NewBay

RADIOWORLD

AUGUST 16, 2017 | The News Source for Radio Managers and Engineers | $5.00 | RADIOWORLD.COM

Wiregrass Country Hears the Growl of WOOF

AM/FM combo carries on the local focus and legacy of Agnes Dowling Simpson

The WOOF Wolf visits Northview High School Career Day.

STATIONPROFILE

DONNA L. HALPER

One in a series about successful stations in all market sizes.

Licensed to Dothan, Ala. — market for Nielsen — WOOF(AM) and WOOF(FM) have announcers who reside in the community and regularly interact with their audience. According to management, both stations are profitable.

"The Ball" airs sports-talk on AM; it is live and local from 6 to 9 a.m. and noon to 2 p.m., and it broadcasts play-by-play of area high school games. The Ball is heard at 560 kHz, with 5,000 watts days and 118 watts nights; it has a translator at 100.1 on the FM dial.

Meanwhile WOOF(FM), an adult contemporary station, plays "continuous soft rock," live and local 24/7, except for one syndicated show on Saturday night. It is heard at 99.7 MHz on a 100 kW Class C1 signal.

Both also can be heard almost anywhere, thanks to live-streaming from *www.997wooffm.com*.

TRUMAN-ERA ROOTS

Much of WOOF Radio's success is credited to Agnes Dowling Simpson, who owned and managed the stations for many years.

If you grew up in Dothan, chances are you knew her. She had an outgoing personality and was said to love meeting people. In addition to being one of the few female radio station owners, she was active in nearly every charitable and civic organization in the area, and received numerous awards for community service. In 1987, she became the first woman to receive the Alabama Broadcaster of the Year award; in 2008 she was named to the Alabama Broadcasters Association Hall of Fame.

Agnes and her husband R. A. Dowling put WOOF(AM) on the air in 1947. As you might guess from the call letters, she loved animals; WOOF's stationery even had a little dog on it. Raising four children kept her busy, but when R.A. died suddenly in 1960, she went back to work full-time, taking on the role of

(continued on page 6)

Get With the Program: A Chat With Doug Vernier

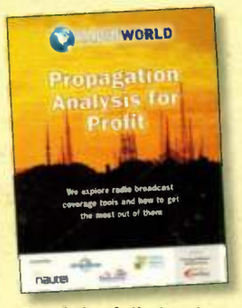
How can you maximize prediction methods and determine where your signal goes?

BY MICHAEL LECLAIR

The following interview appeared in the recent Radio World eBook "Propagation Analysis for Profit."

Doug Vernier is president and owner of V-Soft Communications, a provider of RF propagation software programs that assist engineers in evaluating interference and coverage for radio and television stations, such as FM Commander, AM-Pro and Probe. We asked him about choosing software, using Longley-Rice for coverage evalu-

(continued on page 10)



Read the full ebook at *radioworld.com/ebooks.*

Make Them Sound Great

Push your talent's voice beyond the limits and dominate the airwaves

Wheatstone Voice/Mic processors give you everything you need to make voices grab listeners by the ears.

For our SQ (Super Quiet) mic pres, we emulated and hot-rodded legendary studio preamps to sound incredible for modern radio.

Our compressors, limiters, & EQs are maximized for vocal smoothness, allowing your talent to stand out on-the-air.

Wheatstone's Graphical User Interfaces give you deep, intuitive control to tweak our world-class presets and save those you create.

The result? Voices that can sound superhuman.

Wheatstone M-Series Voice/Mic Processors

M-1: single channel with knobs and buttons • **M-2:** dual channel with multiband compression • **M4-IP USB:** four-channel networkable BLADE-3

Learn more at wheatstone.com/superhuman-voices

Wheatstone
BROADCAST AUDIO PERFECTIONISTS®

Designed and built in the USA. Phone +1-252-638-7000 | wheatstone.com | sales@wheatstone.com

RADIO WORLD
Vol. 41, No. 21 August 16, 2017

Next Issue of RADIO WORLD September 1, 2017
Next Issue of ENGINEERING EXTRA October 18, 2017

Website: www.radioworld.com | Email: radioworld@nbmedia.com
Telephone: (703) 852-4600 | Business Fax: (703) 852-4582
Facebook: Radio World | Twitter: @radioworld_news

For address changes and subscription renewal, please visit radioworld.com and click on the "Subscription" button. To submit letters or story proposals, to request writer's guidelines, or for other editorial matters, email the editor at radioworld@nbmedia.com.

EDITORIAL STAFF
EDITOR IN CHIEF, U.S. Paul J. McLane
GEAR & TECHNOLOGY EDITOR Brett Moss
TECHNICAL ADVISER Thomas R. McGinley
TECHNICAL EDITOR, RWEE W.C. "Cris" Alexander
PRODUCTION EDITOR, RWEE Karen Lee
CONTRIBUTING EDITOR Emily Reigart
CONTRIBUTING EDITOR John Bisset
WEB EDITOR Michael Balderston
INTERNATIONAL EDITOR IN CHIEF Marguerite Clark

EDITORIAL CONTRIBUTORS
W.C. Alexander, Susan Ashworth, James Careless, Harry Cole, Ken Deutsch, Mark Durenberger, Charles Fitch, Christopher Friesen, Harold Hallikainen, Donna Halper, Craig Johnston, Alan Jurison, Paul Kaminski, John Kean, Peter King, Larry Langford, Mark Lapidus, Daniel Mansergh, John Merli, Jim Peck, Mark Persons, Stephen M. Poole, Carl Lindemann, James O'Neal, Tom Osenkowsky, Rich Rarey, John Schneider, Randy Stine, Richard Strickland, James G. Withers, Tom Vernon

ADMINISTRATION & PRODUCTION
PUBLISHER John Casey
EDITORIAL DIRECTOR Paul J. McLane
PRODUCTION MANAGER Karen Lee
ADVERTISING COORDINATOR Caroline Freeland

AUDIENCE DEVELOPMENT
VICE PRESIDENT | CORPORATE DIRECTOR OF AUDIENCE DEVELOPMENT Meg Estevez
CIRCULATION MANAGER Kwentin Keenan
ASSOCIATE CIRCULATION MANAGER Michele Fonville

SUBSCRIPTIONS
Radio World, P.O. Box 282, Lowell, MA 01853
TELEPHONE: 888-266-5828 (USA only 8:30 a.m.–5 p.m. EST)
978-667-0352 (Outside the US) FAX: 978-671-0460
WEBSITE: www.myRWNews.com
EMAIL: newbay@computerfulfillment.com

CORPORATE
NewBay Media LLC
PRESIDENT AND CEO Steve Palm
CHIEF FINANCIAL OFFICER Paul Mastronardi
CONTROLLER Rick Ng
VICE PRESIDENT OF DIGITAL MEDIA Robert Ames

VIDEO/BROADCAST GROUP
EXECUTIVE VICE PRESIDENT Carmel King
VICE PRESIDENT / SALES DIRECTOR Eric Trabb

ADVERTISING SALES REPRESENTATIVES
US REGIONAL & CANADA: John Casey, jcasey@nbmedia.com
T: 212-378-0400, ext. 512 | F: 330-247-1288
US REGIONAL: Michele Inderrieden, minderrieden@nbmedia.com
T: 212-378-0400, ext. 523 | F: 301-234-6303
EUROPE, AFRICA & MIDDLE EAST:
Raffaella Calabrese, rcalabrese@nbmedia.com
T: +39-320-891-1938 | F: +39-02-700-436-999
LATIN AMERICA: Susana Saibene, susana.saibene@gmail.com
T: +34-607-31-40-71
JAPAN: Eiji Yoshikawa, callems@world.odn.ne.jp
T: +81-3-3327-5759 | F: +81-3-3322-7933
ASIA-PACIFIC: Wengong Wang, wwg@imaschina.com
T: +86-755-83862930/40/50 | F: +86-755-83862920
CLASSIFIEDS: Michele Inderrieden, minderrieden@nbmedia.com
T: 212-378-0400, ext. 523 | F: 301-234-6303

Radio World Founded by Stevan B. Dana

Radio World (ISSN: 0274-8541) is published bi-weekly with additional issues in February, April, June, August, October and December by NewBay Media, LLC, 28 East 28th Street, 12th Floor, New York, NY 10016. Phone: (703) 852-4600, Fax: (703) 852-4582. Periodicals postage rates are paid at New York, NY 10079 and additional mailing offices. POSTMASTER: Send address changes to Radio World, P.O. Box 282, Lowell, MA 01853.

