Tobin. He suffered a heart attack during HVAC project work for his employer WBGO in Newark, N.J., according to the station's Interim President/CEO Robert Ottenhoff. Tobin had been chief engineer of WBGO and recently was promoted to chief technology officer. He also was known in the engineering community for his work as co-host for 11 years of the online program "This Week in Radio Tech," or TWiRT.

DIGITAL RADIO: Dec. 21 was a big day for digital radio in Europe. All radios in new cars and other passenger vehicles must now be capable of receiving digital terrestrial radio. That stipulation is part of the European Electronic Communications Code, and digital radio proponents have been looking forward to it.

WorldDAB, which has said that DAB is "firmly established as the core future platform for radio in Europe," welcomed the milestone date.

"Despite the impact of Covid-19, Germany, France, the UK, Italy and Denmark have already introduced laws mandating digital terrestrial radio in cars and other countries are expected to follow shortly," the organization stated. "In the first half of 2020, over 50% of new cars sold in Europe included DAB+ as standard — a number that is expected to reach 100% by the end of 2021 as DAB+ adoption continues to grow across Europe."

VACCINES: The National Association of Broadcasters highlighted a study about the challenges and opportunities for media in covering deployment of COVID-19 vaccines. NAB and the Donald W. Reynolds Journalism Institute commissioned the survey, which was conducted by SmithGeiger. They said that "a strong majority of Americans are eager for a COVID-19 vaccine and interested in news coverage that provides expert testimony on the safety and efficacy of vaccination."

They said that a desire to get back to normal is the biggest motivator for getting vaccinated and that "media organizations could encourage vaccinations by focusing on messages regarding reducing loss of life and helping others."

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

David Morgan, CBRE, is the director of engineering for Sinclair TeleCable-Norfolk in Virginia. He enjoys the generator tips we share.

He sent pictures of the emergency generator at WNIS(AM) 790 in Norfolk. It is a G.M. Diesel (from Detroit) Model 4-71. The gray electrical generator portion was newly installed in 2003 after the old one self-destructed during Hurricane Isabel.

David reminds us of the importance of checking radiator hoses, seen at the upper end of Fig. 2, and to inspect the belts that interconnect the engine pulleys.

First disable the generator so it won't start while you are inspecting it. Then gently squeeze the hoses. They should flex, and there should be no visible cracks in the rubber during flexing.

Before turning the generator back on, conduct a visual inspection of the belts. (A strong trouble light will help in this inspection.)

Locate the longest unsupported section of belt and inspect it for abnormal wear, such as glazing on the side of the belt or missing chunks of the belt.

Fig. 1: This genset recently kept WNIS running for 38 hours.

Fig. 2: Inspect radiator hoses like the one at upper right, as well as the belts on the engine pulleys.

Fig. 3: Cal-Blue Plus stays really gooey for some time after spraying. This makes it easier to spot difficult or very slow leaks.

The latter can be caused by high temperatures from the heat of the engine or friction due to belt slippage.

Next, start the generator up and listen. Noise is the first indication of belt (and possibly pulley) problems. Belt squeal during start-up signifies slippage. Check for glazed sides of the belt. Also listen for squeals during a load test as the station's electrical load is transferred to the generator. Under normal conditions, changes in RPM should not cause the belt to slip.

As the engine runs, watch for erratic movement or flutter in the belt as it turns. Either warrants further inspection by a generator technician.

As with a car tire, friction between the belt and pulleys will wear the belt away. The most common area of wear is on the tops and walls of the belt ribs. Eventually, this friction causes the grooves of the pulleys to bottom out on the grooves of the belt, with belt slippage as the result.

Poor alignment with the belt and pulleys is the biggest cause of noise. This condition can also cause belt fraying and premature wear.

The best way to inspect for this condition is to sight down the side of the belt to make sure the belt edge doesn't make any bends away from or toward the engine. Any deviation you can spot with your eye is excessive.

One other maintenance tip concerns care when adding oil or coolant to the generator engine. If either comes in contact with the belt, slippage can increase, and the slippage can cause even higher friction temperatures, resulting in more belt damage. Also inspect the seals around the water pump and the engine oil seals; leaks can contaminate the belt surface.

These tips about squealing belts also apply to air conditioning air handlers. If you hear a squeal, investigate!

SLOW-LEAK FINDER

David wraps up his comments by noting that this generator recently powered the station for about 38 hours after Tropical Storm Isaias blew through the Norfolk area. Even older generators, when properly maintained, can provide long and reliable service.

David adds a comment about using soapy water to detect leaks in transmission lines and the associated manifolds and nitrogen tank fittings.

To spot difficult or very slow leaks, he has found it easier to use blue leak detector spray, such as Cal-Blue Plus brand from Nu-Calgon (*www.nucalgon.com*), which was developed for HVAC technicians to spot refrigerant leaks. Unlike soapy bubble water, this spray stays really gooey for some time after spraying; the adhesion allows time for slow leaking nitrogen to bubble out. And because of its high viscosity, the bubbles last a long time. The viscosity also enables the product to remain in contact with the applied surface for an extended period, making slow leaks easier to spot.

The best way to inspect for this condition is to sight down the side of the belt to make sure the belt edge doesn't make any bends away from or toward the engine.

Cal-Blue Plus is non-corrosive to metal, meaning fittings and copper tubing will not be damaged by the compound. You can find it at places like Grainger and Home Depot, or via Amazon.

John Bisset has spent more than 50 years in the broadcasting industry and is in his 31st year writing Workbench. He handles western U.S. radio sales for the Telos Alliance. He holds CPBE certification with the Society of Broadcast Engineers and is a past recipient of the SBE's Educator of the Year Award. Workbench submissions are encouraged, qualify for SBE Recertification, and can be emailed to johnpbisset@gmail.com.

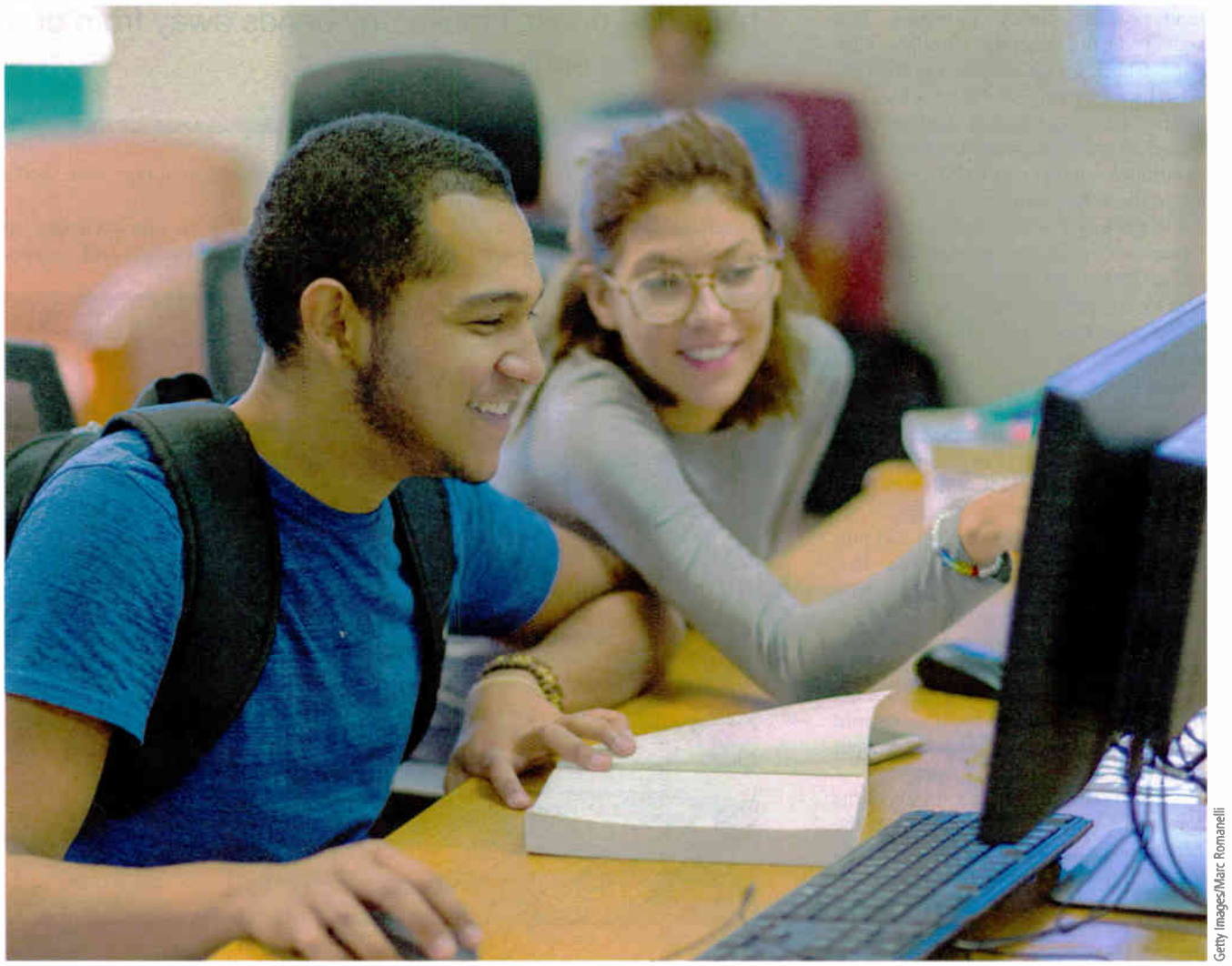
Take Chances in Your Station Hiring

To expand your pool of candidates, expand your methods for finding them

COMMENTARY

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.



