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An FM DXer develops a nifty radio location mobile app.

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Explore RadioLand

For Nick Langan, an FM station location app was a perfect software project

Paul McLane
Editor in Chief

Nick Langan has designed a free mobile app for iOS and Android called RadioLand that locates "listenable" FM radio stations from a given location in North America. He developed it for his software engineering masters' thesis at Villanova University near Philadelphia. I asked him about it.

How did this get started?

Nick Langan: While I firmly believe this will grow into something bigger, it's a side venture as I try to find my way into some sort of career in software development. It's a company of one, though I've had plenty of great support.

My love for radio runs deep. I grew up in the '90s and remember when radio guides were available in book form. There was one written by Jeffrey Dingle, "Essential Radio," I picked up during a trip to Boston that stuck with me.

I am an avid radio enthusiast. I've been an FM DXer for over 15 years and host a podcast on such propagation with Bryce Foster, the VHF DX podcast. I don't operate on the bands too much but I'm a licensed ham (W2NJL).

I live in the South Jersey Pine Barrens. My responsibilities include being the operations manager at 89.1 WXVU at Villanova University, which recently took over the frequency allocation in the Main Line suburban section of Philadelphia full-time.

With my newfound passion for software development and the chance to create some of my own projects in my Villanova computer science curriculum, I decided that if I ever had the chance to do a longer-term project, it would be a radio location type mobile app.

Describe the app.

Langan: It takes your location, be it anywhere in North America, and delivers an accurate list or map of the FM radio stations you are in reliable listening range of.

There are a few sources that do this online — RadioLocator for one, a great inspiration for the app — but to my amazement, none that is solely a mobile app. I wanted to research the way I could build this for mobile and at

THIS ISSUE

the same time improve upon predictions of FM signal strengths.

With the data we've been able to amass, RadioLand handles not just listings in the United States, but Canada, Mexico, Bermuda and the Caribbean, with sights set on Europe next. The list and map of stations receivable for a location can be shared out as a PDF file.

You can see a talk I gave about the app at my college's 3-Minute Thesis competition, which I'm proud to say landed me second place. [At YouTube, search "3MT 2022: Nick Langan."]

Nick Langan

Who is the target user?

Langan: RadioLand naturally leans technical, as it's a reflection of my interests. So first and foremost would be the radio engineering community. The long-distance FM radio hobbyist also was in mind when I was designing this.

But the traveler on a road trip, tuning around for an NPR affiliate or the home of the St. Louis Cardinals for example, was a highly discussed use case of this app. Through slogan and format data that we have for each station, I think what RadioLand offers for the listener who may not necessarily care about transmitter ERP but just accurate listings and search results is valuable.

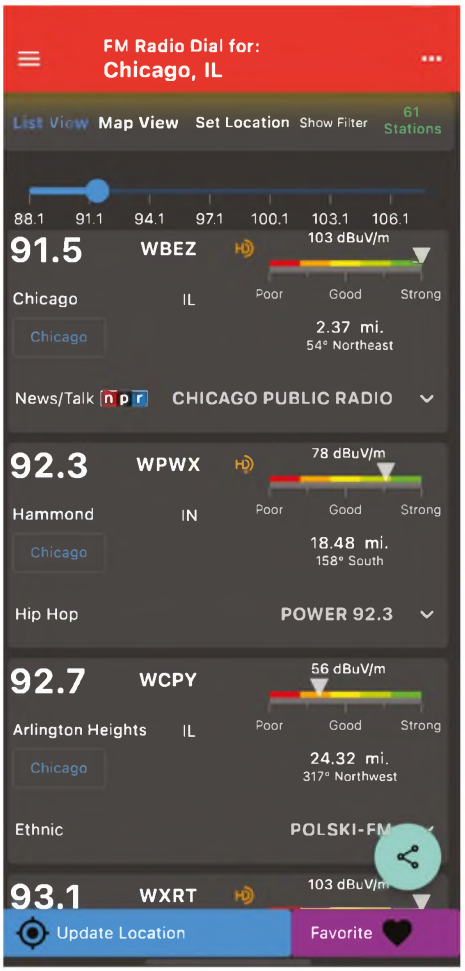
> **RadioLand handles not just listings in the United States, but Canada, Mexico, Bermuda and the Caribbean, with sights set on Europe next.**

What data is it pulling from, and how do you develop the signal strength information?

Langan: Mark Colombo, an FCC engineer and the proprietor of RabbitEars.Info, the TV model for RadioLand, has been an immense help in amassing the data sources.

RadioLand pulls in updated copies of the FCC database each night, and Canada's FM database through ISED as it is updated, and that is the technical data for the stations you see. Format and slogan data, along with station data from all other areas, is via the WTFDA's FM database. The WTFDA is the DX hobbyist group I am a member of.

Mark provided a method to produce signal strength predictions using the Longley-Rice propagation model,



developed in the 1960s and still widely used. The tests we've conducted show how it shines in a variety of areas where extrapolating contour data, for example, can be error-prone.

As any engineer could probably speak to, Longley-Rice is not perfect. I wrote a 300+ page thesis paper taking a look at some of its strengths and weaknesses, but I feel its predictions are as good as any model I've seen for FM broadcast.

A distinguishing factor is that we are also factoring in station directional patterns, through the field values published by the FCC and ISED, for U.S. and Canadian FM stations. So the predictions you see in RadioLand consider if 105.9 WMAL-FM, for example, is only sending 30% of their power toward your azimuth. Accuracy had to be the number one consideration, and the directional pattern data has helped ensure it.

Perhaps Mark's biggest contribution is the Longley-Rice coverage map overlays that are available for a majority of U.S. FM stations, which he had generated on the side for RabbitEars.Info. The overlays look beautiful in the app.

From what I gather, people are impressed with the accuracy of the Longley-Rice-based predictions. It's done a great job highlighting some of the more mysterious, but obviously terrain-based, sweet spots for FM signals. Here in South Jersey, I've never quite been able to understand why the stations from the Lehigh Valley and Reading areas get in so well on a variety of receivers. The contour extrapolations do not account for this. Longley-Rice, and subsequently RadioLand, does, likely due to the nature of the signals propagating downward to the coastal plain.

What makes me happiest is hearing casual listeners describe the app as easy to use and delivering lots of good information.

What else should we know?

Langan: I spent part of the past summer making some small additions, including matching the FM listings to the top 253 Nielsen FM markets and having a section where you can search by Nielsen markets. We also cataloged each Major League Baseball and National Football league FM broadcast affiliate, which was a complex data gathering process. I'm open to any idea for a feature and encourage anyone to contact me at nlanga01@villanova.edu for comments.

My next project is finding a data source for streaming links for the stations in the app and I hope to make progress on that soon.

Left
The typical functionality of the app showing a list of receivable FM stations, based on the 50 dBuV/m "Medium" threshold.

Middle
Showing receivable FM stations plotted on a map in reference to the searched for location — in this case based on the 40 dBuV/m "Weak" threshold.