For custom reprints & eprints please contact our reprints coordinator at Wright's Media: 877-652-5295 or NewBay@wrightsmedia.com
List Rental: 914-368-1024, jganis@meritdirect.com

Globe graphic ©iStockphoto.com / Edward Grajeda

600+ FM Stations Could Be Affected by TV Repack

BY PAUL McLANE

We knew the ambitious TV spectrum "repack" process over the next three years would likely have operational implications for FM broadcasters. This summer the NAB released a study that sought to quantify the scope.

The study, conducted by V-Soft Communications, found that more than 600 FM stations could be affected by the repack, a process in which over 1,100 TV stations will change channels or, in some cases, go off the air. Many of the TV stations will require antenna replacements or other tower work that could take days, or weeks.

The possible impact on radio was broken down in the accompanying table, and NAB filed a list of affected FM stations in comments to the FCC.

Robert Weller, NAB's vice president for spectrum policy, told Radio World in July that the potential impact on FMs is chiefly from RF exposure concerns. If an FM and a TV station share a common tower or are on nearby towers, workers for the TV station could face RF hazards unless the FM reduces or turns off power.

"While many FM stations have auxiliary antennas that can help reduce downtime, many do not; and the expenses of constructing an auxiliary facility and revenue loss are generally not considered reimbursable by the Incentive Auction Broadcast Relocation Fund," Weller said, referring to money set aside by Congress to help the TV industry through the process. But as of early August, there are bills in both houses of Congress that seek to provide relief to FM stations that are affected.

Weller said that 452 TV stations planning to change channels could affect the operation of 629 nearby FMs. Further, more than 100 of those FMs are affected by three or more TV stations; some are affected by as many as six. Further, some of those are in different phases of their repack, and Weller said this could mean "multiple and lengthy" requests for FM stations to lower power or even cease operations.

States with the most radio stations possibly affected are Florida (137), New York (117) and California (109). Forty-six states, the District of Columbia and Puerto Rico have at least one affected radio station.

V-Soft used information from the FCC's station database; it listed FM stations likely to be affected by TV antenna modifications by full-service and Class A TV facilities required as a result of the spectrum auction repack; it also listed FM stations that, based on V-Soft's calculations, are in a common aperture with the TV station antenna on the same tower, and identifies whether potentially affected FMs could use auxiliary facilities while work is being performed on the TV facility.

Weller said affected NAB member stations were provided a copy of the report.

You can read the list of FM stations affected by TV station channel changes at *tinyurl.com/rw-repack1* and the list of FMs affected by TV stations going off the air at *tinyurl.com/rw-repack2*.

NAB — V-Soft Communications

Summary of affected stations:

	Only Considering TV Stations Going Off-Air	Only Considering TV Stations Changing Hands	Combined Total
Number of Affected FM Transmitters	**115**	**629**	**678**
Number of TV Transmitters Affecting at Least 1 FM	74	452	526
Number of TV Transmitters NOT Affecting FM	79	545	624
Affected FM stations with an off-site aux facility	62	237	254
Affected FM stations without an off-site aux facility	53	392	424
FM stations in common aperture with TV antenna	41	135	154
FM stations considered that were NOT deemed to be affected	10,738	10,224	10,175

The first column indicates counts for the scenario where only TV stations that are going off-air are considered. The second indicates FM stations affected by TV stations that are changing channels. The last column shows the results when both stations going off-air and those changing channels are considered. The combined total is not a simple sum of the first two columns because some FM stations are affected by both a channel going off-air and a station that is changing channels.

IN CASE YOU MISSED IT

Radio World and our NewsBytes e-newsletter complement one another. Here's a sampling of headlines from recent weeks:

Congrats to 2017 SBE National Award Winners
The Society of Broadcast Engineers named Steve Brown as the Robert W. Flanders SBE Engineer of the Year. Tony Peterle was chosen as the James C. Wulliman SBE Educator of the Year. Jim Dalke was saluted for Best Technical Article, Book or Program.

NAB Supports EAS Blue Alerts If Modeled After AMBER
It asked for uniform guidance and a centralized support system for the rollout; and it said the code should be clearly differentiated from the existing Law Enforcement Warning code.

FCC Is Back to Full Strength; Carr, Rosenworcel Confirmed
Rosenworcel, a Democrat, is returning; she served from 2012–16. Carr, a Republican, was general counsel of the FCC and earlier was an advisor to then-Commissioner Pai.

FM Translator Window Ends
More than 1,000 AM stations participated in the latest translator filing window. The one-week window gave some Class C and D AM stations the opportunity to apply. Dates for the next auction have not been announced.

EAS Test Reporting System Now Open
Most U.S. radio stations must renew Form One by Aug. 28. The national test is Sept. 27; by 11:59 p.m. that day you'll need to file Form Two; and detailed post-test data on Form 3 is due Nov. 13.

The Quiet Dignity of Tom Osenkowsky

Consulting engineer and RW family member confronts his diagnosis and reflects on career

Today I'm tipping my hat to a friend and colleague in the Radio World family, Tom Osenkowsky, in recognition of an accomplished career.

You may know him from his technical consulting work, articles in Radio World, a chapter in an SBE handbook about disaster planning, presentations to the NAB Broadcast Engineering Conference, or SBE and IEEE Broadcast Technology Society events.

One good reason to make note of Tom's career right now is that the 11th edition of the National Association of Broadcasters Engineering Handbook is fresh in print. This is a particularly important industry reference, and Tom has had a hand in the two most recent editions as associate editor and a chapter co-author.

The other reason is that he is terminally ill. Tom has been actively battling lymphoma, multiple myeloma and stage IV renal failure since December of 2014. In July of this year, due to the lack of available options and low blood counts, he terminated his cancer treatments. As I write, he is in the care of Regional Hospice & Palliative Care in Danbury, Conn.

"I was proud to be the first patient in New England to beta test a new chemo, Darzalex, which lowered my Creat[inine] to where I did not require dialysis," he told me.

"Unfortunately it did not lower other critical anomalies in my blood. Other patients are benefiting from the data gathered during my stay in the Observation Floor at Danbury Hospital."

Tom has been an absolute inspiration to me in the direct and honest way he has confronted this prognosis. He stated his outlook frankly: "I do not have any dependents, and cared for my parents up to their final breaths. It is time to go."

A RANGE OF RF WORK

I asked him to reflect on memories of his broadcasting career; replying by email, he was typically matter of fact. He said it began by accident during high school.

"I started as a news stringer for local station WINE, Brookfield, Conn.," he said. "After attending Central Connecticut State College for a year, I got married and worked for Automation Industries Inc. in Danbury, Conn. I learned a lot of the manufacturing process."

The opportunity arose to become chief engineer of then-WOWW(AM) in Naugatuck; he worked there until he was hired — despite a lack of FM experience — by the late Bill Patrick at WAVZ(AM)/WKCI(FM) in New Haven.