Getty Images/Marc Romanelli

Radio World has recently hopped in at the right time by leading some important conversations related to radio. In covering the strains that stations face in diversifying their workforces as well as tensions in noncommercial media over dozens of diversity scandals, fresh discussions with readers like you are starting.

Hiring and leadership development among early-career and diverse voices that we want to bring in to our stations is one of the more perplexing matters. One reader said it best: We tried, but had a hard time finding the right person with the right skills.

This leg of the journey stymies many well-meaning managers. How do we overcome the obstacle?

It is important to approach recruitment with an eye to what you want to see. If you are looking to expand your pool of candidates, you may need to expand your methods for finding them.

While personal references, traditional networks and ads in the usual places can be helpful, keep in mind that the people you're looking for may not have access to the contacts you have, or know yet about the networks you do. A new college graduate, a person of color fresh to the industry or someone whose skills could strengthen your station may simply not have access to the colleague networks we do.

INTEREST IS THERE

Here's one idea: Have you thought about circulating job postings to groups like the University Station Alliance or College Broadcasters Inc., or reached out to a local university or community radio station?

Many university licensees and student-run college radio stations have a steady stream of students who get radio training in many facets of the organization. Those campuses hand out diplomas to seniors each year, and those seniors go into an uncertain workforce.

Having talked to many students at CBI's conferences, I can tell you a lot of them would love to have a career in radio. They just do not realize it is a possibility, so they look elsewhere.

Finding early career and diverse talent for your station may also require you to think deeply about your organization's needs and screening.

Each applicant should get the same questions about the role and be asked to perform tasks required for the position. You might want to be open to skills that translate well to jobs you're hiring for. In addition, for entry- and mid-level positions, you may be open to more on-the-job training.

Similarly, leadership development is as much about who the candidate is, as it is about the manager identifying an employee's strengths and helping them cultivate leadership abilities with appropriate mentorship. Those not traditionally associated with radio may not understand the nuances we do, and it takes an astute manager to see how a candidate or new employee's talents translate to our work. That may not be simple, but it is rewarding.

Having talked to many students at CBI's conferences, I can tell you a lot of them would love to have a career in radio. They just do not realize it is a possibility.

BE AN ADVOCATE

Of course, some of the big-picture issues may be out of our hands. Owners and our own bosses need to give attention to recruitment and retention organization-wide, as well as helping staff as a whole to be culturally competent in our ever-changing workplace, where five generations now meet.

We as well-intentioned managers play a role in being advocates and sounding boards to the higher ups on diversity as well.

Evolving our stations to meet the needs of our communities is exciting work. Those of you thinking about diversity and the cultural shifts we are seeing deserve praise. Just as someone long before took a chance on us, we are in a position to change someone's life by creating opportunities.

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

Landlords and Building Owners, Beware

If you harbor pirate radio operations, the FCC Media Bureau is looking for you

BY PAUL McLANE

The Federal Communications Commission's Enforcement Bureau in December began targeting property owners and managers who tolerate pirate broadcasting on their properties.

The bureau started by notifying owners of three properties in Queens in New York City that there was apparent illegal broadcasting happening at their buildings.

It issued an announcement that it was exercising the FCC's new authority under the recently enacted PIRATE Act, which gives the commission a significant new hammer in its anti-pirate toolkit: "Parties that knowingly facilitate illegal broadcasting on their property are liable for fines of up to $2 million," it stated.

"PLAINLY ILLEGAL"

Enforcement Bureau Chief Rosemary Harold said, "It is unacceptable — and plainly illegal under the new law — for landlords and property managers to simply opt to ignore pirate radio operations. Once they are aware of these unauthorized broadcasts, they must take steps to stop it from continuing in their buildings or at other sites they own or control."

If they don't, she said, they risk a heavy fine, followed by collection action in court.

"In addition, our enforcement actions will be made public, which may create further unforeseen business risks." She emphasized what the FCC and broadcasters have been saying for years: that pirate radio is illegal, and can interfere with licensed stations and emergency alerting.

The bureau will provide written notice to property owners and managers that it thinks "are turning a blind eye to — or even helping facilitate — illegal broadcasting."

It also has created a new "Notice of Illegal Pirate Radio Broadcasting." The notice provides owners a period of time to remedy the problem before any enforcement action proceeds.

"SUFFICIENT KNOWLEDGE"

The first three notices were mailed — first class and certified mail — to owners of buildings in Queens that are just a few blocks apart.

The bureau said it traced a signal on 105.5 MHz from 3520 97th Street, Queens; another on 91.3 MHz from 3535 95th Street; and a third on 95.9 MHz from 3512 99th Street. They were given 10 days to respond; the FCC said the bureau will "consider any response before taking further action."

Under the prominent headline "Notice of Illegal Pirate Broadcasting," each letter's language should get the attention of a landlord. It reviews the possible penalties, then adds: "If you do not respond to this Notice, the FCC may nonetheless determine that, as a legal matter, you have sufficient knowledge of the above-referenced pirate radio activity to support enforcement action against you. Service of this Notice to you or your agent establishes the foundation, along with other evidence, that could lead to significant financial penalties."

Broadcasters have pushed for decades for the FCC to be more aggressive in combating illegal broadcasting. FCC Commissioner Michael O'Rielly was a vocal proponent of giving the commission more tools to do that, and Congress did so in the PIRATE Act.

The argument is that landlords and property managers often know of the activity, and the bureau said it has previously sent warnings to landlords and sought cooperation from national property owners' organizations to raise awareness.

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Tips for Power Users of V-Soft FMCommander

BY DOUG VERNIER

The author is president of V-Soft Communications and Doug Vernier Telecommunications Consultants. This is one in a series of articles about how to get the most out of various popular broadcast products.

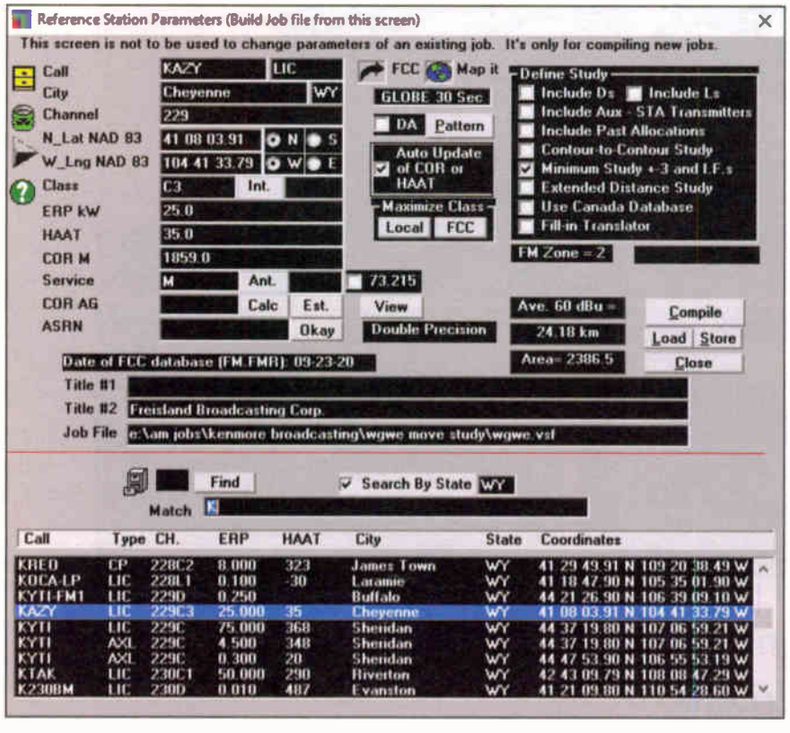
Is there a product you'd like to see featured in this series? Email radioworld@futurenet.com with the make and model, and why you think it should be featured.