Right
Longley-Rice coverage overlay on a map relative to station transmitter location.

Above
SBE's board of directors at the national meeting in September. Front, from left: President Andrea Cummis, Vice President Ted Hand, Secretary Jason Ornellas and board members David Antoine and Geary Morrill. Rear: Board members Mark Heller, Shane Toven, Ched Keiler, Greg Dahl and Fred Willard.

SBE prioritizes focus for 2023

Society adds new international chapter as it points to the future

Writer

Randy J. Stine

Radio World's lead news contributor profiled radio engineer Pierre Lonewolf in the Aug. 17 issue.

The Society of Broadcast Engineers is looking for ways to maximize the education and training programs that broadcast engineers will need to succeed in an increasingly IT-centric workplace.

The SBE membership stands at 4,500 members in 116 chapters in the United States and Hong Kong. It also recently added a chapter in the Republic of Georgia; 10 engineers have joined that fledgling chapter, which will serve broadcast engineers in Georgia, Armenia, Azerbaijan and Moldova.

Membership has been slowly falling in recent years, according to SBE, from a peak of 5,918 in 2008. The organization says this is partly attributable to fewer people choosing broadcast engineering as a career and radio stations doing more with fewer people, along with increased equipment reliability and advancing technology.

The society offers an extensive list of educational programs for broadcast engineers, operators, technicians and broadcast IT professionals. It is led by President Andrea Cummis, CBT, CTO, and the national board, with support from Executive Director Jim Ragsdale.

What was the biggest accomplishment of your 2022 national meeting in September?

Jim Ragsdale: The main effort was reviewing the goals from our last strategic planning session, which took place in 2018. The report identified a number of objectives aimed at connecting with our members more effectively and what their needs were.

One of the major things identified in 2018 was the complete rebuild from the ground up of our website, and that has been accomplished. And we now have a new survey that has been created to gather ideas for future planning. It will be shared with membership for their input. That's step one. [Take the survey by visiting *http://surveymonkey.com/r/SBEStrategy*.]

Andrea Cummis: And then the other major news was officially recognizing the new chapter in Georgia. That was one of our goals to get that finalized.

I would add that SBE Chapter 22 did a very nice job of hosting the national meeting. It was held in conjunction with their Broadcast and Technology Expo, which was very well attended. Our thanks to them.

What priorities or initiatives has SBE put out there for the coming year?

Cummis: The number one thing is strategic planning and doing it in an entirely different way than in the past. Previously we would get 30 people from all over the country in a room for discussion. Now we have put together that 12-question survey Jim mentioned.

As part of that we're asking for interest from members if they would like to be involved in a series of Zoom planning sessions. We hope to host a whole bunch of them to really find out what members really need from us.

Then maybe a smaller in person meeting near the end of the process.

When do you envision these Zoom meetings commencing?

Cummis: If not late this year, then by early 2023.

The Technical Professional Training program is two years old. It was meant to simplify steps to engage someone who is new to the broadcasting technical career path. Can you give us a status report?

Ragsdale: The TPT has been very effective. In fact, our mentorship program has grown and roughly doubled in

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Society info

To learn about the SBE and its offerings in support of engineering careers, email James Ragsdale at *jragsdale@sbe.org*.

numbers the past two years. Up to 120 now I believe are involved. Of that 50 are mentors. Many of the mentees have come through the TPT program.

We now have several state broadcast associations around the country offering scholarships for those interested in the TPT program. Missouri for one has granted a scholarship for that, and Nebraska is another. So we are getting good response from many of our peers asking how they can help to prepare new broadcast engineers for service in their state. The TPT program is a good way to do that.

Are there other ongoing initiatives that are notable?

Ragsdale: The Ennes Educational Foundation has recently connected with Veterans-TV. They're a non-profit that has obtained a donated broadcast truck and equipment that goes into the truck, to be used as a mobile studio classroom. Their goal is to train military veterans who have recently left the military in broadcast engineering and prepare them to work within the broadcast industry.

Our relationship is in the startup phase. Veterans-TV approached the Ennes Foundation about the project and the foundation agreed to provide scholarships and books for the program.

Madam President, are there any goals you have set for the society for your second term?

Cummis: Handling the strategic planning is my main goal. We are also trying to plan some training sessions with Fred Baumgartner [who for many years organized the SBE Ennes Workshops] at NAB. But we are just getting those together. We would like to restart some of the things we used to do. We used to work with NAB on a lot of seminars.

Ragsdale: At the Broadcast Engineering & IT Conference we now really only have an hour of time specifically dedicated to broadcast engineering [for the SBE Ennes Workshop].

Cummis: So we are trying to reclaim that territory and restart some of our own training. And another goal is expansion. It seems like it's going to be hard to expand much in the U.S., so gaining that new Georgia chapter was big in our efforts to become a real international organization.

Jim, you're fairly new in your role as executive director, what have you learned about broadcast engineers and the society so far?

Ragsdale: I've been here since January of 2021. The most significant thing I have seen is just how tight-knit the group of people is and how committed they are about developing each other's expertise. That has really played out in the SBE's certification and education.

If you look at our education programs, they are for the most part member-prepared and member-delivered. That just goes to show the commitment among members to share their knowledge and strengthen the talents of fellow members.

We understand we have an aging membership base. We have understood for years that we need to do a better job of developing new broadcast engineers in the field. That has been a heavy part of my focus the past year and a half. Just trying to identify who those folks are who are currently not members but would benefit from membership. And get the word out about what we have to offer.

Can you assess the overall health of broadcast engineering as a profession?

Ragsdale: I think sometimes we have too narrow of a focus in recognizing that there are people with similar skill sets who are not working in RF.

If you look at Bureau of Labor Statistics data, they have a job description called broadcast technician, and according to them there are 28,000 of those folks. A lot of those are not working in RF but they are doing something related. But 28,000 compared to our membership is a significant gap. So I think there is a lot of opportunity to reach people who would benefit from membership in SBE.

Cummis: I think there are a lot of people who don't work in RF who feel they don't belong in our group. For example, I do not work in RF. My background is all in production engineering and there are a lot of production engineers and production managers who feel they don't fit in somehow because of our name.

Could broadcast engineering eventually turn into a specialty arm of IT?

Cummis: Well they are certainly merging in some ways. And to be an engineer in a media situation you need to know a fair amount of IT. But I don't know if IT people are necessarily going to be doing what we do. I've always found that not to work very well.

Broadcast engineers or media engineers typically can learn the IT side, since it is just another technology. But for people who start in IT, especially the help desk people, they are not ones to run around and help with emergencies. They are more likely to answer the phone and have you take a ticket; and when they get to you, they get to you. So I'm not convinced the professions are going to merge.

Another issue is that many broadcast engineering positions are union, where IT is not. So they can't directly merge in the workplace. But it doesn't mean the technology doesn't overlap in certain places.

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John Bisset
CPBE
The author has spent over 50 years in broadcasting and is in his 32nd year writing Workbench. He handles western U.S. radio sales for the Telos Alliance and is a past recipient of the SBE's Educator of the Year Award.