"A little over a year later our Alford directional FM antenna was destroyed by falling ice, and I negotiated a mutual consent agreement with a neighboring adjacent-channel station which allowed us to operate non-directionally," Tom remembers. "I designed a two-bay antenna at increased height on the WTNH(TV) tower, which allowed a very substantial increase in coverage."

Tom Osenkowsky is shown with a Piper Warrior belonging to his friend and fellow engineer Paul Shulins. The photo was taken by Russ Mundschenk.

He also served WRCQ/WRCH as chief engineer. He did contract engineering on a long-term basis for WNHU, WQAQ, WVOF and WNTY. He performed engineering in St. Maarten and Aruba, as well as across the United States for AM/FM clients. Tom wrote computer programs to assist in the design and analysis of AM antenna and coupling systems to allow broadband operation with increased fidelity and coverage.

"One of the more interesting projects was to design an AM/FM reception system using multiple tuners for a client who monitored and recorded broadcast stations for the purpose of reconstructing their program and music logs," he said.

"In this case reception was as important to their business model as transmission was to a broadcast station. I specified the required antennas, equipment and installation procedures and was able to meet their needs. The sole exception was a directional AM whose array placed a null directly over their offices. Direct reception was not possible in that case and an alternative reception method was required."

Another interesting and precedent-setting project was convincing the FCC to recognize the effect of a tower on a non-directional FM antenna.

"My client relocated their FM to a NCE TV tower, and a co-channel neighbor objected. I did range tests and we agreed to specifically mount our antenna in such a manner as to minimize signal toward their market and remain classified as a non-directional station. The station has since vacated the site and the objecting station was sold."

FROM THE EDITOR

Paul McLane

"GENUINE COMPASSION"

An article like this can struggle to capture the personality behind the deeds. I asked colleagues to share their own thoughts.

Paul Shulins said Tom has made countless contributions. "Never afraid to speak his mind when he feels that broadcasters can benefit from his comments, he has on numerous occasions either made us rethink issues, or has brought us a different perspective that was never previously considered." He called Tom not only an excellent engineer but a wonderful role model and human being.

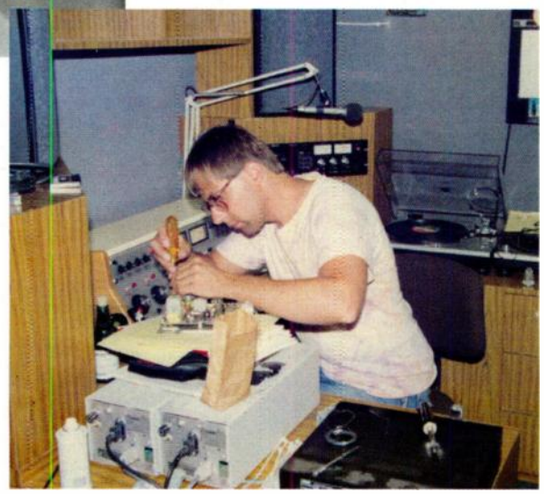
NAB's David Layer worked with him on the handbook. "He was truly the perfect man for the job, he had the right engineering knowledge and the right contacts and acquaintances in the broadcast engineering community to help find and recruit the right authors for our chapters, to work with the authors on developing the content, and to massage that content into the outstanding material that has become the hallmark of the NAB Engineering Handbook publication." As Layer put it, no one gets wealthy from this work, it is more a labor of love

I learned that Tom is well respected in the consulting community.

Ron Rackley, who has known him for more than three decades, told me, "Tom has an honest intellectual curiosity to go along with his rather intense personality that has always driven him to excellence."

They met when Ron was curriculum coordinator and a lecturer for the old AM Directional Antenna Seminar at NAB headquarters in Washington in the 1980s. "He and I sat at lunch one day and discussed how some AM directional antenna patterns can be reverse-engineered into their component pairs so that alternative designs for the same pattern shape can be evaluated for optimal performance," Ron recalled.

"I explained how it would require solving a complex system of simultaneous polynomial equations, something I had never attempted mathematically, favoring solution by simpler iterative analysis myself. A few weeks later, a floppy disk arrived with a program to



Tom Osenkowsky tuned a Gates FM-10H at WKCI in Hamden, Conn., circa 1978, above, and worked in St. Maarten at studios of PJD2/PJD3 in a later undated photo.

reverse-engineer patterns using the math I had described. Tom had taught himself the math and written his 'moding' software for rapid solutions with it." Ron was impressed.

Perhaps the person who best described Tom's personality, as I've experienced it, is Gary Cavell. He only got to know Tom while working on the handbook. "But somehow, jumping into this project with him was like continuing a long conversation with someone I had known for years." Tom, he said, undertook the editing and management of more chapters than anyone, "and did so with resolute dignity while quietly coping with the greatest challenge of his life."

He took note of Tom's "personality, intelligence, humor, sense of justice and firm convictions," and added, "He does not suffer fools easily, and will not shy away from a confrontation if someone is being treated unfairly in his presence."

He captured something that I, too, noticed. "I suppose he can be intimidating to some, due in part to a seemingly prickly 'New York' personality, but there is a serious undercurrent of warmth and genuine compassion that unfailingly comes through. I especially enjoy his sharp, often 'off the wall' humor that he seamlessly interjects into situations, typically when sorely needed."

I echo this. Maybe as a born New Yorker, I'm well suited to finding Tom's deadpan, puckish sense of humor so appealing.

SMOKIN' TOM GARY

So what does this engineering veteran feel is the most notable recent development in radio broadcast engineering? Tom points to the integration of computers, audio over IP, automation and syndication in studio and transmitter facilities.

"This is somewhat due to the newly introduced methods of delivering entertainment, news, sports, weather and information to the public," he said. "Smartphones, iPhones and similar devices have replaced portable transistor radios. They are also interactive with the owner."

Over-the-air broadcasters have attempted to reduce operating expenses by eliminating local talent, he said. Stations have consolidated and some have surrendered their licenses. "The face of broadcasting has changed and so have the audience and their expectations. The advertising dollar has been divided in many ways, leaving OTA broadcasters with a lesser share than previous times."

Meanwhile, on the personal level, his closest friend has been trying to help out as best he can. Russ Mundschenk met Tom Osenkowsky on CB radio in 1969; he considers Tom not only his lifelong buddy but his mentor, even though they are the same age.

"We have followed each other through the same studios and transmitter sites for the past 48 years. I stood up for him when he married Peggy and am still there for him today.

"We started out as WLAD announcers filling the shifts no one else wanted. 'Smokin' Tom Gary' went on to more lucrative pursuits as chief engineer of that Danbury, Conn., station and WKCI/WAVZ in New Haven. There, he made both stations the loudest on the dial by cobbling together one of the first multiband audio processors with a Crown crossover, dbx AGC's and an Optimod 8000."

Tom, Russ recalled, was also responsible for rebuilding many AM arrays in the Northeast including daytimer WNTY in Southington, Conn., and developed a simple DOS-based method-of-moments software suite that others have found very useful.

This July, after lunch and a flight in Paul Shulin's Piper Warrior, Tom gave Russ the same Radio Shack DX-150 that Russ used to learn Morse Code in 1969.

Thank you, Tom — for your contributions to radio, for your work in Radio World, for your friendship these many years, and for your fortitude and inspiration. It shouldn't require an illness to tell you that we're proud to know you.

THIS ISSUE

AUGUST 16, 2017

WOOF

(continued from page 1)

station manager.

WOOF was losing money, according to a station history, but she helped turn it around; and even after marrying longtime friend Dr. Sam Simpson in 1962, she continued to manage the AM. In 1964, she took a chance on putting an FM station on the air.

At that time, the FM dial was still something of a gamble, but her decision turned out well; WOOF(FM) began to attract a loyal following, and more than five decades years later, this hasn't changed. The station is consistently top in the 12+ ratings.