Lost the lease on your tower? Need to find a better channel? Can you increase power?

These are the common questions posed by FMCommander users. Here is how you can make the best of V-Soft Communications' widely respected FM channel-study program.

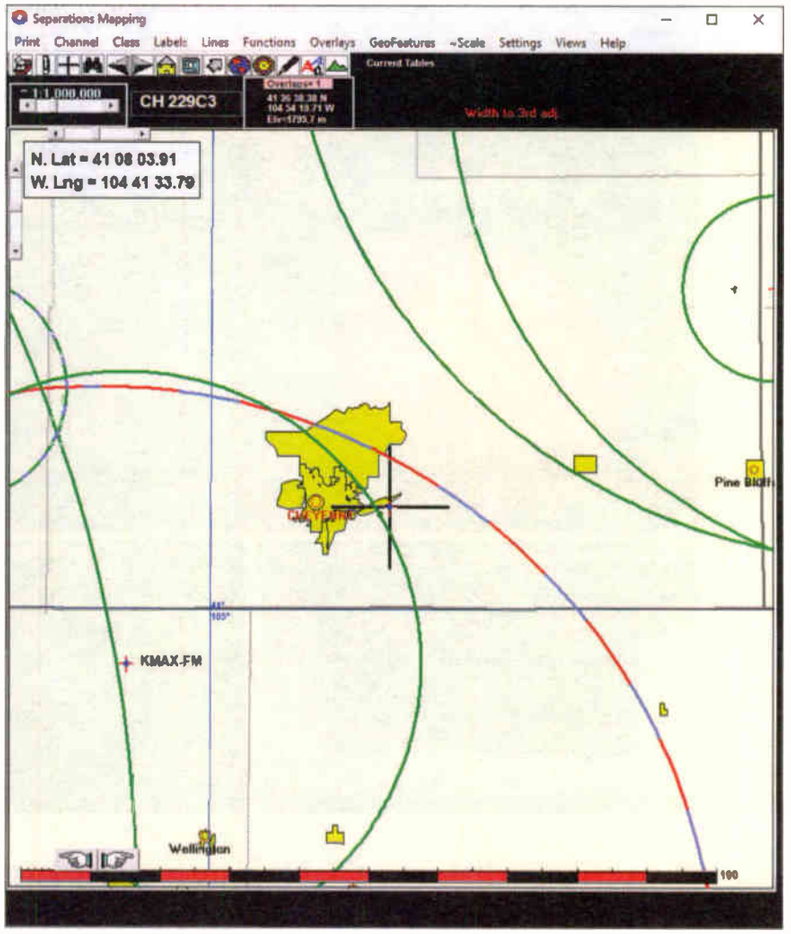
Need a new tower site? Start the program and enter your station's call sign, then click the "Compile" button to create your job file as shown in the image below. (In this case we have used KAZY.) The program will access the V-Soft FCC database, updated daily, to find all the stations that must be protected by the reference station under the rules.

The FMCommander channel search program allows a user to find new ways to upgrade a station or to move a transmitter site under short space.



Within a few seconds the program will show you the minimum separations channel study as shown in the image at top right:

Well, it looks like your station already fails the minimum separation required to KCWA. The user can see the situation graphically by opening the "Separations Mapping" screen as shown below.



The big plus mark reference site must not be inside another station's separation circle. The radius of this circle is the Sec. 73.207 required minimum distance between stations based on their class. As you can see, the site is inside the separations circle for KCWA. This can happen if one or both stations use the Sec. 73.215 short space rules. But can the station be moved to a different tower that can satisfy the rules?

To look for usable existing towers click open the "Map Information" window and click the bullseye icon to see the default coverage of the reference station. Any new tower location must satisfy the FCC requirement for the 70 dBu to cover at least 80 percent of the principal city to which the reference station is licensed (note in the next image that this is barely the case for the now-existing tower):

(continued on page 18)

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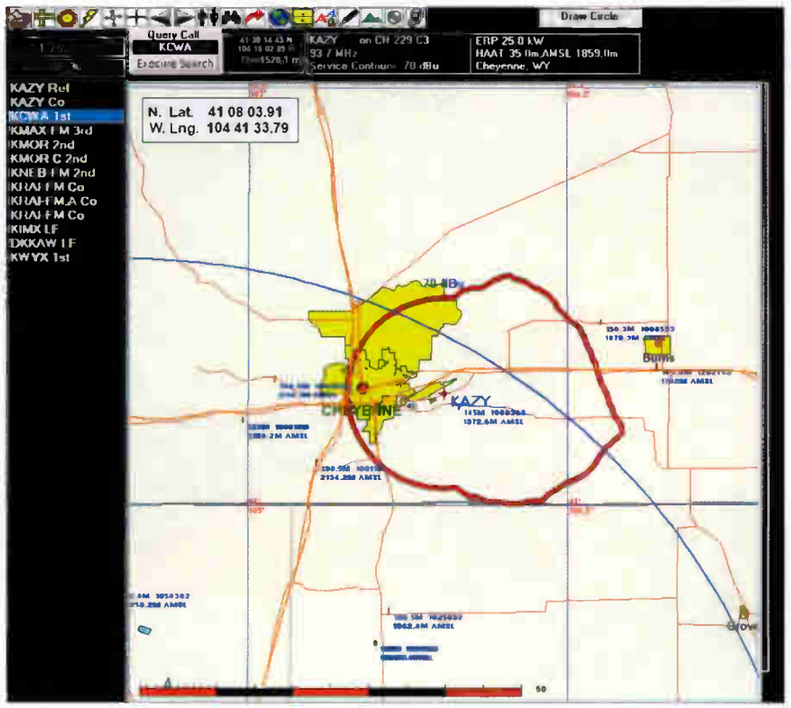
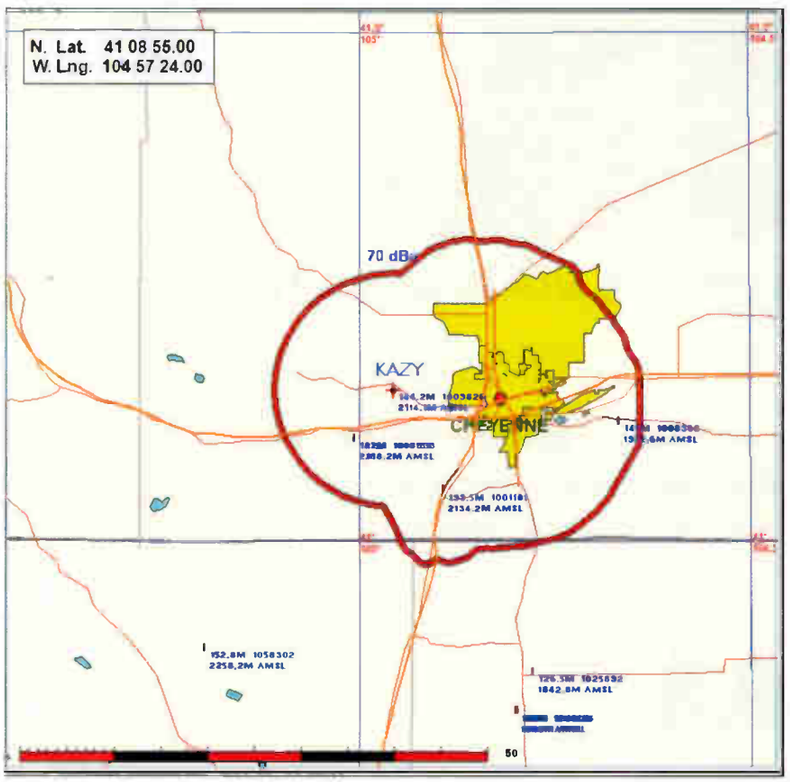
FMCOMMANDER

(continued from page 20)