Tips Please
Workbench submissions are encouraged and qualify for SBE recertification credit. Email *johnpbisset@gmail.com*.

Shure thing: A solution to crumbling foam

Fans of the SM5B have a source for replacement windscreens

The Shure SM5B was an amazing studio microphone, known for its warmth and the fact that you couldn't hit the microphone capsule with a "plosive" if you tried. They are legendary and now can be found sold on the internet for more than $1,000.

The mic's only drawback was its blimp-like windscreen. It could not be replaced easily; and over the years, you might end up talking into disintegrated foam. And in an era when smoking was allowed in many studios (not to mention drinking), you might find mold growing on it.

Shure no longer services the SM5B. But good news: Indianapolis-based Auralex Acoustics can provide replacement windscreens. You won't find the windscreens on the Auralex website though; go instead to *www.5bwindscreens.com*. A purchase from this site will include two discount codes for future Auralex purchases.

Above Right
The decomposing foam windscreen on a Shure SM5B.

Right
Here's your spiffy replacement.

Acoustics resource

Eric Smith is a former air personality, producer, talk show host and production director. He's also founder and president of Auralex.

Over the years, I've installed a lot of its absorption and diffusion products, but it had been a while since I visited their website. In addition to a variety of products, Eric has amassed useful resources about studio construction.

The ebook "Acoustics 101" is a must-read. It's a 50-page download chock full

Above
Ick! Mold can grow on the foam windscreen.

> **Have you ever hit the send button on an email but regretted it seconds later? There's a feature in Microsoft Outlook that you should know about.**

of good information about studio acoustics. The "Sound Isolation Quick Guide" is another useful resource if you are building a studio from scratch. Both documents can be found by clicking on the Education and Resources tab at *www.auralex.com*.

Eric also followed up on our discussion of wall-wart power supplies that inconveniently block the adjacent outlets on AC power strips. The three-prong to two-prong adapter we mentioned in September is one solution, but Eric adds his vote for the idea mentioned by Bill Ruck and several other readers, which is to purchase a package of foot-long, three-prong AC extension cords.

A package of 10 costs $20 on Amazon (search "KMC Power Extension Cord"). They get the wall-warts out of the way, allowing all available outlets on the power strip to be used.

Avoid "Sender's Remorse"

Have you ever hit the send button on an email but regretted it seconds later? There's a feature in Microsoft Outlook that you should know about.

Our Radio World colleague Dan Slentz in Cleveland found the instructions in Microsoft's Help section. They're shown in the accompanying box and will allow you to set up a delay. (Dan has his set for two minutes;, and the max is 120 minutes, though Dan says that in some cases, two days would probably be more appropriate!) RW

Set Up a Delay in MS Outlook

1. Click **File**.
2. Click **Manage Rules & Alerts**.
3. Click **New Rule**.
4. In the **Step 1: Select a template** box, under **Start from a Blank Rule**, click **Apply rule on messages I send**, and then click **Next**.
5. In the **Step 1: Select condition(s)** list, and select the check boxes for any options that you want, and then click **Next**.
   If you do not select any check boxes, a confirmation dialog box appears. If you click **Yes**, the rule that you are creating is applied to all messages that you send.
6. In the **Step 1: Select action(s)** list, select the **defer delivery by a number of minutes** check box.
7. In the **Step 2: Edit the rule description (click an underlined value)** box, click the underlined phrase **a number of** and enter the number of minutes for which you want the messages to be held before it is sent. Delivery can be delayed up to 120 minutes.
8. Click **OK**, and then click **Next**.
9. Select the check boxes for any exceptions that you want.
10. Click **Next**.
11. In the **Step 1: Specify a name for this rule** box, type a name for the rule.
12. Select the **Turn on this rule** check box.
13. Click **Finish**.

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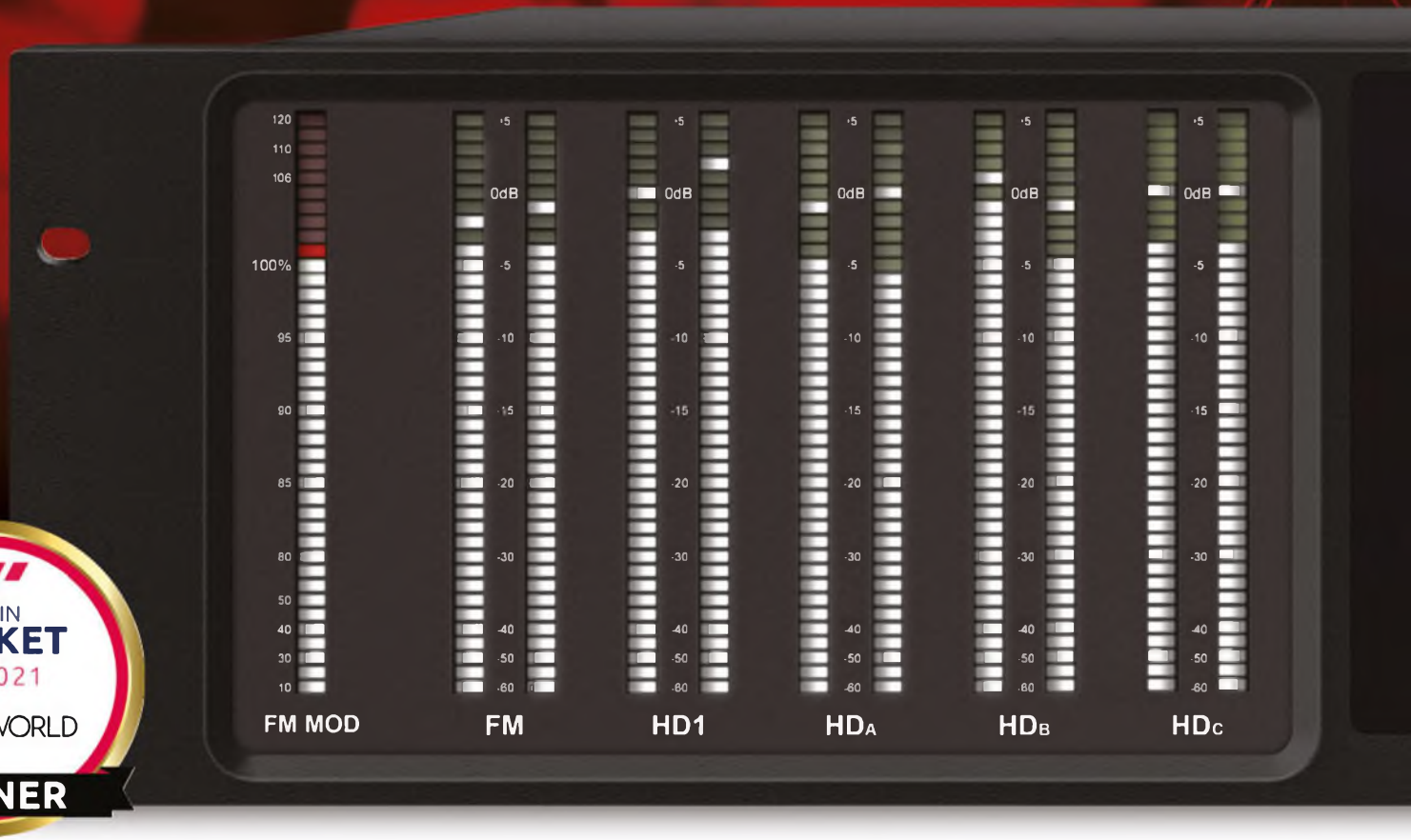

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Where VOA's broadcast infrastructure stands today

Shortwave retains a role in serving particularly difficult-to-reach audiences

Writer

James Careless

Find more of the author's stories about all aspects of international radio at *www.radioworld.com/author/jamescareless.*

Russia's horrific invasion of Ukraine and its simultaneous blocking of Western media outlets has renewed public interest in shortwave radio broadcasters like the federally funded Voice of America.