Over the years, the stations have remained community-focused, and both are still family-owned. Agnes Dowling Simpson died in 2012; her daughter Leigh Simpson now is president and general manager. Like her siblings, Leigh grew up around her mom's radio station, learning to run the equipment and helping around the office. After studying political science in college, Leigh joined the stations full-time in 1982. Thirty-five years later, she is as devoted to the two stations as her mother was.

Station founder Agnes Simpson in her official warm weather WOOF Radio uniform. A video about her life can be found on the station's history page.

RELIABLE AIR CHAIN

In this series of articles, we have discovered that once people are hired at successful stations, they tend to stay. Whether this is cause or effect may be a matter of opinion, but the phenomenon is evident at WOOF Radio.

For example, Sales Manager Hal Edwards has been there for 25 years; he was a deejay before he got into sales. These days, he has three full-time and two part-time sales reps.

Edwards acknowledges that national business isn't what it used to be, but he says local revenue has remained strong: Houston County in the Wiregrass region is home to a military base, and the regional hub for two major hospitals (the Wiregrass region, including southeastern Alabama, is so named for a native grass). There is a flourishing local business community, which has a good relationship with both stations.

During drive time, there are typically 12 to 14 minutes of commercials, with rates ranging from $25 for a 30-second spot to $40 for a 60-second spot; there are also various packages for remotes, and live broadcasts of local sports consistently generate revenue. And one other thing that helps the station's bottom line is a lack of debt: "We own the land, the building and the transmitter," says Edwards.

Another veteran is Chief Engineer Michael "Mike" Holderfield, who has been with WOOF Radio for 34 years. Like Leigh Simpson, he comes from a radio family; his father owned a small station in Elba, Ala. But while other kids dreamed of being deejays, Mike was interested in electronics. "I'm a hands-on engineer."

He believes in getting the most out of the equipment, and he is proud that the stations are seldom if ever off the air. That's because he believes in having backups.

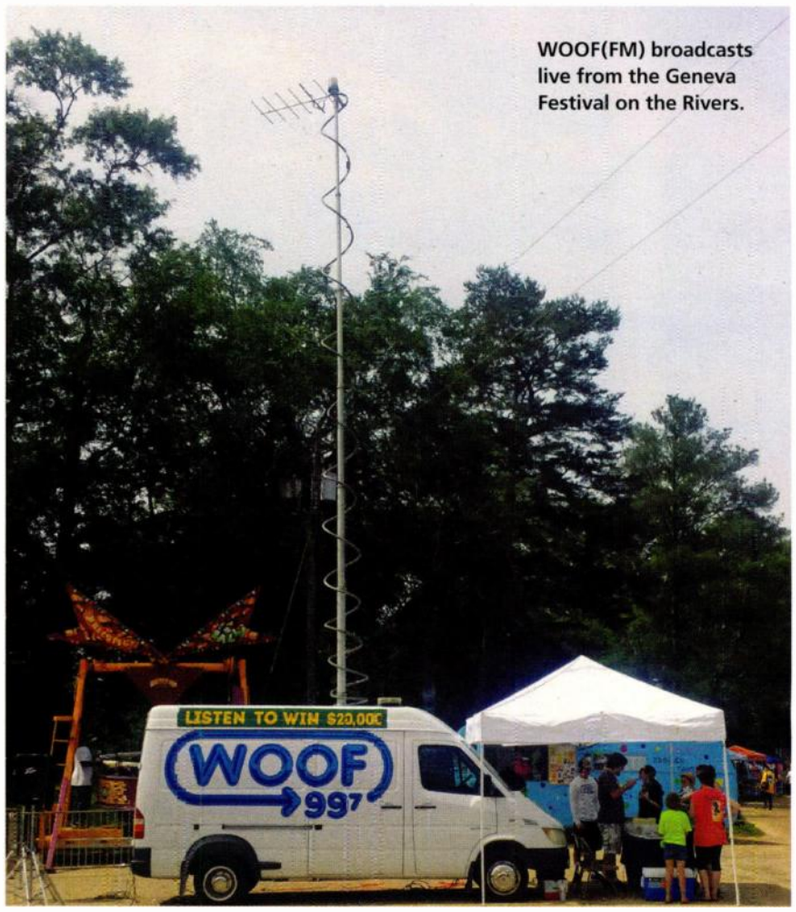
"Redundancy is very important to us. [Being] consistent in all we do is a big factor in our success." The AM air chain includes a Broadcast Electronics AM 6A transmitter, a 70-year-old Windcharger tower — "It still works," says Holderfield, "we've replaced the guy wires, but nothing else" — Omnia processing, Wheatstone console, Maestro automation and XDS satellite receivers. The AM's translator, W261AT, includes a BW Broadcast TX1000 transmitter, Orban processing and a Jampro antenna sitting 256 meters HAAT.

In the FM air chain is a Harris HT-25CD Transmitter, ERI antenna at 299 meters HAAT, Orban processing, Moseley Starlink STL, Radio Systems Millenium console, EV mics, Maestro automation and an Adobe Audition DAW. There are also Onan backup generators for all sites, and a Marti that dates to 1985 and to which Edwards refers as an "old reliable" for its ongoing role in remotes.

WOOF WEAR

The broadcaster seeks to be visible in the community, whether raising money for local charities or making appearances at area festivals and fairs. In a tradition begun by Agnes Simpson, announcers wear uniforms when they do remotes, matching clothes for special occasions, Leigh Simpson said.

"The rule is as long as you are out on location, you must wear WOOF wear." Staff are free to adapt it to the occasion or the season; they can purchase a comfortable sleeveless shirt for hot weather, for example, and the station logo will be embroidered on it.



WOOF(FM) broadcasts live from the Geneva Festival on the Rivers.

Another popular promotional concept is the WOOF Wolf, the station mascot for the FM. The station began using this costumed character in the late 1970s; he continues to be popular at remotes (kids love to have their picture taken with him).

Nearly everyone on staff, as well as interns and even Leigh herself, has taken a turn dressing up as the WOOF Wolf: during the period from Thanksgiving to Christmas he becomes Santa WOOF Wolf, and marches in Christmas parades. There also is a plush toy version called Baby WOOF Wolf: when people win a prize, he's included as a bonus.

WOOF(FM) has two vans; the bigger one is the WOOF Mobile, the smaller is the Howler. Both have the station logo prominently displayed. If there is a local event, chances are the van (and the WOOF Wolf) will be there.

Since listeners love giveaways, the stations offer plenty of prizes. The AM gives sports fans golf gear, gas grills, or "The Ball" logo jackets, complete with a $100 in the pocket. When college football season is about to start, the station hosts a big party at a local restaurant. There are door prizes, and the grand prize is a huge flat-screen TV. WOOF(FM) is known for giving away cash. There are prizes of $100 and a few all the way up to $20,000. People wait to hear the wolf howl sounder, and they can call in for their chance to win.

FAMILY CONNECTIONS

Although WOOF(FM) has been around for five decades, it continues to reinvent itself.