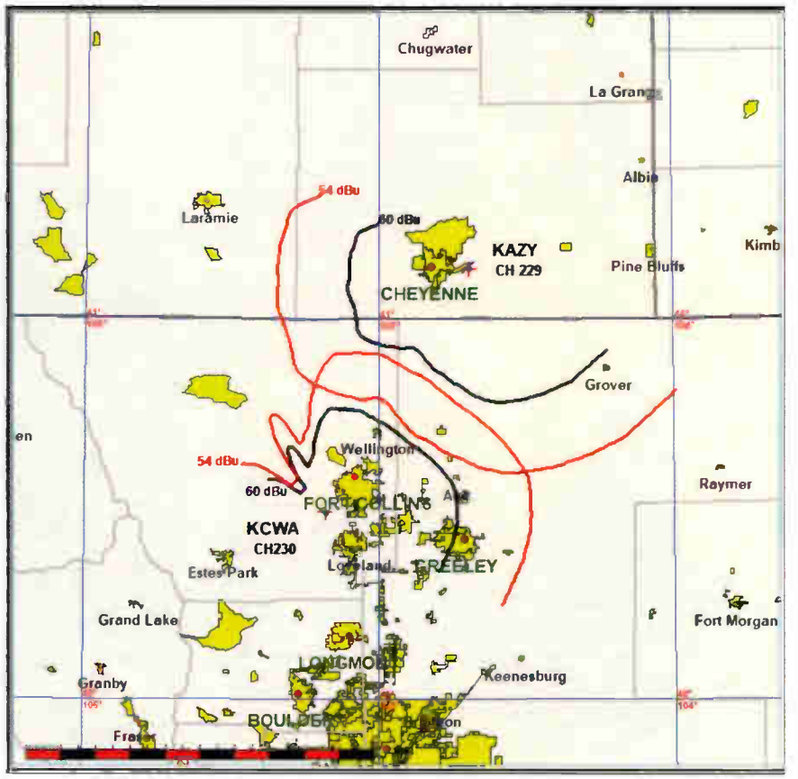
Click on any of the towers to move the reference station to the selected tower. For this example, we will click on the tower to the west of Cheyenne. The tower I.D. number and heights are listed immediately below the tower.



Looking at the updated main screen table, we find that that besides the overlap with KCWA, we now have another problem with KMAX-FM. Notice that, on the Main screen, KMAX-FM is now colored magenta (below). This means that the site fails to meet the minimum 73.215 short space distance to apply the required (U-to-D) contour-to-contour rules. As you can see by the maps, there are no other towers that are outside the KCWA circle.

Call	Type	Ch	Location		Azi	Dist	FCC	Margin
KAZY	LIC	229C3	Cheyenne	WY	94.0	22.21		
KMAX-FM	LIC	232C3	Wellington	CO	212.7	29.11	43.0	-13.9
KCWA	LIC-Z	230A	Loveland	CO	194.7	75.18	89.0	-13.8
KRAI-FM	LIC-D	229C1	Craig	CO	256.9	232.47	211.0	21.5

This likely means that a new tower must be built at a nearby site that would properly serve the principal city and that would not make the short space contour overlap worse. The application at such a site must show that, based on the protected and interference contours of two stations, there is no overlap that would cause interference. When the lightning bolt icon is clicked from the Map Information screen, the screen will show the contour relationship of the reference station and KCWA.



As one can see, there is no contour overlap and the site meets the 73.215 short spacing requirements. It appears that the current tower's location is the only area that meets all the requirements.

Got a suggestion for a product you'd like to see in this series? Email radioworld@futurenet.com.

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5 Tips for Processing Your Podcast

Seek to develop a core processing recipe for both your podcast and your station

COMMENTARY

BY MARY ANN SEIDLER

The author is with Telos Alliance.

Getty Images/Maskot

Processing is as important for podcasts as it is for live radio. However, your challenges and your goals are going to be slightly different.

Radio needs to have that larger-than-life sound to stand out. It's broadcasting, and the challenges are much different.

Just for starters, processing for FM has to take into consideration pre-emphasis, limiting, stereo pilot and multi-path. Most radio stations are a combination of music and voice, and the processing needs to bring out the best in both. Consider the amount of time a lot of processing gurus spend listening to one clip from one song to make sure that the cowbells really sound like cowbells when the radio listener hears it (yes, I am talking about Omnia founder Frank Foti).

The processing also needs to be adjusted for a wider variety of content and voices than a podcast.

Could you have the same processing preset for both an FM radio station and your podcast? Not really, because you will not have pre-emphasis or a final clipper to deal with.

But just as many radio stations have managed to get their streams having similar sonic signatures for their FM and streams, developing a core processing recipe for your podcasts and your FM station can and should be a goal.

After all, if your listeners love your radio station and they recognize the same sonic signature on your podcasts, you already have a fan.

One thing both have in common is the objective: To make sure the listener stays with you and loves your sound. Here are five tips to process your podcasts that will do just that.

1 TEST YOUR PODCAST'S PROCESSED SOUND IN A VARIETY OF ENVIRONMENTS

The other thing podcasting and radio have in common is that you don't know *where* your listener is doing the listening. It may be in a car, using earbuds on public transportation, or at home, whether it be on an FM radio or smart speakers.

For both FM and podcasting, you have to create a sonic signature that works across all devices and environments. And we highly recommended that you test your podcast's processed sound across a variety of devices.

We learned from many years of experience that what may sound great in one environment doesn't always translate to others. In other words, don't listen on the most beautiful speakers you have and think "Eureka!" The person listening on a really small smart speaker may not have the same experience at all.

Don't listen on the most beautiful speakers you have and think "Eureka!" The person listening on a really small smart speaker may not have the same experience at all.

2 PROCESS BASED ON VOICE

Most podcasts are voice-only with only occasional music beds. A podcast should be processed depending on that voice. The processing adjustments you make will be to try to make the voice sound as good as it can.

This is critically important to keep in mind. The podcaster may have a great story but not the greatest voice, and processing can be used to add a bit more "oomph" to that voice or get rid of issues with over sibilance. What type of mic the podcaster uses can also affect how you process the audio.

3 CONSIDER YOUR FORMAT AND AUDIENCE

Your podcast's desired sound also depends on what type of podcast you are producing.

A fast-paced podcast geared towards a young audience including lots of music beds can be processed very aggressively. But even at that, if you are going to maximize the loudness, it will need to be at a lower loudness level overall, because it will need to fit in with the rest of the content on a smart speaker or other podcasts. Very little irritates people more than audio content that is much louder than other content.

Using that same aggressive type of audio processing on a cooking show geared towards a more mature audience is a mistake. That audience doesn't need to hear something über-compressed. Your goal with that type of show is probably a much more open sound.

4 PODCAST PROCESSING & AUDIO CODECS

Processing for podcasting is similar to processing for streaming. You do not have the same issues you need to deal with in FM processing.

Both podcasts and streams do have the challenges of audible artifacts caused by audio codecs as well. The good news is that you do not have to deal with a final clipper which can cause issues with audio codecs.

5 GET INTIMATE WITH YOUR AUDIENCE

It is also worth considering that podcasting by its nature is a much more intimate one-on-one experience. It is a podcaster sharing information or a story with its audience one at a time. Often people are listening on ear buds. Processing needs to have that intimate feel.

For more on this topic, see the Telos Alliance webinar "Podcast Audio Quality" at telosalliance.com, *click on Virtual Showcase. Also see the Radio World ebook "Trends in Processing for Radio" at* radioworld.com/ebooks.

How to Choose Your Next Console

10 questions to ask yourself as you prepare to make a purchase

BY GARY KLINE

Congratulations, you've decided to buy a radio broadcast console!

The complexity of broadcast plants has increased, accelerated by the demands of new types of content across many types of platforms.

Here are important questions to ask yourself as you prepare to make your purchase.

1 WHO AM I?

Identifying "who you are" is the first step in the decision tree.

Are you a stand-alone station? A cluster in a market? A group owner with a handful of markets, or hundreds of stations? A state-owned network? A network serving affiliates on a regional or national basis? A production house or podcaster?

Identifying your size and scope can point you as you navigate audio mixing and routing technologies.

For example, a large group owner might be more interested in virtual or centralized operations, while a small cluster might be more interested in a self-contained digital system.

Or let's say you operate as a network that serves affiliates; you may be interested in consoles with extra control capability and extra routing. Large-scale radio shows need to be routed to various paths for regionalized spot insertion, potentially avoiding copyright issues with beds, to feed audio streams and video channels.

The network studio console also requires buttons and controls to send cues to satellite stations for commercial switching, imaging and IDs.

Now, typical modern consoles can do a lot of that; the point is that on a network syndicated program, you may want an expanded version of the same.

These few examples illustrate why it is essential to identify who you are. Many consoles look alike but differ in functionality, and the differences are not always immediately apparent. Understanding how to identify and navigate the nuances can make a big difference in your users' long-term satisfaction and productivity.