Now managed by the U.S. Agency for Global Media or USAGM, VOA's roots go back to 1941, when the U.S. government leased a dozen commercial broadcaster owned/operated shortwave radio transmitters for the VOA's predecessor, the U.S. Foreign Information Service. (These shortwave transmitters were previously used by U.S. broadcasters to share content between their AM radio stations.)

The VOA came into being in 1942. It played a major role in broadcasting U.S. news and views to the world during World War Two and the Cold War. After the fall of the Berlin Wall, shifting government priorities, the emergence of platforms competing with shortwave, and budget cuts led to VOA's language services, broadcasts and programming being reduced.

Today, "USAGM operates transmitting stations around the world, including in the U.S., Africa, Europe and Asia," Laurie Moy, USAGM's director of public affairs said in an email earlier this year.

"All of these stations are equipped with multiple shortwave transmitters, and four of these stations have a medium-wave (AM) transmitter each. In total, USAGM's network consists of about 75 shortwave (ranging from 100 to 250 kW) and medium-wave (ranging from 100 to 1000 kW) transmitters."

The agency also has access to shortwave and medium-wave transmitters via leases and exchange agreements with other broadcasters.

At present, USAGM produces content in 63 languages, 35 of which are aired on shortwave and medium-wave. VOA itself produces content in 48 languages, 18 of which are aired on shortwave and medium-wave.

"In terms of the agency's shortwave network, shortwave continues to reach particularly difficult-to-reach audiences, such as in North Korea, western China, Afghanistan and elsewhere," Moy told Radio World.

Shrinkage and growth

In its heyday, VOA had major U.S. shortwave transmitter/antenna sites at Greenville, N.C.; at Bethany, Ohio; and at Delano and Dixon, both in California.

"The only VOA transmitter that exists in the U.S. today is Site B at Greenville, which was opened in 1963 by John F. Kennedy himself," said shortwave enthusiast Dan Robinson, a retired VOA correspondent, language service chief and longtime shortwave enthusiast who continues to

Above
VOA shortwave infrastructure in Kuwait

follow international broadcasting.

"Internationally," said Gerhard Straub, who retired last year as director of the USAGM's Broadcast Technologies Division, "there have been no significant reductions in the shortwave infrastructure. The last significant reduction was when the Sri Lanka transmitting station was closed after suffering significant storm damage. At that time, transmitters from Sri Lanka were moved to other transmission sites, notably the Greenville station, to modernize it a bit."

Moy agreed: "Other than closing the Sri Lanka station, USAGM has made no other significant changes to the network since 2017, except to maintain and repair equipment as needed. At our station in the Northern Mariana Islands, where a typhoon destroyed the transmission infrastructure in October 2018, USAGM has been repairing or replacing the damaged antenna arrays."

On the flip side, said Straub, "There is a major project underway to increase shortwave capability at the Kuwait transmitting station, in addition to a new antenna that was added a couple of years ago. This project is adding antennas and transmitters to provide additional coverage of Africa. USAGM also added Digital Radio Mondiale capability at the Greenville transmitting station to experiment with that mode in a project with the Office of Cuba Broadcasting."

Reliance on other platforms

In recent years, VOA, Radio Free Europe/Radio Liberty and other U.S. government broadcasting services have increasingly relied on non-shortwave platforms to get their messages across to international listeners.

"A key goal for USAGM is to deliver programming to audiences on the platforms they prefer, despite the instabilities and evolution of media markets," said Moy. "USAGM continues to see year-on-year growth of its radio audiences — USAGM's weekly audiences on radio platforms in 2021 total 142 million people — and virtually all of this growth comes from local rebroadcasts and USAGM's own FMs.

"While TV remains the most popular platform for USAGM audiences overall, audiences on digital platforms are the fastest growing and now surpass radio audiences," she continued. "Digital platforms include not only websites and social media, but also on-demand video apps, podcasts, streaming services and more."

Dan Robinson has written critically about VOA's audience methodology and expressed skepticism about these audience numbers. "You'll see situations where VOA signs a rebroadcast agreement with some TV or radio station in, let's say, Northern Nigeria, and then instantly tack on that broadcaster's own audience claims to VOA's global reach numbers," he said. "But this does not mean that VOA is actually reaching that entire audience."

But Moy pushed back on that.

"Mr. Robinson's research-based assertions are incorrect. We do not count an affiliate's total audience as our own. We conduct our own nationally representative surveys, adhering to standards developed by the Conference of International Broadcasters' Audience Research Service. In these surveys we ask about the reach of our brands — for example VOA — and the reach of specific programs with clear brand names, such as Africa 54. Once someone says they consume our brand or our program, then we ask where they consume it, including questions about whether they're watching/listening on a named partner station."

Local AM/FM/TV rebroadcasts and websites can be vulnerable to hostile regimes shutting them down. But VOA does not intend to follow the BBC World Service's lead and reintroduce shortwave broadcasts to this region.

"Our research indicates there are few shortwave sets in use in that part of the world, so it's not in our current plan to add shortwave broadcasts," said Bridget Ann Serchak, VOA's director of public relations earlier this year. "However, we have begun a satellite TV channel to provide additional content for audiences in Ukraine and are exploring other methods of transmission."

No major shortwave revival

One thing seems certain: A global rebuild/expansion of VOA's shortwave infrastructure is not in the cards.

"In some areas shortwave is not considered as important as it used to be, mainly due to the proliferation of other media platforms such as internet and satellite-based systems and the media consumption habits of the target demographic in those areas," Straub said.

"However, in other geographical areas such as Africa, shortwave continues to be very important, as evidenced by the addition of USAGM shortwave capability to this area."

This is a position that makes sense to Dan Robinson, much as he wishes it didn't.

"There's a difference between what I would like to see as someone who was always interested in shortwave and saw the impact that it used to have, and what I think makes sense today," he said. "At the same time, much of the shrinkage has been driven by VOA, BBC and other broadcasters pulling back from shortwave and their listenership falling as a result, not vice versa."