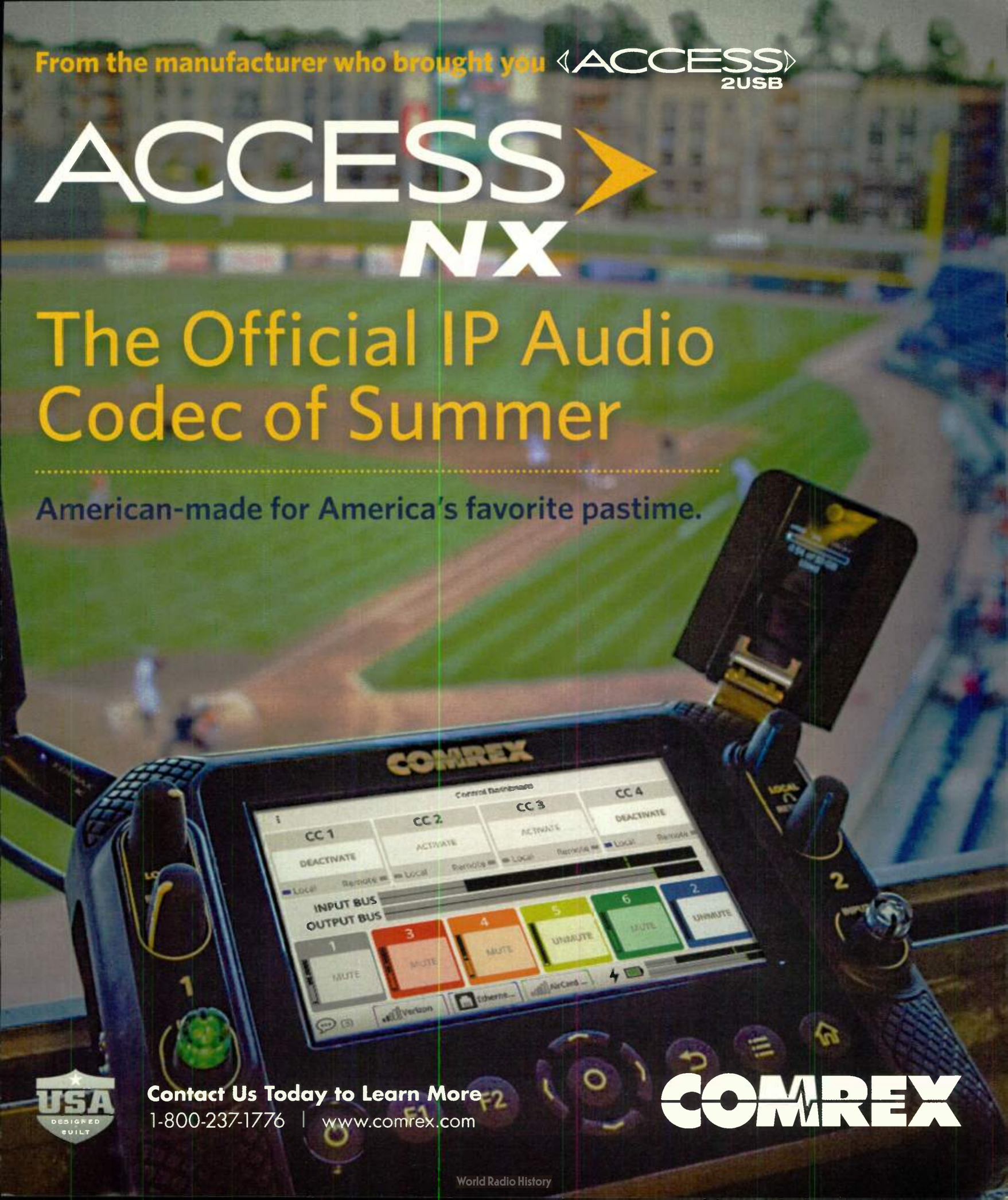
"Entire families have grown up listening to the station," says Leigh Simpson, who notes that some of the contest winners are kids who have become fans.

A-six-year-old boy won $100 recently; a a 16-year-old girl won $100 the same day. Interestingly, as Leigh was looking through a box of photographs, she found an old Polaroid picture of that same girl when she was about three, standing with her mother and grandmother. "The mom had won the Mother's Day grand prize for her mom. Three generations of listeners!"

While sports debates on the AM can sometimes get intense, WOOF(FM) was designed to be family-friendly. Aimed at a predominantly female audience, the station avoids on-air political argument and doesn't accept local political ads. The announcers are perceived as family members: morning host Amydee, who has been with the station for 18 years, is more than a friendly voice playing the music.

She tries to be provide information her audience wants. "Women listeners are always telling us they're worried

(continued on page 8)



WOOF

(continued from page 6)

about losing weight," she says, "so, every day, I give them some helpful hints."

And listeners care deeply about their favorite announcers. Recently, longtime 2–7 pm host Laura Pate, a 29-year veteran whom Amydee refers to as "the calm voice in their busy afternoon," has been battling cancer. Daily, listeners visit the station to drop off cards for her and send email messages to say they are praying for her. Hosts like Rick Patrick in mid-days and Stephano in the evening are also popular; the fact that the station has live personalities matters to the audience. Sales Manager Hal Edwards says it matters to advertisers, too, based on interest from advertisers in store appearances and remotes.

FM morning hosts Amydee and John Houston.

For news coverage, John Daniel works mornings and serves as news director (he and morning show host Amydee are married). In the afternoon, the anchor is Deborah Pearson, who first worked at WOOF as a college intern at Alabama State University in the 1980s. She had grown up listening and long wanted to be in radio news. These days, in addition to reporting, she helps to train college interns, many of whom come from nearby Troy University.

When asked about the station's news philosophy, Daniel said, "People know they can trust us … By having Deborah here in the afternoon and me in the morning, [there is] always someone in the building [with] the knowledge and experience to handle breaking news, or to deliver important information accurately."

WOOF Radio News has won the AP's highest state award, "Most Outstanding News Operation," for eight years in a row, and both Daniel and Pearson have won numerous awards for excellence in reporting.

Lance Griffin, morning host of "The Game Plan" on the AM, is the editor of the local newspaper, the Dothan Eagle. He was a sports reporter for the newspaper, so talking sports in the morning and covering news the rest of the day is a win-win for him. While the FM gets higher ratings, the AM has a passionate fan base of men 25–54 who love talking sports.

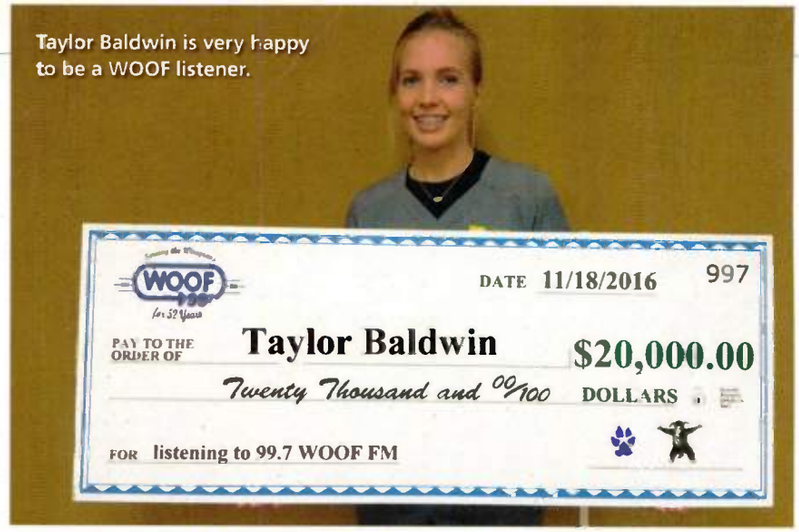
"College football is like a religion here," Griffin said, noting the intense rivalry between the Auburn University Tigers and the University of Alabama Crimson Tide.

Everyone at WOOF Radio wears many hats. They might pitch in at the reception desk, produce a talk show, do production, appear at a remote, or dress up as the WOOF Wolf. Some work on both stations; John Daniel is not only the news director but also co-host of "The Huddle" on the AM. Co-host Gary Gibson also does overnights on FM.

Undoubtedly, Agnes Simpson would be proud of how her stations have maintained their reputation for so many years. As her daughter Leigh says, "We've tried to keep the best of radio. We're here to serve the community. And I think we do a good job of it."