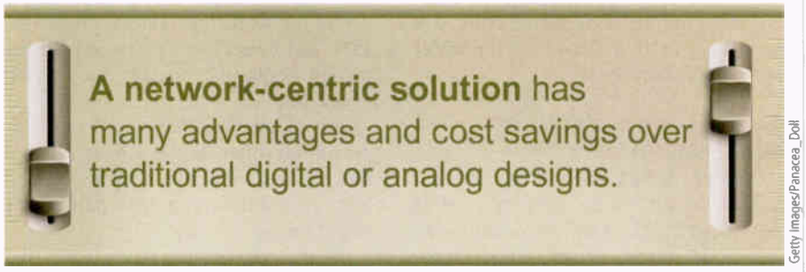
2 DO I NEED A PHYSICAL CONSOLE?

Don't be afraid to ask this aloud.

For most of us, the notion of a studio has included a physical mixing console at the center. But it's becoming more common to use a tablet or flat-screen control surfaces; some are even transitioning into private or leased cloud platforms. These can handle the mixing and content playout for many stations. In some instances, there's no console in the studio at all. (There may not even be a need for a studio.)

Some radio groups have announced that they are looking to virtualize to reduce their footprint and save on real-estate costs.

(continued on page 24)



Getty Images/Panacea_Doll

CONSOLES

(continued from page 23)

So before you go shopping for a traditional console, consider whether you need one, or if a flat-screen or tablet approach makes sense.

3 DO I UNDERSTAND THE TERMINOLOGY?

You've heard the terms thrown around: AoIP (audio over IP), AES, AES67, AES70, cloud or virtual mixing, node, blade, driver, glass, Opus, CAN bus, multicast, unicast, engine, Livewire, Wheatnet, Dante, MPX over IP, auto-mix, GPIO, master clock and console- versus network-centric.

Defining each is beyond the scope of this article, but take time to learn what they are. Discuss terminology with your engineer, consultant or preferred equipment vendor. Do a Google search.

Learn about AoIP, the most widely installed recent technology. AoIP's newest implementations, like cloud-based mixing, are best explained by manufacturers that offer it or technical consultants who specialize in audio technology.

4 WHAT'S THE PURPOSE?

Will the room function as an air studio, production room, combo air/production room, voice-track room or booth, a newsroom, a network program control room for syndication, a workstation for news or sports?

Chances are you're buying consoles for several rooms; that adds another layer of consideration; you'll still need to define each room's purpose, but you'll also need to consider the *facility's big-picture purpose* as well.

Also, take into account what type of content each room is producing. A sports station has different needs than a music station, which has different needs than a 24/7 news station. Air studio consoles are configured differently from a production room. The latter rely more heavily on digital audio editing software to handle mixing but can be smaller than an air studio console. On the other hand, a network control room needs more individual channels and busses. Other use cases may change the console layout.

From the big picture perspective, establish whether the facility is to operate on its own or connect to a centralized operations center. If you decide on centralization, will the equipment be housed in your building, another remote location, or in the cloud?

5 SEEK INPUT FROM THE STAKEHOLDERS

This can be overlooked, but the people who operate and manipulate the console are excellent sources of information regarding what works and doesn't with your current setup.

They will have a list of improvements and features they would like to see in the workflow. Talent, producers, PDs, and board ops all have something to say about the console they touch every day.

For complicated situations like multi-person morning shows, I have sat in a few times to watch what goes on and learn in real time what their pain points might be.

By interviewing the stakeholders and doing in-studio sit and watch sessions, you will learn beneficial information to guide you in selecting the right console (physical or soft). If you skip this step, you may end up with complaints and unhappy team members who felt they were not given a voice.

6 ANALOG, DIGITAL, AOIP, CLOUD, OR HYBRID?

These days, it is rare for stations of any size or complexity to choose an analog distribution path for broadcast on-air use.

The people who operate and manipulate the console are excellent sources of information regarding what works and doesn't with your current setup.

Good analog consoles for radio are still being made; one of them may be the best fit for users who need simple reliability and affordable cost. But with digital options more affordable than ever, do research that option too.

Be aware that going analog can involve a lot of cabling, which can be expensive to install and maintain. Analog consoles can lose calibration and may not provide the same noise floor or stereo separation, not to mention other specs.

Note that recording studios and musicians at times may prefer analog for their specialized needs, though to be clear, those boards (they sometimes call them desks) are very different in style and function than a radio console.

For many console buyers today, digital is the preferred way to manage audio and route signals in a broadcast facility, even for buyers with relatively modest budgets.

If you opt for digital, you must decide between using a traditional digital technology such as AES-3, MADI or similar with localized inputs and outputs or an AoIP network-centric design.

For years we built studios using a console-centric mentality; the console was the center of everything in the room. Your input sources wired to it directly. There was a single program or audition output that fed the air chain. There may have been an external router installed in more extensive facilities, but this was not a network-centric design.

A network-centric system uses consoles and source gear that rely on off-the-shelf network switches to move audio, control, and metadata around your plant. You'll find AoIP networked audio systems in many of the newer studio buildouts worldwide in all sizes of facilities.

Several console manufacturers offer a large selection of AoIP solutions and peripherals to meet almost any requirement. A network-centric solution has many advantages and cost savings over traditional digital or analog designs. The wiring is greatly simplified, as AoIP uses the same Cat-5/6 cabling that your data and phone network does. You can manage the system from almost anywhere with a smartphone or laptop. Routing audio and everyday things such as IFB, mix-minus and remote (OB) feeds is a cinch.

7 VIRTUALIZATION?

The concept of virtualization is becoming more familiar to broadcasters.

By virtualizing audio infrastructure, you can remove some or all of the hardware, thereby reducing your capital and annual maintenance costs, replacing a portion of those with cloud service costs over time.

Virtualization also enhances your off-site backup capability, which allows you to restore operations should something happen to the studio. Today, It's no longer about an off-site backup of data (music and other critical files), but also about being able to restore broadcast operations from any location with suitable internet.

One type of virtualized environment allows you to operate using the "cloud" (some central data center that you own or lease from a console vendor) and, if you desire, to feed your transmitter site directly. In a scenario such as this, you only need to log in remotely to the data center and log into your playout system to manage the station from anywhere.

If you are not ready to leap entirely into the cloud, you have the choice to go with a "hybrid" or "private cloud" approach. This is yet another example of a virtualized environment.

Hybrid involves a certain amount of locally maintained hardware with a complimentary cloud solution on the back end. It could be something as simple as running your automation playout system locally but having it backed up in the cloud for business continuity purposes. If something went wrong with the studio, you could switch to the cloud for playout or immediately sync the cloud data to another computer that would pick up where the other left off. Private cloud is typically a virtualized environment with the data center located on-premise or inside company-owned or leased facilities, hence *private*.

Another example would be to utilize a work surface (glass or physical console) that uses a mixing engine in the cloud. Think of it like having a traditional console with faders and knobs but being able to plug it into any internet connection and run the station like you were in the original studio.

8 WHAT'S MY BUDGET?

I recommend you consider the budget only after you've thought hard about what technology makes the most sense. Don't let budget concerns get

in the way of making the right call on technology.

Of course, in some situations, the amount of money available isn't negotiable. But there are good choices for consoles that fit almost every budget, so there's no reason to rule something out prematurely just because you think, "I can't afford that new digital stuff."

I've sat in many meetings where the budget increased after senior management and stakeholders received an education on the benefits of AoIP and the future of network-centric design.

Also, be aware that as technology moves toward service models, your costs migrate from a "capital expense" model, meaning largely paid up at the time of purchase, to "operating expense," with costs incurred over time. For instance, if you choose to use virtualization or a hybrid approach, you'll be paying an ongoing fee for the benefit of media cloud services; that's an "op-ex" model.

For many buyers, a final analysis of operating versus capital will involve someone from the business department.

WHERE SHOULD I SHOP?

Depending on which technology you've chosen and where you are in the world, a particular group of manufacturers makes sense for you; the list will include companies you know, but make sure to learn all that are active in your country or market.

Develop your list through online research, discussions with fellow engineers and consultants, trade shows, and reading articles like those in Radio World about the decisions made by well-regarded facilities and managers.

Buying a console is like buying an airplane; it lasts for many years. Even if you aren't using a physical surface, you'll be living and working with your software system for a long time. The quality of the company, including its level of support, is critical.

Pricing deals can be time-consuming as there are several components to a digital audio system. You may be purchasing a work surface, network switches, software drivers (for playout systems and other computer-based audio sources), XY panels, headphone panels, support, etc.