Acting Chief of Staff Gary Butterworth noted that VOA's second-newest language, Rohingya, launched in July 2019 exclusively on shortwave and medium-wave.

"It's certainly true that the world seems to be moving on from these bands, but they're not entirely dead yet, and we certainly haven't forgotten about them," he told Radio World.

What remains to be seen is how the apparent drop of a new "Iron Curtain" across parts of Eastern Europe affects the West's ability to reach listeners there. Even today, shortwave's advocates say that SW remains the cheapest, easiest to conceal and hardest to block option for listeners in Ukraine, Russia and other countries of interest to Vladimir Putin.

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Above
Ryan Conarro, Jody Aguirre, Benny Hill, Darrius Turner and Herbert Alexander at Limon Correctional Facility.

With the click of a mouse, anyone in the world can listen to Inside Wire: Colorado Prison Radio day or night. It's produced and hosted by inmates in four Colorado Department of Corrections' state prisons, which has installed professional-grade studios at these facilities and funded the University of Denver's Prison Arts Initiative to manage the station.

Inmates throughout the state prison system can listen to Inside Wire through closed-circuit TVs in their cells. The program is being run by PAI's arts administrators, aided by former inmates, with a startup cost of $25,000 and an annual budget of $15,000. The radio content is produced by current inmates within the prison system.

Inside Wire is formatted like a regular radio station, with a 24/7 program schedule that can be seen online.

"For instance, we have an inmate-hosted weekday morning show, 'Inside Wire in the Morning,' that comes out of Limon Correctional Facility," said Ryan Connaro, Inside Wire's general manager and program director.

"It features music plus guests from throughout the facility, sometimes other incarcerated people, sometimes staff."

Inside Wire offers more musical genres and original spoken word content than most conventional commercial stations. The programming has a distinctive inmate focus — as befits a station that is "radio by prisoners for prisoners," said Brent Nicholas, the music and sound producer/audio content manager and a former inmate himself.

"It is providing a platform for people inside to change representations of themselves and to actually have their voices heard by each other and the outside world," he said.

The music mix, production values and presentation quality sound as good as those of any outside-the-walls broadcaster — as also befits a station run by people with a passion for radio.

Unexpected COVID benefit

Inside Radio owes its existence to COVID-19.

The pandemic forced the shutdown of many in-person programs delivered by the Prison Arts Initiative, programs that helped Colorado state prison inmates improve their life skills, boost their morale and get ready to reenter society when their sentences are served.

Like other organizations during the pandemic, the Prison Arts Initiative turned to remote methods to provide content to inmates via CCTV. This is when the lightbulb turned on.

"Hey, we can broadcast that synchronously to all facilities using our closed-circuit TV network," Connaro said. (Inmates purchase their electronic devices from the state, and most choose TVs for their cells over other types.)

Then things got moving: Audio production studios were built at the state prisons and Inside Wire went live on CCTV and online on March 1 of this year.

The value of providing inmates with the ability to produce their own radio content is significant, according to Seth Ready. He is a communications associate with Prison Arts Initiative and manager of the Inside Wire Hotlines audio bulletin board.

"I served 15 years in the Department of Corrections and I've been out for 12 years," Ready told Radio World. "I took hands-on courses on both the production and microphone sides of radio. And to this day, creating radio has been the favorite job I have had in life."

> **"Creating radio has been the favorite job I have had in life."**

Producers speak

To get a sense of radio's inspirational value for inmates, Radio World spoke via video conference with five Inside Wire producers/hosts at Limon Correctional Facility, all of whom are inmates there.

Anthony Quintana Jr. is Inside Wire's engineer of operations. He leapt at the chance to take part in the project.

"What I really am passionate about is the visions that drive Inside Wire," Quintana said. "It's really easy for media outlets to talk about all the negatives that happen inside prison and after people are released. What we do is show the positive things, the transformations of men and women here who are really, really trying to improve their lives and

How to listen

You can hear "Inside Wire" at *www.colorado prisonradio.com.*

be prepared to rejoin society and do the right thing."

Tuesday morning radio host and Engagement Director Jody Aguirre shares Quintana's passion. "Through radio, we are giving a voice to the voiceless, letting people know who we are and not what they've been told that we are," he said.

Aguirre is also hoping to address the public's prejudices towards prisoners through the station's global web stream. "We are hoping to change the narrative that's out there," he said. "It's going to be a hard task because people want to hang onto that 'movie script' of us, if you will. You know what I mean? And we're not that."

Above
Sarah Berry and Cynthia Gonzalez at Denver Women's Correctional Facility.

Below
Anthony Quintana Jr.

Making a difference

Just like local radio, the listener-focused information, entertainment and sense of connection being delivered via Inside Radio is making their hosts feel known and respected in their communities. Inside Wire Production Manager Joaquin Mares learned this when he spoke outside the studio with a passing inmate who had just transferred in from another facility.

"He asked about what I did here, and I said, 'I'm on the radio'," Mares recalled. "And he said, 'Yeah, I like your show. It's cool what you guys are doing.'"

The participants say Inside Wire's inmate-produced/hosted content is making life better for friends and family on the outside.

"A couple of months ago we were given the opportunity to start bringing in co-hosts (from the inmate population) and sometimes our co-hosts will do a whole four-hour show with us," said Features Manager Benny Hill.

"One co-host told me that it was really cool that his family was able to spend four hours with him that morning by listening in, because they otherwise wouldn't be able to come out to the prison and visit him. They felt like they were spending time with that person, just over the radio."

For Inside Wire Music Manager Darrius Turner, being on the radio as an inmate producer/host is a positive way to support his listeners.

"People at other prisons and in the 'free world' have been writing to me with expressions of gratitude, and telling me that I give other minorities hope," he said. "For me, that's just the biggest milestone: To know that I'm doing the right thing and being of service to the community behind the walls, as well as the communities on the street."

In the studio

Inside Wire's four prison studios are equipped with Rodecaster Pro Podcast Production Studios; Audio-Technica mics, pop filters, booms and headphones; ClearSonic baffles and soundproofing; Sony ICD portable digital recorders; and Reaper digital audio workstation software.

The studios were designed by consulting engineer Jonathan Howard, who works in the arts community and teaches sound design/audio production at the Denver School of the Arts.

Because prisoners are not allowed to access the internet,

Photos: MeiLi Smith

finished shows are dubbed onto USB devices, which Ryan Connaro picks up and takes to the outside world for streaming.

You can find the program schedule at *www.coloradoprisonradio.com/programs.html*.

Above (l to r) Darrius Turner, Herbert Alexander and Jody Aguirre

The language of radio

In my conversations with these inmates, we conversed as mutual lovers of radio. We used a common language that anyone who revels in this profession employs. We were talking with one another as radio people.

This said, the inmates were well aware of their environs, and it is likely that their loss of freedoms makes creating radio even more precious to them and inspires the passion in the content that they share online.