Donna Halper recently has profiled WATD(FM) in Marshfield, Mass., and WSVX(AM) in Shelbyville, Ind. Find those articles at radioworld.com, *keyword Halper.*

Got a suggestion for this series? Tell us why you think a station or group is noteworthy as an example of radio success. Email radioworld@nbmedia.com *with "Station Profile" in the subject line.*



News Director John Daniel, Chief Engineer Michael Holderfield and "Love Zone" host and sales rep Brad Bailey inspect a new transmitter.

More than just an IP Codec...

"ViA's touch screen is a game changer for us. It allows you to access what you want quickly and this is particularly useful when connecting over Wi-Fi."

- John Herath, Director of Operations, Farm Journal Radio

AgriTalk is a live talk radio program focusing on agriculture and rural America which airs on 98 affiliate stations throughout the Midwest. The show is on the road for over 100 days a year and they rely on ViA for remotes over Wi-Fi, LAN and cellular connections.

- Full duplex stereo program plus separate full duplex IFB communications
- 5 input digital mixer and configurable matrix router (3 x XLR inputs, plus stereo analog line in, or stereo digital in/out)
- Built-in dual band Wi-Fi with integrated web-browser
- Dual LAN & USB ports & optional ISDN or POTS modules
- Schedule, dial, manage & hangup connections automatically
- Adjustable input EQ & compression, plus AGC limiting
- 6.5 hours of power with one internal battery

Join the #ViARevolution

ViA

Tieline

The Codec Company

317-845-8000 | sales@tieline.com | tieline.com

PROPAGATION

(continued from page 1)

ation and implementing single-frequency networks, among other topics.

Radio World: *I'm a station engineer and I would like to have the ability to do basic evaluations of station coverage areas for my management. What kinds of software should I consider purchasing? Are there other forms of access to this type of software, short of outright purchase?*

Vernier: If you are willing to purchase software for this purpose, it is wise to look at software that has a proven record for prediction accuracy, gives you significant flexibility for doing what-ifs and that integrates population and interference analysis into a single user-friendly package. The software should be capable of using a wide variety of terrain databases, land-cover databases and the latest population data available from the U.S. Census Bureau and it should be able to easily produce attractive maps. If the programs of the vendor are also in daily use at the FCC, you can be sure that the answers produced will have credibility and will ensure matching FCC results.

For purchased software, the user should select a vendor that provides a high level of regular support for the user. Changes in the FCC rules or in the station database contents that the program uses should be provided by the vendor. This would include regular program code updates that keep the program fully accurate as time proceeds.

RW: *Your company offers a specific program for FM and AM frequency work and one called "Probe." How do these differ?*

Vernier: The AM and FM programs are quite different due to the differences in the rules for allocating frequencies in these broadcast bands. Either of the programs can find new frequencies, upgrade station classes and produce high-quality maps. AM Pro is in regular use at the FCC to vet incoming applications from engineers and owners. Probe is a multifaceted program that allows one to use a large number of different propagation prediction routines, determine the extent of outgoing and incoming interference to both FM,

Doug Vernier

FM and TV translators or booster stations, as well as DTV stations, and to produce atlas quality maps of coverage and interference areas, showing where population is lost or gained.

As far as free goes, the FCC has a few programs that will project service contours. FMQuery, the FCC's tool for acquiring data and filings for FM radio stations, is available for free on the internet. Drilling down within this online program will take you to links that plot an FM facility's primary service contour to FCC accuracy. The program will display the standard 60 dBu contour over open street maps or USGS maps. The AM version of the FCC's coverage tool (AMQuery) will plot the 0.5 and 2 mV/m groundwave service contours. The commission's TVQuery plots the noise-limited service contour of DTV TV stations over base maps.

The Radio Locator is an online program often used by the beginner to look at existing station coverage. The program plots contour lines over area maps that represent local, distant and fringe listening. The contour values are not specifically labeled on the maps, making comparisons to FCC data a bit more difficult.

RW: *What is a Longley-Rice study and how does it compare to the FCC method of predicting coverage contours?*

Vernier: One thing to remember is that any of the prediction methods to determine where your signal goes are just that: "predictions." Nearly anyone will tell you that predictions will have some degree of error, from "absolutely wrong" to "pretty good."

The FCC's contour prediction method for FM broadcast stations uses actual measured signal curves and average radial antenna heights over 3–16 km terrain. With the input of these radial heights above average terrain (usually eight evenly spaced radials) and the effective radiated power, the FCC curves will predict the coverage signal levels at a distance.

The FCC method is okay for general use by the FCC in an effort to predict station coverage and interference; however it tends to be overly protective in many cases because it does not look at terrain beyond 16 kilometers. This means that tall signal blocking hills or mountains, just beyond the 16 km distance, will not be seen and a station's coverage will be projected as if the mountains didn't exist. On the other hand, if the transmitter is situated high on a mountain top with a ridge or two found below within the 16 km path to a distance city that also had high elevation, the real path to the city would be line-of-sight. The interfering signal will be unaffected by terrain, resulting in under predicting the interference.

The Longley-Rice method offers many degrees of improvement over the FCC contour method, including using the terrain all the way from the transmitter to the listener or viewer's location. This model has recently been used by the commission to determine the new DTV re-channeling allocation scheme. It has become the commission's de facto DTV prediction method.

Longley-Rice goes well beyond the FCC curves, considering atmospheric absorption, including absorption by water vapor and oxygen, loss due to sky-noise temperature and attenuation caused by rain and clouds. It considers terrain roughness, knife-edge (with and without ground-reflections), loss due to isolated obstacles, diffraction, forward scatter and long-term power fading. The model's code is available freely to the public. The Longley-Rice model and our V-Soft Communications implementation of it require the following inputs for analysis based on multiple point-to-point paths:

- Frequency (20–20,000 MHz)
- Transmitter antenna height (above mean sea level, meters)
- Transmitter antenna height (above ground, meters)
- Transmitter power
- Transmitter antenna pattern
- Receiver antenna height (above ground, meters)
- System antenna polarization (vertical or horizontal)
- System Ground Conductivity (mhoS/m)
- System dielectric constant (permittivity)
- System minimum monthly mean surface refractivity (adjusted to sea level.)

The Fig. 1 map shows the V-Soft implementation of the Longley-Rice method. Note that when using Longley-Rice the color coding represents the signal strength areas as predicted by the method. The reader will notice that the effect of signal by terrain is shown clearly where the terrain drops off along rivers and lakes.

There are other models than Longley-Rice that predict coverage. Some are better than others. However, actual proof of that rests in comparing the model's prediction with actual measurements. For many reasons, this is difficult to do accurately. All models use the attenuation provided by urban clutter. Some simply subtract a fixed amount of signal along the entire path, while others use land cover attenuation that is defined by latitude and longitude coordinates. Still other models, such as Okumura, use the height above average terrain to calculate path loss but do not consider terrain obstacles. The Okumura method was developed for

(continued on page 12)

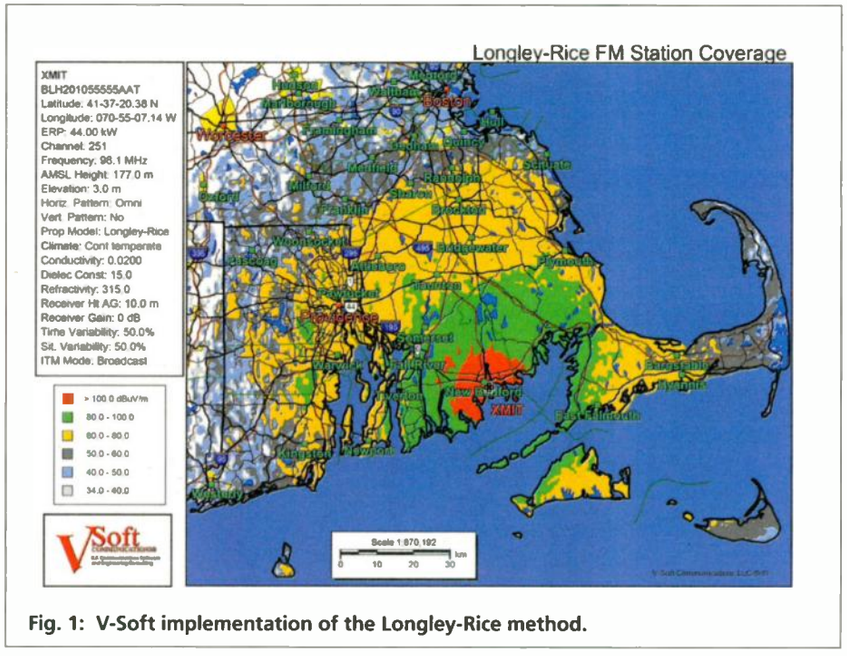


Fig. 1: V-Soft implementation of the Longley-Rice method.