Review every line item and double-check those quantities are right. For complex systems, it is best to go over the details with an expert, someone at the manufacturer, a trusted reseller, a consulting engineer, an integrator or your corporate engineering team if you have one. One pass is not enough; it's standard on larger projects that the buyers review their equipment list several times.

DEEP BREATH, AND LET'S BUY!

When you are ready to "pull the trigger," step back and review each step in your decision tree. This is not about second-guessing but ensuring you've carefully thought through the process. If you rushed because it's budget season or management issued a last-minute directive, this is the time to step back and review. A pause also adds credibility to the procurement process.

A large group owner might be more interested in virtual or centralized operations, while a small cluster might be more interested in a self-contained digital system.

Executing your purchase, believe it or not, is the easy part. Sign the contract and place the order. Then get ready for the excitement of delivery and installation. Studio and console upgrades are a huge morale booster at any station anywhere on the globe. It signifies an advance forward and investment in the product that every employee feels.

The author is a broadcast consultant who has held technical positions with several major broadcast organizations, most notably as senior VP of engineering at Cumulus Media. He has provided engineering support and consulting in the United States, Canada, China, Europe and several South American countries. He is a past recipient of the Radio World Excellence in Engineering Award.

WHO'S BUYING WHAT

Radio World's "Who's Buying What" feature reports on notable purchases and installations of technology products.

Nautel NV Series FM transmitters, part of an earlier TRT infrastructure modernization project, are shown in Dikmen, Ankara, Turkey.

Nautel recently snagged another big contract to provide FM transmitters in Turkey.

The company is supplying 30 NVLT FM transmitters to Turkish Radio-Television Corp. with the option to purchase 12 more if needed.

These transmitters are all 5 kW models. The transmitters will be deployed at key locations throughout the country in 2021.

"Based in Ankara, TRT provides five regional and six national radio services as well as six AM radio broadcasts," Nautel noted in its announcement.

"Additionally, Voice of Turkey provides shortwave programming in 32 languages. TRT radio is available on internet, satellite and cable as well as terrestrial services."

In 2009, Nautel won a contract for 195 FM transmitters in a range of power levels up to 20 kW, and it supplied three 300 kW MW transmitters to TRT in 2008–2009. It said its transmitters have been "used to modernize a large portion of Turkey's national FM radio infrastructure."

WSEW's new Dielectric antenna is the six-bay system with the white radome covers.

WSEW(FM) in Maine will soon operate from a fresh tower site that includes a six-bay Dielectric DCR-H FM antenna with radome.

The site is across the border in Barrington, N.H., and was to go live early in the new year.

The noncom Christian station is relocating from a tower in Sanford, Maine, in order to improve signal strength and reach more people including listeners in Manchester, Nashua and Portsmouth, according to a press release from Dielectric.

Ron Malone is president of the licensee, Word Radio.

"WSEW's market penetration was previously limited with the use of a log-periodic antenna system solution using linear, slant polarization," Dielectric stated.

"In addition to the advantages of circular polarization, the side-mounted, six-bay antenna will have a prime position on the 400-foot tower to maximize coverage, with its center of radiation at 287 feet above ground level."

The tower at the new site is owned by Vertical Bridge. Malone was quoted saying the project is intended to resolve issues that the station has had with multipath and occasional dropouts.

PreSonus PD-70: A Little Different Flavor

New broadcast microphone player makes a promising debut

PRODUCT EVALUATION

BY CHRIS WYGAL

Any given enthusiast on any given subject has his or her favorite "make" and "model." Fishermen can rattle off their preferred rod and reel combinations in an instant. The same is true with home theatre junkies. And bicyclists. And gardeners.

If, however, you want to engage in a fiery, passionate debate for the ages, get an engineer riled up about microphones!

Radio engineers have a well-established palette of large-diaphragm studio microphones from which to choose. Over the years a few players have darted on and off the scene in their efforts to provide some sort of nuance or cost-effective solution.

The upper frequencies are accented beginning at 1 kHz, leveling off at +5 dB around 4 kHz and then rolling off at 11 kHz.

A notable new contribution comes from PreSonus. Known mostly for their audio interfaces and mixing consoles, the Louisiana-based manufacturer does have a microphone selection. They offer drum kit mics, matched-pair condensers, an RTA mic, large-diaphragm side address, and very recently, a USB voiceover mic option.

Adding to that growing catalog, PreSonus entered the hardcore radio broadcaster arena with the new PD-70, which retails for $129.95.

What is it? Read on!

BULLETPROOF RUGGEDNESS

A radio studio is the most unforgiving environment for a microphone. Energetic on-air talent are physical and loud, and the first recipient of that energy is the mic. It's why studio microphones are heavy and robust. The PreSonus PD-70 holds its own in that regard.

It weighs 1.4 pounds and is nothing but steel. A built-in pop filter and outer foam windscreen foster a sleek design and, more importantly, excellent plosive rejection. It has a hard-mount design, but handling noise is minimal due to the sheer weight and solid inner construction.

The most interesting rugged feature is the XLR jack construction. It is built firmly into the back end of the PD-70 and it's not going anywhere. If ever a microphone could be called a "brick," the PD-70 is it.

TECH SPECS

The PD-70, from a performance perspective, wasn't designed to reproduce or accentuate warmth and tone. Its purpose is to accentuate clarity.

The frequency response is a full 20 Hz to 20 kHz, but the HP rolloff happens at nearly 100 Hz and falls off fairly rapidly. The upper frequencies are accented beginning at 1 kHz, leveling off at +5 dB around 4 kHz and then rolling off at 11 kHz. This translates into a microphone that keeps voices out of the mud. It's that simple.

When conducting A/B comparisons to other legacy "radio mics," the PD-70 coloration lends itself to aiding in situations where vocal clarity and microphone technique are poor. The proximity effect is greatly reduced by the early 100 Hz high-pass rolloff. Additionally, the PD-70 exhibits some sort of magic as it pertains to the higher frequency response, in that "S" sounds are very detailed and clean.

The dynamic nature of the PD-70 and its aggressive off-axis rejection make it very forgiving in less-than-perfect acoustic environments. Unlike some dynamic microphones, the PD-70 noise floor is virtually nonexistent. It has a very clean output and performs smoothly, using any preamp.

AT HOME

So where should the PD-70 go?

As the price of $129.95 suggests, PreSonus introduced it as an entry-level,

budget-friendly studio mic solution. In testing and comparisons, however, it is competitive against longstanding industry stalwarts.

The PD-70 would stand out where novice voice talent is present. It is forgiving to poor mic technique, accommodating to untrained vocal talent (who generally don't know how to project properly), friendly to bad acoustical environments and it can absorb physical abuse.

For voice talent who have deeper, warm voices and need a microphone that will reproduce that warmth, the PD-70 may not be what he or she is looking for. For everyone else who needs clarity and accurate voice reproduction, the PD-70 is a top-notch, affordable choice.

Large-diaphragm dynamic microphones frequently are used on kick drums and guitar cabinets. The PD-70 may not necessarily be a kick drum mic. It would, however, perform well as a guitar microphone. Its frequency response rejects the "boomy" tones produced by guitar soundholes and accurately reproduces string sounds with clarity. When a soloist arrives in a studio to do a guitar performance, the PD-70 is an excellent choice.

As for me, my voice can be muddy for two reasons. It's fairly deep, but also very asymmetrical. The asymmetry demonstrated itself using the PD-70, but it wasn't as pronounced. Plus, the PD-70's focus on clarity overcame the asymmetry effects very nicely.

Finally, for this review I asked a production director to spend some time with the PD-70. He conducted an A/B comparison against a very expensive industry standard. After the comparison, he immediately ordered a PD-70.

PRODUCT CAPSULE

PRESONUS PD-70
Broadcast Dynamic Microphone

Thumbs Up
+ Excellent clarity
+ Solid construction
+ Good performance vs. price

Thumbs Down
– Not a high-end microphone

Price: $129.95

Contact: For information, contact PreSonus in Louisiana at +1-225-216-7887 or visit *www.presonus.com*.

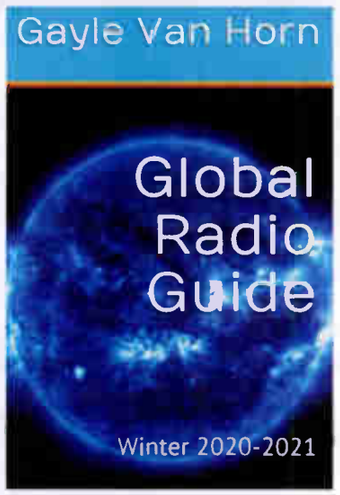
MARKETPLACE

The "Global Radio Guide" from Teak Publishing is available in its new 15th edition.