Hill puts it this way. "Well, I have life without parole, and I may never get out of prison. But one of the things that I hope is that Inside Wire is a contributor to the way prisons are run, and for the better. I hope that Inside Wire will help change the views of the public who sees movies like 'The Shawshank Redemption' and feel like they've got it all figured out about what prisoners do in prison, because that's the furthest from the truth. And hopefully Inside Wire will bring people in who have gotten out and become success stories to talk to our listeners, and shine a light on the fact that we're not all monsters in here."

About Buyer's Guide
The Buyer's Guide section appears in every other issue, focusing on a particular category of equipment and services. It is intended to help buyers know what's on the market and gain insight into how their peers are using such products.

Messina connects hosts of all experience levels

Real Side Productions deploys Comrex tools including Opal and Access NX

Joe Messina is the host of "The Joe Messina Show" (formerly "The Real Side Radio Show"), a nationally syndicated political radio show and podcast.

As a seasoned radio and podcasting professional, Joe also shares his expertise as a producer to other broadcasters with his production company, Real Side Productions.

"We're a Comrex house," he says. "I produce live radio shows all day, including my own three-hour show that I do every night. I've often had to produce shows remotely, which is how I originally got involved with the company."

Messina frequently has guests on his show from all over the globe. He uses Comrex Opal, a guest interview solution, to get them connected without hassle.

"I bought some Android tablets and a couple of headsets to send out to guests who are regularly on the show," said Messina. Guests connect by opening a link in the browser of the tablet. "When they connect, they sound like they're sitting in the studio with me."

Real Side Productions works with creators of varying experience levels, from seasoned podcasters who are looking to syndicate their shows on the radio, to new hosts seeking coaching to perfect their craft. Messina says RSP caters to people at all stages of their careers.

"All of these hosts know what they're talking about, but they still need to learn to use the equipment," said Messina. "When they're ready to buy equipment, I tell them to go with Comrex because if you call tech support, you'll always get someone who knows the product and can help you figure out your problem."

When COVID hit in 2020, Real Side Productions needed to shift its clients to a remote setup. "I created a little to-go pack, which contained a portable Access NX unit, and sent it to hosts with greater levels of technical experience."

For greener hosts, Messina sent Android tablets to connect with the Opal. "I was skeptical of Opal at first; it sounded too good to be true, like a bubble gum ad," said Messina. "But once I got it set up and working, it's been flawless."

More info
www.comrex.com

> **When they connect, they sound like they're sitting in the studio with me.**

Tech Update

Orban Increases Density and Loudness

Orban says its Optimod-PCn 1600 Audio Processing Software increases the density and loudness of program material using multiband compression and sophisticated peak limiting, and improves the consistency of the sound without producing unpleasant side effects.

"Audio processing can be smoothly activated and defeated on-air via a delay-matched pass-through mode, allowing programs that can benefit from full dynamic range to pass through Optimod-PCn 1600 without dynamic compression except for safety limiting using MX or non-MX limiter modes."

Two-Band automatic gain control with a phase-linear crossover, adjustable band coupling and window gating compensates for varying input levels, Orban says. "This intelligent AGC rides gain over an adjustable range of up to 25 dB, compressing dynamic range and compensating for operator gain-riding errors and for gain inconsistencies in automated systems."

The company said Five-Band compression with selectable phase-linear and all-pass crossover topologies provides a consistent, "processed" sound free from side effects.

"Band-coupling controls allow the gain differences between adjacent bands of the five-band compressor to be constrained to any desired value, allowing you to preserve as much of the frequency balance of the original program material as desired, unless doing so would otherwise cause objectionable spectral gain intermodulation artifacts."

The subjective loudness control incorporates contemporary concepts of "target loudness" including those specified in EBU R128 and ATSC A/85 and the most recent ITU-R BS.1770 loudness measurement algorithm, as well as the proprietary Orban-CBS Labs Loudness Meter and Loudness Controller.

The PCn 1600 includes presets for various programming formats, and there are special-purpose presets for mastering and pure peak limiting. It can also be used as a studio AGC (including peak limiting) to protect a studio-to-transmitter link, optimally using the STL's native dynamic range.

Info: www.orban.com/keyfeatures-pcn1600

AKPM enhances workflows with StreamGuys

Alaska Public Media wanted richer analytics and dynamic message insertion

More info
www.streamguys.com

Alaska Public Media (AKPM) harnesses the power of multiple media platforms to make a more informed and connected life possible for all Alaskans.

StreamGuys says that while AKPM has used its services to deliver live/linear streams of radio station KSKA 91.1 FM for many years, the organization's on-demand audio content had been hosted on its own website with RSS feeds created through FeedBurner.

AKPM was looking to improve their workflow, but reductions in FeedBurner functionality forced it to make a change.

"We wanted richer analytics to get a better handle on our audience," said Linda Wei, chief content officer at Alaska Public Media.

"We also wanted to dynamically insert messages such as underwriting into both our live streams and on-demand content. We didn't want separate live and on-demand workflows that would be cumbersome to maintain."

She said that moving on-demand audio hosting to StreamGuys enabled it to bring all of its digital content, plus new dynamic messaging, under one roof.

AKPM now uses StreamGuys' SGrecast to manage its on-demand content.

"It's much more user-friendly than our previous approach," Wei said. She likes that there are multiple ways to do any task." SGrecast's interface is adaptable to however each user wants to work."

For messaging insertion, AKPM uses StreamGuys' advertising ecosystem integration. "More of our audience is listening through streaming, and we want to target them to increase relevance and avoid listener fatigue. StreamGuys' integration with third-party ad marketplaces enables us to do that."

Tech Update

Tieline ViA for Live Remotes and Podcasting

The Tieline ViA now delivers voice tracking, FTP and podcasting capability directly from the codec in the field.

Tieline says that means the ViA portable remote codec, which delivers live streaming with record and playback capability, doubles as an integrated podcast production studio.

"With the Tieline ViA you can simultaneously record and play audio files, so you can create a podcast on the go while broadcasting live at home or from a remote site," it states.

"Or even record a post-game show, complete with post-game interviews and sponsors' messages, all without entering the studio."

During recording the podcast creator can insert live content and integrate inbound callers, pre-recorded interviews, music and ad spots.

"At the end of the broadcast simply navigate to the FTP Upload page and tap 'Send' to upload the file and you are done. Connect over IP from the ViA codec to a Gateway or Gateway 4 codec at the studio as these codecs include Icecast and Shoutcast to deliver support for HTTP streaming as well."

Info: www.tieline.com/via

Ferncast supports Bundesliga's Mainz 05

1. FSV Mainz 05 is a German club playing in the Bundesliga, the top of the German football or soccer league system. (The team's full name is "1. Fußball- und Sportverein Mainz 05 e.V.")

Software supplier Ferncast reports: "Mainz 05 has a close relationship with its fans and endeavors to stay on top of its technology. For this reason, they have been Icecast streaming their own in-house 'fan radio' called '05er.fm' for some time, available on their own website."

The team live-streams the commentary for its games, plus the stadium atmosphere as well as general discussions.

"However, this was not enough for them — Mainz 05 wanted to modernize their workflow and enable greater fan participation."