AES67 Livewire+

This Is Virtual Radio

Meet Axia IP-Tablet

You've heard about it. You've read about it. Now it's time to really think about it. IP-Tablet software virtualizes monitoring and control of broadcast gear, putting your favorite console functions at your fingertips while lessening the need for physical equipment.

Virtual Radio, Your Way

Control networked HTML5 gear, your Axia Fusion console, Omnia processors, Telos phone systems, and more. Access the internal mixer in your xNode or design layouts of Axia Pathfinder buttons. Customize to your heart's content.

Connect to More

Designed by Livewire® partner IP-Studio, IP-Tablet is testament to the power of the Livewire network. With more than 70,000 connected devices and 100-plus partners, Livewire lets you Connect to More.

(352) 622-7700 | BGS.cc | TelosAlliance.com/Axia/IP-Tablet

Broadcasters General Store

AXIA THE TELOS ALLIANCE

PROPAGATION

(continued from page 10)

highly populated areas where two story buildings predominate, such as in Japan. Its algorithms have been improved along the way by Hata and Davidson, thus we also have Okumura/Hata and Okumura Hata Davidson.

Many users, such as the U.S. Army and Navy, prefer the Terrain Integrated Rough Earth Model that is known to do better than Longley-Rice over large bodies of water. TIREM was developed using data from Technote 101, a two volume Treatise published by National Bureau of Standards that also is the base for Longley-Rice. The model was developed originally at university level and later sold to Allion Science and Technology Corp. of Annapolis, Md. Allion made the code proprietary which places a damper on its wide use by the FCC and others since there is no way to know how precisely it's predictions are made.

The ITU method is used widely in Central and South America. It uses a set of propagation curves that are based on measurement data mainly relating mean climatic conditions in temperate climates. The model considers the transmitter height above average terrain, the receive antenna height, and incorporates a correction for terrain clearance angle when making field strength predictions.

The Point-to-Point or PTP method was developed by Harry Wong of the FCC's Office of Engineering and Technology. Its processes are based on radio diffraction and attenuation to the free space path caused by irregular terrain entering the Fresnel zone. Although published in the FCC rules as a method of considering terrain roughness, the method was not adopted by the Mass Media Bureau.

The propagation methods described above are not, by far, the entire list of those used to determine where signals go; however they are considered the ones in popular use. Currently, the FCC accepts the Longley-Method for the majority of alternative showings it receives.

***RW:** What is knife-edge diffraction and how does it affect coverage?*
Vernier: "Knife edging" is when the radio wave diffracts, or bends, as it passes over the sharp edge of an obstacle that lies across the wave's direction of movement. Part of the signal is cut off by the terrain edge, and the other half is diffracted downward. Knife-edge diffraction can be helpful in serving areas that would normally not be able to receive reception due to the large terrain blockage. It is important to note that the shape of the diffracting terrain is important to the amount of diffraction produced by the obstacle. There are areas nestled in the mountains where the only reception available is through knife-edge diffraction.

***RW:** What is the best method to make field measurements of FM coverage areas?*
Vernier: There are numerous considerations to make when taking actual measurements. Often the engineer taking measurements can fall into the trap of doing everything right except one thing that seriously impacts the accuracy.

A short list of things that cause inaccuracies:

A. Failure to use a calibrated reference antenna and failure to apply those correction factors to the field strength of the frequency being measured.

B. Failure to use an omnidirectional antenna. (Antennas mounted to a car for a drive test will be directional, so turns by the car will affect signal strength.) In one NPR Labs study, engineers installed a circular ground plane to go atop the car under the vertical whip antenna that helped circularize the antennas pattern; however the engineers found that the car was still somewhat directional.)

C. Failure to recognize the impact of the vertical elevation field

D. Failure to place the receive antenna above blocking terrain obstacles. (This is impossible if the transmitter is city-bound.)

Engineers have taken to a costly project of measuring an antenna's pattern by using an airplane or helicopter to "fly the tower" with a calibrated antenna. One of the issues they have run into is maintaining exact distances and elevation along the circle route. Lately engineers have begun to experiment with drones to replace the costly airplane/helicopter method. However, while less costly, such measurements have most of the same issues.

***RW:** HD Radio is becoming available to more listeners every year due to new car sales. For a station wishing to provide good coverage for a supplemental HD2 channel, what would you recommend in terms of system design and injection levels?*
Vernier: Most new HD transmitters being installed today will use low-level injection of the HD carriers. High-level injection, once in common use, is no longer wanted, because high-level combining wastes energy, increasing the cost of running the transmitter.

In general terms the quality of the HD2 signal depends on the overall signal strength of the analog portion of the signal and the amount of injection of the HD signal. Dropouts occur with IBOC transmissions when the signal level drops due to terrain blockage, and in some cases interference from other stations.

It is unfortunate that when listeners to HD2 or other multicast channels lose signal the radio has no backup, such as in the case of HD1, and it simply goes to silence. When the FCC gave stations permission to use IBOC, initially stations went to an injection level of –20 decibels over carrier level, which is 1 percent of the licensed power. Stations uniformly found that the HD injection level covered a smaller area than the analog coverage. When the FCC allowed –14 dBc injection many stations found that the match was almost the same as the analog coverage. In cases when a special showing of no interference to other stations is presented to the FCC, stations are allowed –10 dBc injection. Many of these stations report that their HD2 signal goes as far, or further, than the analog.

The Longley-Rice method offers many degrees of improvement over the FCC contour method, including using the terrain all the way from the transmitter to the listener or viewer's location.

***RW:** Is it possible to use same-frequency boosters to improve the coverage of a station that might be terrain-blocked for part of its licensed coverage area?*
Vernier: Yes, absolutely. However, misplaced boosters can also be more destructive to a given station's signal. In the case of a booster that is placed to overcome a large terrain obstacle that totally blocks the signal between the booster and its primary station, the booster can be installed so it compensates effectively for the loss of listeners. However, in the situation where the terrain blockage interrupts the signal over only a part of a station's signal area, and a booster is installed that covers both the terrain blocked area and the unblocked area, serious interference can result in the unblocked area. To the listener, the interference manifests itself as garbled audio or picket fencing.

Due to the time the signal travels from the primary station to a given listener and the time it takes for the signal to travel from the booster to the listener, the phase of each signal will not be identical. While the process of synchronizing by delaying the booster signal can correct the interference at the listener's location, other areas that are off-angle of the direct line to the listener will not have synchronization. If those areas that are out of sync are unpopulated and the populated areas where synchronization can be accomplished are targeted by the boosters, coverage to important terrain blocked areas can be achieved.

Installing a booster in an essentially flat area can be challenging because there will always be areas where synchronization cannot be achieved. It is said that more boosters have been installed and then promptly turned off than those that are licensed and operating due to the interference and synchronizing issues.