Gayle Van Horn's treasure for the shortwave aficionado "dives into how and where to hear exotic shortwave stations transmitting in the world's tropical radio bands."

The "Global Radio Guide" is sold as a Kindle ebook for $8.99.

A release states that these stations "serve as a window into the culture and daily lives of countries not served by large international broadcast stations. Even in an increasingly connected and digital world, for many of the citizens in these countries, these radio stations serve as the only source of news and information they have at their disposal."



The guide features 24-hour station/frequency guide with schedules for selected AM band, longwave and shortwave radio stations; hourly schedules for all language services, frequencies and world target areas for more than 500 stations worldwide; listings of DX radio programs and internet website addresses for many stations, time and frequency stations as well as other odd signals in the shortwave ether.

In addition to contributions of Van Horn, W4GVH, Ken Reitz and Fred Waterer of Spectrum Monitor along with Larry Van Horn add significant content.

Find it on Amazon or at *www.teakpublishing.com*.

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.

Orban OPTIMOD-FM 8100A/ XT2 6-Band Limiter, also a pair of Texar Audio Prisms with the Phase Rotator option (ideally post 500 s/n). WhatsApp/Viber +35797869349 or e-mail; DavidShapiro56@outlook.com

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.

RECEIVERS/ TRANSCEIVERS

WANT TO SELL

Professional grade SCA demod module, $25.00. Contact David davidwj3089@ gmail.com

WANT TO BUY

AM Stereo radio. Call 417-619-2467.

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.

RF CONNECTORS

WANT TO SELL

RF CONNECTORS & GADGETS – Parts, Products & More! www.W5SWL.com

TAX DEDUCTIBLE EQUIPMENT

Donate your broadcast facility; IRS approved 501(c)(3) non-profit charitable organization. Fair market value. License (AM/FM/FV), land, building, tower, equipment, etc. The Augustus Foundation, Inc., 2902 Main Street, La Marque, Texas 77568. (409) 359-3435. Contact Dr. M. Augustus

TRANSMITTERS/ EXCITERS/ TRANSLATORS

WANT TO SELL

BE-25T 25KW FM transmitter 2007 frequency agile tube transmitter in good working condition on 90.7 (all its life) when pulled from service. Approx. 6 mos. on rebuilt tube and a newly rebuilt fan motor, also spare optical modules, manuals and maintenance logbook. $17,500/OBO. As-is, where-is: Hayward, CA, Jeff Cotton, 530-279-6262 or info@kdup.org.

MISCELLANEOUS

WANT TO SELL

UPGRADE consoles to international specs with world standard Weston 30B illuminated 4" vu meters. 4 in like-new condition. GramOphone@earthlink.net

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

OMAS MARCONI PEN FOR SALE

Omas Marconi 100 Anni di Radio 1895-1995 Charcoal Grey Limited Edition Pen (No.3334 of 4000) New in original Presentation Box; This pen commemorates 100 years of Marconi's invention of radio Call or Email for Photos 919 556-5506 or Email: radiogla@gmail.com Price: $2600 + $50-Shipping

WANT TO BUY

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

Old recording of AM 930 KRTH 'Smokin Oldies' format recordings from the mid 80's. WhatsApp/Viber +35797869349 or e-mail; DavidShapiro56@outlook.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.

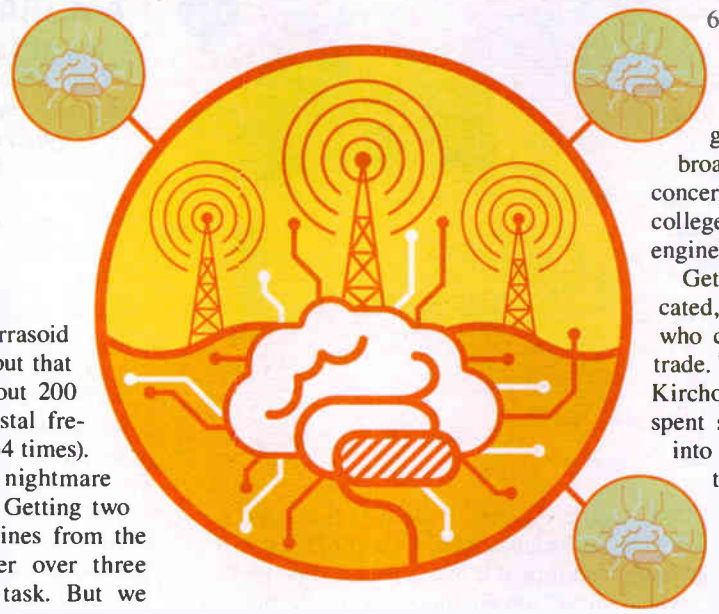
TUBES

DISTRIBUTOR DIRECTORY

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

"The Old Goats Are Going Away"

Broadcasters need to act to refill our ranks before the dial goes quiet



COMMENTARY

BY RON SCHACHT

I see trouble ahead in our business in the shortage of qualified broadcast engineers. I am not speaking of IT people. I am speaking of the guy in a T-shirt and jeans who gets to the transmitter, looks for the problem, reads the schematic, crawls inside the box and replaces R-16, R-17, C-232 and Q-4, and the music again blares forth.

We are losing those guys every day, and they are being replaced by the guy who walks into the site, looks at the box, grabs his cell phone, calls BE or Nautel to find which board to pull, and ships it back while waiting for a loaner to get the rig going.

I never thought of myself as an old-timer. Starting in the business in 1963, old-timers were the guys I learned from, mostly World War II graduates. They knew everything about audio and RF. I wished I knew a tenth as much as they did.

My first real bit of engineering was converting a 50 kW FM station to stereo in 1963. No one listened to FM then, I think there were 10 FM radios in the city and five were in Cadillacs owned by mob hit men.

I remember putting the stereo generator in an eight-foot rack. It took up four feet of the rack and had enough 12AU7s in it to heat the building. It had two outputs, one L+R that went into the phase modulator of the serrasoid exciter and the L–R output that went into the exciter about 200 multipliers later (the crystal frequency was multiplied 864 times).

It was a technical nightmare compared to mono FM. Getting two matched phased phone lines from the studio to the transmitter over three exchanges was another task. But we were stereo most of the time.

The FCC had a rule that if you weren't transmitting stereophonic program material for more than a certain length of time, you had to shut the stereo pilot off so as not to mislead the 10 listeners by illuminating their stereo beacon. So the pilot on/off was wired into the old Rust remote control so the studio could turn it off when a monophonic recording of a symphony played.

Times changed; we wound up with RF STLs, stereo generators on a single chip, CD players, computers and lots of stuff made in foreign countries that wasn't worth fixing or whose parts were not available, so when they broke they wound up on a shelf at the transmitter site.

Sending an IT guy into that is like sending a 90-year-old woman into the Indy 500 with her Buick LeSabre. She ain't gonna win and she will probably die trying.

CONCERTED EFFORT

Today many stations have guys who can swap XLRs or RCA plugs from one item to another. But we also still have transmitters, antennas, phasors and all of the other sundry items that make a radio broadcast station distinct from an internet music source (I don't call internet streams "radio stations" because you can't have radio without RADiate).

When we talk of RF, we talk of a whole lot more than 5 volts, maybe 3,000 times that, and a whole lot of amps both DC and RF. Sending an IT guy into that is like sending a 90-year-old woman into the Indy 500 with her Buick LeSabre. She ain't gonna win and she will probably die trying.

One of the problems is lack of interest. When I was young I got a ham license at 12, built my own CW rig with a 6L6, turned it into a phone rig with another 6L6 and a Heising choke, built a superregen receiver and went on 80, 75 and 40 meters. Parts from a few old television chassis and old radios my dad brought home, parts from a military surplus store down the road — in 1960 there was still a lot of WW2 surplus.

Try that today; there are no radios or television sets with good parts or even worth trying to get parts from, there is limited surplus and most of the corner parts stores are gone. You can't even build a Heathkit anymore.

A few years ago, I built a guitar amplifier for my son. What a project, just to find octal tube sockets for the 6L6s took forever. Kids have no interest in this kind of stuff anymore.

We all, especially big conglomerates who own most of the broadcast stations, have to make a concerted effort to get high school and college kids interested in broadcast engineering as a career.