Ferncast provided an Audio Codec Server Mini running aixtream software to handle the audio encoding and streaming, while the commentator's microphones are connected via a USB audio interface connected to the Mini. This combo is controlled live by the commentators via a laptop PC.

In addition to Icecast streaming, the club wanted to be able to receive phone calls from listeners and allow the commentators to add callers to the ongoing conversation, so the caller's audio needed to be added to the Icecast stream as well.

"Identifying incoming calls and adding them to the stream had to be kept simple to control for the commentators so a custom control panel ('Quick Actions') was implemented into the UI by Ferncast."

This included the ability for the commentators to add jingles and similar audio clips to the stream or mute themselves or other microphones at a click. Such customized virtual control panels are now available to all aixtream users.

More Info
www.ferncast.com

Cox doesn't do Windows with WheatNet-IP

It replaced banks of PCs with Wheatstream or Streamblade AoIP appliances

Another Windows update was the last thing Morgan Grammer wanted to do when he took over engineering the replacement hardware for Cox radio's 200-plus streams as the DOE for Cox Media Group – Radio, Tulsa.

"We were looking at PC refreshes for 57 stations in 20 markets and all their HD channels plus all the on-demand channels, and we were thinking 'will this even work with Windows 11?'" said Grammer, referring to the group's legacy streaming system.

Grammer, along with Cox DOE George Corso, Miami, replaced banks of PCs with a main and backup Wheatstream or Streamblade AoIP appliance per market in most cases.

Each WheatNet-IP appliance is capable of eight channels in and 32 output streams for both MP3 and AAC encoding to redundant CDNs, and provides provisioning, metadata support and audio processing for each unique stream.

In addition to not having to worry about Windows updates, Grammer told Wheatstone that Cox stations benefit from the appliances' audio processing specifically designed for streaming.

"We can maintain the excitement that comes with radio without having to clip everything to 0 dBFS, which we don't want for streaming because the codec can really turn that into grunge," said Grammar. He added that level matching between sources is another benefit of the Streamblade/ Wheatstream appliances.

Above
Morgan Grammer

More Info
www.wheatstone.com

"We ingest a lot of different sources from our ad partners and the last thing we want is music at one level and then deafening our listeners with an ad that comes on after," he said.

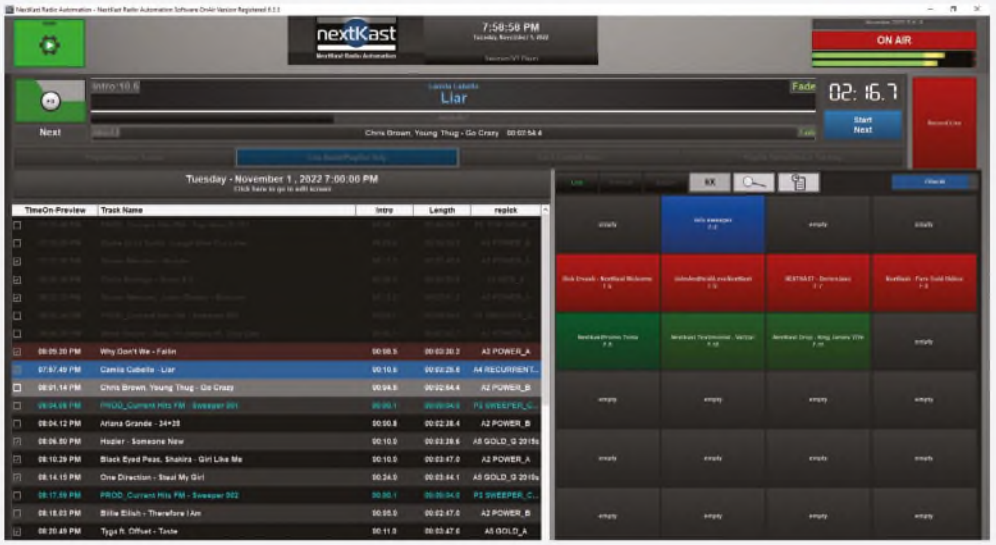
"The overarching goal was to be able to spin up channels on a whim and process them for a large variety of source material and having it sound good coming out the other end," he added.

In fact, Cox station KRMG-FM in Tulsa recently won its seventh NAB Marconi Award for news coverage; and as this article was being prepared, Grammer was in the process of putting up a secondary stream for breaking news as a result.

All streaming is native to the WheatNet-IP audio network used in Cox studios, with no AD/DA required, and because the AoIP appliances include the Nielsen watermark audio software encoder, that saves additional units in the rack, which is more complexity that Grammer can do without.

"That's the beauty of the box. We can keep adding more licenses and grow as we come up with more channels without having to redeploy more hardware," he said.

NextKast Updates Its Automation



NextKast has released the latest version of its OnAir Radio Automation Product. "Although not a software feature, a big change is including migration from your old automation with your purchase," it wrote. "Support has also been expanded to 24/7."

Software features include real-time traffic merging (update log of active day or hour/re-merging), and simplified talk and sports clock creation, reducing command count by up to 70%, which the company says simplifies maintenance of the satellite log.

The user interface has become more configurable. "A unique real-time remote asset downloader method has been improved for making downloaded shows much easier to set up and keep up to date."

MobileVT has expanded and added goLive, the ability to do remote live hosting via a browser. It also allows multiple hosts to do a live show from a browser. "Multiple morning show hosts can be in separate locations and all can hear each other and host a show from a browser."

RDS and metadata delivery have been improved and streamlined. Cart Number will now display in track list and the system logs when they are used. And MusicMaster Nexus integration setup has been improved to make setup quicker.

The software is available with a monthly lease or buyout with remote migration support included. Other lease options include hardware and software lease combined; 24/7 support is available for a monthly fee.

Info: http://www.nextkast.com.

BROADCAST EQUIPMENT EXCHANGE

BROADCAST EQUIPMENT EXCHANGE

Writer
Joe Manfredi
Station Manager
Old Westbury Web Radio

College radio is not a right, it's a privilege

An educator and station manager speaks up for the medium

This is one in a series of articles and commentaries about the state of college radio.

Above Right
Blanca Schneider (seated), Dr. Lorenz Neuwirth, Jessica Wallace, Keith Scott and Chris Callahan

Below
Commencement, 2018. Front: Joshua Richter, Michelle Weinfurt, Christine Mustazza, Joshaua Butensky and Arielle Mancebo. Rear: Jonathan Ramos, Michael DeRosa, Joe Manfredi, Andrew Thoma, Michael Gallopini, Rene Canales and James Bacchioni.

If only a venue existed where students could explore their creative curiosity while developing skills in leadership, digital media, journalism, marketing, public speaking, IT, engineering ...

Oh wait.

At a time when sales of college radio stations are on the rise and more institutions migrate their broadcast outlets from towers to the internet or simply drop them, I say not so fast.

College radio stations matter. Managed properly, they are assets to their institutions — places where students can begin a career; be taught to act in the interest, convenience and necessity of the public; and learn the value of free speech, democracy and storytelling.