Get them interested, get them educated, best by shadowing an old goat who can show them the tricks of the trade. Yes an EE degree is great to learn Kirchoff's laws, but Kirchoff never spent several hours at 3 a.m. looking into a dead HT-25. The likelihood is that the old goat will tell the youth that he should probably look at the screen blocker kapton, a lesson the youth is not likely to forget.

Broadcasters have to realize that us old goats are going away, and they had better not only get the youth trained to take over but make the pay comparative to working in an office as an IT manager so they don't do just that.

We, the limited number of old-timers who learned from the old old timers and through the wisdom of age and smelly fingers from getting too close to the ATU coils, have to keep alert for anyone who might express the slightest interest in our business. I ask around schools, especially the science teachers, if they have any students who seem interested in electronics.

We have to persuade them, nurture them and tell them lies (don't mention having to walk into a remote site at 2 a.m. in a blizzard with the temperature at –30). Tell them they will have a job for the rest of their life, they can't ship their job off to China or India or wherever.

At least if we all make an effort to replace ourselves, things can stay status quo. If our ranks aren't refilled soon, the radio dials are going to start getting really quiet.

Comment on this or any story. Email radioworld@futurenet.com *with "Letter to the Editor" in the subject line.*

Write to RW
Email **radioworld@futurenet.com** with "Letter to the Editor" in the subject field. Please include issue date and story headline.

TPTP AIMS TO HELP

The Society of Broadcast Engineers recently announced a response to ongoing concerns about new technical talent choosing broadcasting as a career by creating the Technical Professional Training Program.

"As technology and the average age and tenure of technical professionals advance, there is concern to adequately fulfill the technical staffing needs in the long term," SBE noted. The goal of the program is to train new entrants to the field of broadcast technology through a series of webinars, mentoring, certification support and other resources.

Learn more about it at *http://sbe.org/sbe-technical-professional-training-program*

READER'S FORUM

BETTINI VS. LITTLE


FEATURES
Constructing the First "Real" Radio Station
A look at the technical side of 1920 KDKA
BY JAMES O'BEA
Carnell's 1920 Radiotelephone Transmitter

In the Oct. 14 KDKA feature "Constructing the First 'Real' Radio Station," the question is twice asked — including in a page 21 photo caption — "Did engineer Donald Little invent and fabricate the world's first transducer for turning record groove modulations into a varying voltage?"

The answer is: Decidedly not. The honor for that advance goes to Gianni Bettini, an Italian army lieutenant who made his fortune in the USA but died and remains back in Italy, having patented electrical recording in 1902.

Bettini took a Berliner microphone, manufactured by Bell's Western Electric Co. and of the type that went into all the world's telephones for 100 years (which includes KDKA's in 1920), pushed a needle through the center of its diaphragm and turned it into a phonograph pickup. Bell, Edison and even disc record "revolutionizer" (no pun intended) Emile Berliner missed it.

Had any one of them paid attention we'd have had electrical recording two decades before Western Electric introduced it when they created motion picture sound in 1926 (or was it '25?).

For Radio World readers it should be noted that the broadcasting business quickly adopted WECo's 33-1/3 rpm 16-inch disc, which inaugurated the quarter-century era of recorded-program dissemination on discs.

Interestingly, the four networks — NBC (Red), NBC Blue, CBS and Mutual, the least heralded yet with the most affiliated stations of all — engaged my friend Harry Bryant's Radio Recorders in Hollywood to create what came to be called *transcriptions* for delayed broadcast on the "coast" of shows coming in "live" from New York, Chicago, Pittsburgh and Detroit.

Oliver Berliner

The author is grandson of Emile Berliner, inventor of the microphone, gramophone (disc records player) and the method of mass-producing unlimited copies of a single master disc recording.

AM RULE CHANGES

Regarding the letter "Drop the Three-Channel Rule" (*radioworld.com*):

The commission can't drop the "three-channel rule" without a rulemaking action.

But they've already proposed significant changes in the allocation rules, and adoption of those appears to have stalled, reportedly because the upper echelons of the commission just don't think AM radio is important anymore. But it would be very simple to merely adopt what they've proposed.

There is considerable controversy about Class A protection (most of it just persiflage), but adoption of the changes already proposed for Class B, C, and D stations would be straightforward and would significantly improve the conditions for site changes, facility consolidations, and, yes, even facility improvements for many AM stations.

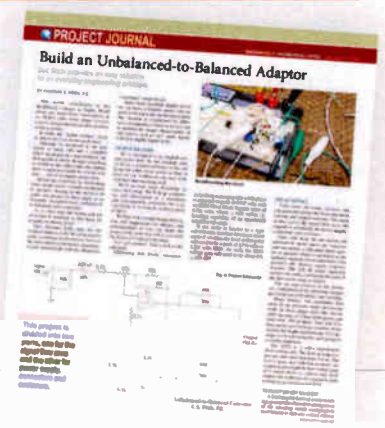
Ben Dawson
Hatfield & Dawson Consulting Engineers

SIMPLE AND SWEET

Loved Buc Fitch's article "Build an Unbalanced-to-Balanced Adaptor" (Radio World Engineering Extra, Oct. 21).

Station owner, front-line engineer, technically challenged person loves it simple and sweet. Thank Buc please.

Wesley Cox
WCGA(AM)
Woodbine, Ga.


PROJECT JOURNAL
Build an Unbalanced-to-Balanced Adaptor

AM TRAIN WRECK

Re "FCC Approves All-Digital Option for AM," *radioworld.com*, Oct. 27:

As Al Borland used to say to Tim Taylor on the TV show "Home Improvement": I don't think so, Tim.

All-digital all over the place in the AM band equals train wreck.

Here's a thought: How about *only one* section of the AM band can be used for digital, i.e. Expanded Band can be digital-only, and then all clear-channel 50 kW PEP stations must remain analog, and better yet, all EAS PEP 50 kW 1A stations get 500,000 watts of analog stereo AM in my "AM improvement program."

FCC regs would also require any FM stereo radio also must have a stereo AM section that meets the "AMAX" analog standards and/or meets DAB+, DRM or HD Radio standards.

That's AM improvement: making sure that you have a decent AM receiver with noise blanking, decent analog audio bandwidth and stereo audio, and the station has enough power to cut through the RF hurricane of switching DC power supplies!

Lop off a chunk of AM where digital is permitted as to not obsolete 500,000 AM tuners that can still be used, mandate decent tuner/receiver standards for the AM and FM bands and give the transmitter power that AM stations asked for back in 1962. (Actually that might have been more like 750 kW than 500 kW; yeah, that would be okay too).

John Pavlica

Left: Workbench author John Bisset. (Life is good with a bucket of steamed oysters.)

THANKS, JOHN!

I've known John Bisset for a long time, and his Workbench column has always been my "go-to guide" for information through the years ("Happy 30 Years to RW's Workbench," Nov. 11 issue).

I have a number of articles filed in a folder to refer to when I need some inspiration. I do enjoy passing along tips that may help others with their stations and John has always accommodated me with printing them. He has visited our studios on a number of occasions and has been to the Nebraska Broadcasters Association convention many times.

I value John's friendship very much and I congratulate him on his 30 years of giving us the extra wisdom to carry on this profession of broadcast engineering.

Mark Voris
Chief Engineer
Spirit Catholic Radio Network
Omaha, Neb.

HEAR, HEAR

John, your Workbench column is always my favorite in RW! Thanks for many years of helping us get our work done easier, faster, better. Engineers helping engineers has always been a great part of the discipline.

Terry Skelton

CORRECTION

Due to an editing error, the interview "Why WPR Cut Back on HD Radio" in the Nov. 11 issue omitted the full name and title of WPR Director Mike Crane.

EBOOKS: Tools for Strategic Technology Decision-Making

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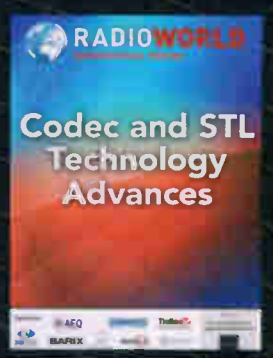
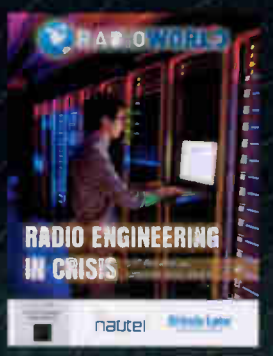


The ebooks are a huge hit with readers. They help engineers, GMs, operations managers and other top radio executives — radio's new breed of digital, cross-platform decision-makers — understand this new world and thrive in it.



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