Stations can foster personal growth and understanding by bringing students into contact with others of varied experience and disciplines. They can provide a platform for constructive, meaningful conversation while exploring a variety of topics.

Stations can teach responsibility, ethics and values, especially when their leadership seeks to create inclusive, safe and fun learning experiences.

Many stations are student-operated. These are applied-learning, service-based academic spaces where young people can engage in self-discovery while developing communities and creating lifelong relationships. It's a context where students, faculty, staff, and community volunteers ideally work as one.

Radio's minor league

College radio still serves as an important source of broadcast industry talent.

If news is on the program grid, students may be executing local and regional coverage, political interviews, campus news and events, community affairs and educational programming, and perhaps live audio and video webcasting from real pressers.

For helmet heads, court crashers and field fans, college radio may provide the opportunity to create live audio (and video) content including play-by-play, color and field reporting. Students may interview athletes, coaches and sports professionals.

If music is on the menu, DJs can flourish. College radio also is responsible for uncovering new and independent artists and continues to help the careers of musicians and their fan bases. These artists participate in interviews, studio performances, station branding, and ticket and merchandise giveaways.

Sound hounds who love computer screens, software and splicing can learn all phases of production and exercise their creativity as they gain proficiency.

Those with an interest in public relations or marketing can explore branding and social media, create narratives, acquire new listeners, engage the audience, identify demographics and represent the station and the college to the public. Some

John Fogarty, James Bacchioni and Brittany Samuels covering sports on OWWB.

may create or improve the station's website or produce content for access on-demand or via podcast.

The opportunities are almost endless. A PD or GM may learn management, scheduling, mentorship and the importance of deadlines and goals. Their roles demand discipline, sacrifice, teamwork and other transferrable skills.

Student managers may also have to fix that darn EAS machine — unless there's a bright-eyed student with a tech-geek streak who gladly will assume ownership of problem-solving and infrastructure management. With technical people in such demand in and out of our industry, a college radio station is a great place to hone broadcast and IT skills in a demonstrable way.

Many college radio stations have been recognized with regional and national awards for work in all aspects of production, content, context and delivery.

College stations are also interactive multimedia facilities where students can learn about video, podcasting, social platforms and so many of today's important media tools.

Unlike any other

College radio still matters. Ask our students, ask our listeners, ask me or any of us around the world who lead college stations.

Ask Rob Quicke of WPSC(FM) in New Jersey, founder of World College Radio Day. Ask the folks at the Intercollegiate Broadcasting System. Ask the College Media Association and its members.

My mantra is that college radio is not a right, it's a privilege. The radio medium is unlike any other thanks to its immediacy and intimacy. And we have a responsibility to use it well for our listeners and our communities as well as our students and our institutions.

Thanks for listening.

The author has more than 25 years of broadcast and college radio experience. He is a lecturer in the American Studies/ Media & Communications department at State University of New York College at Old Westbury.

Readers' Forum

How you can help NWR

I enjoyed reading Ron Schacht's article in the Oct. 26 issue, "FEMA Believes in Radio. Is Your Station Doing Its Part?"

I started at KFRU(AM) in Columbia, Mo., in the late 1970s, and we prided ourselves on our severe weather coverage. KFRU encouraged everyone to have a NOAA Weather Radio (NWR) so they could receive alerts in the middle of the night, then tune to KFRU for lifesaving storm tracking and protective information, which was a huge ratings booster.

During my 30+ year on-air career, I worked for three stations that understood the importance of NWR and proudly hosted it on their towers, as a public service.

The National Weather Service operates 1,033 NWR transmitters that send their signals to 94% of the U.S. population in all 50 states and five U.S. territories.

The cost to run this network is $16 million per year. Increasingly, this budget is being severely affected by rising, often exorbitant tower rental rates, with approximately 40% of the yearly NWR budget consumed by tower rental alone.

This severely hinders the ability of NOAA to maintain, improve and expand its radio network.

Broadcasters: When NOAA comes looking for tower space, let them onto your tower at a rate that enforces your commitment to serve the public interest, convenience and necessity. The NOAA transmitter you host is the source of lifesaving information your station can use to super-serve your audience during times of danger.

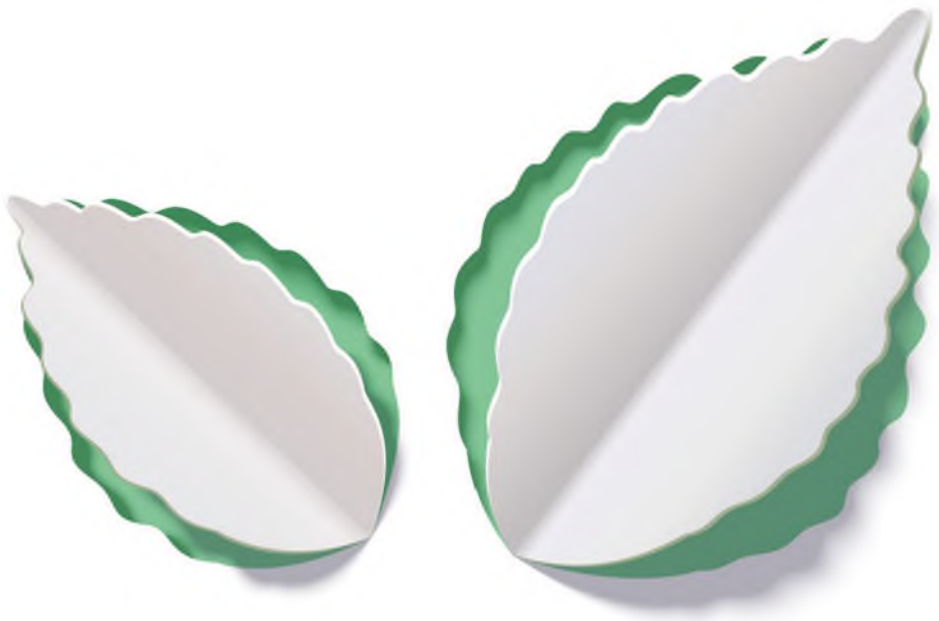
Re-packaging and disseminating official watch and warning information affects listeners in a way that creates lifelong fans of YOUR station because you saved their lives.

On a related note, bipartisan bill H.R. 5324, the NOAA Weather Radio Modernization Act of 2021, passed the U.S. House almost unanimously and as I write it is in the Senate, awaiting approval. All broadcasters should contact their senators and ask them to pass HR-5324 before the end of this year. It directs NOAA to allocate more of its *current budget* to improve NWR by replacing outdated copper-wire transmitter links with more reliable microwave, IP and satellite comms, bringing this 60-year-old broadcast network into the 21st century. Thanks for helping us build a Weather-Ready Nation.

Bruce T. Jones
Meteorologist/Spokesperson
Midland Radio Corp.

How to submit

Radio World welcomes comment on all relevant topics. Email *radioworld@futurenet.com* with "Letter to the Editor" in the subject field.



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