There are several computer programs available to the cellular community that deal with this issue, however not many for use by the broadcaster. The only program I am aware of is the V-Soft Communications' booster module packaged that is an option with the Probe 4 propagation analysis program. This program will allow the user to adjust the booster or the primary station's timing delay, threshold for interference in dB, maximum allowed timing delay for interference reception, and the front-to-back ratio for the receiving antenna. Based on the inputs, the program will graphically plot the areas where interference is predicted to occur.

Leave Your Competitors in the Dust

Introducing VOLT, the hotrod new processor from Omnia that gives you more processing power and sonic performance in one rack unit than others give you in three. Sharing technological lineage with top-of-the-line Omnia products like the Omnia.11, VOLT drives you faster, with exciting sound that will take you from zero to *100* in seconds! In the race for electrifying, competitive, market-leading sound, VOLT puts the competition squarely in the rearview.

TelosAlliance.com/VOLT

Omnia
THE TELOS ALLIANCE

Community Radio Trains the Next Generation

Plus tips for satellite alignment, transmitter site organization and more

WORKBENCH

by John Bisset

Email Workbench tips to johnpbisset@gmail.com

I hear it a lot: Where will the next generation of broadcasters come from?

Well, in Tucson, Ariz., KXCI Community Broadcasting is doing its part with a broadcasting summer school. Coordinated by Bridgitte Thum, seen at the microphone in Fig. 1, and Michelle Boulet-Stephenson, the summer school teaches the fundamentals of broadcasting.

Two age groups are targeted, 9 through 12 years of age and 13 through 16. Since the station is heavy into vinyl, the kids even learn what a turntable is and how to cue up a record.

Fig. 1: KXCI's Bridgitte Thum is an instructor at the community station's broadcasting summer school.

And speaking of records, Music Director Duncan Hudson included a picture of a great way to protect the LP library. Seen in Fig. 2, the large eyehooks permit a vinyl-coated cable to be passed through them and secured.

Fig. 2: Large eyehooks permit a vinyl-coated cable to pass through and discourage pilfering of the record library. The same idea can be used for CDs.

Now that satellite realignment is behind us, Bible Broadcasting Staff Engineer Steve Tuzeneu writes about a tip BBN has been using to check the performance of satellite receiving dishes.

Steve and his associates have added checks of parabola and focal length for each dish as a part of their maintenance routine.

With the dish out of shape, Steve says they have noticed the receive signal is not as high as it should be. Sometimes, this is caused by the snow cover being tighter than necessary. Other times, the dish could just be warped.

Steve and his associates measure the focal length between the center of the dish and the feed horn. When the focal length is off by just a few inches, the result is an attenuated signal.

Finally, Steve has used a portable laser, attached to the center inner ring of the feed horn, to facilitate measurement. With the laser, he can determine if the feed horn is pointed directly toward the center of the dish. At one of the sites, they gained a 50-percent improvement in received signal just by adjusting the alignment.

Keeping a dish aligned in high winds can also be a constant headache. Consider installing "guy wires" from either side of the dish to help stabilize it.

Fig. 3: The laser holder is mounted on the inner ring of the feed horn assembly.

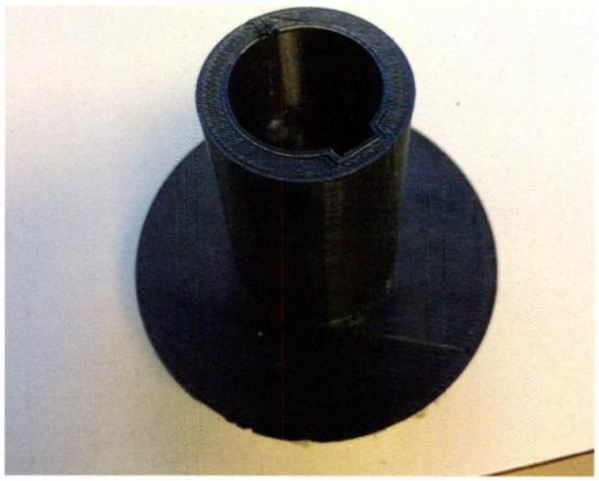


Fig. 4: The laser pointer fits inside. The laser should point directly to the center of the dish. If not, the feed horn mount can be adjusted.

Cumulus Fresno's Chris Basham offers a great way to keep transmitter sites organized.

Use a simple key holder, mounted behind the equipment racks in the locked technical operations center. As seen in Fig. 5, each transmitter site is identified, and the tag includes its address.

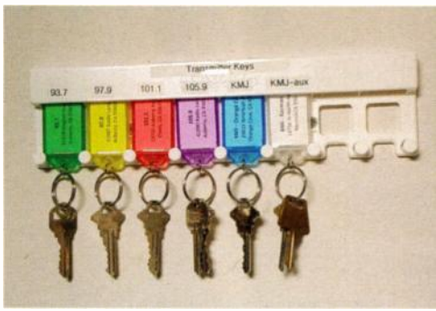


Fig. 5: An inexpensive, wall-mounted transmitter site key holder. Each key is identified not only by station but also with the address.

Sure, you may know where all the sites are located, but does your GM? Or the vacation relief engineer filling in while you're out of town?

You can find all sorts of wall-mounted key holders on the 'net. I found one for $8 made by MMF Industries/Steel-Master and sold online by office supply store Quill (*www.quill.com*). It holds 10 keys and is wall-mounted.

(continued on page 18)

ANNIVERSARY SALE - Special Pricing During the Month of August 2017

Control Your Sonic Signature

NEW FEATURES

719 DAVID IV
FM/HD BROADCAST PROCESSOR

Features

- Streamlined 4th Generation DSP-based audio processor
- Precision FM Stereo generator with dual outputs, internal metering of your RDS/RDBS subcarrier
- 5 Bands of Dynamic Range Compression and "Graphic EQ"
- 25 factory presets and 20 customizable presets
- Network / remote controllable

5 Bands

Low Latency 3.9ms

25 Presets

Award Winning

Remote Network Interface

Rear Panel

3 year WARRANTY

CE

INOVONICS BROADCAST

Better Radio Since 1972

sales@inovonicsbroadcast.com

phone: 831-458-0552

The Forever Console...Wheatstone LXE

Adapt to new technology, new techniques, and new workflows with LXE. Completely configure/reconfigure your console – every button, knob, and display on the surface is fully programmable using our intuitive ConsoleBuilder™ GUI/scripting interface.

With ScreenBuilder™LXE, you can design dynamic custom touchscreen interfaces to augment LXE's extensive screen set. Beautiful to see and use.

Need more input faders? Enable up to four layers to double/triple/quadruple the number (up to 32) in the same footprint.

LXE is built to last in every way.

Learn more: wheatstone.com/lxe

Wheatstone
BROADCAST AUDIO PERFECTIONISTS®

THE High Performance Standard for Radio Broadcast

What makes Wheatstone consoles best-of-class? Breakthrough technology with award winners like WheatNet-IP Intelligent Network with bus-minus*. Unique design ingenuity. Precision production/starship-grade materials. Obsessive Wheatstone quality. FullTime support*. What does all that get YOU? Absolutely spoiled...

LX-24 –This Really Changed Everything

THE standard in radio today. Exceptional console at every level, fully loaded and completely modular.

L-8 & L-12 – Full-Featured, Smaller Size

Outstanding companions to the LXE and LX-24. Perfectly sized for newsrooms, etc.

IP-12 & IP-16 – Best $ Per Channel Ratio

Precisely designed and engineered for peak performance at mid-size stations.

Intelligently Network Your Consoles

Each powerful BLADE-3 (point-of-use interface) contains a map of the entire WheatNet-IP Intelligent Network to route I/O, access sources, add processing, mix to/from any device. Plus routable logic, silence sensing, gain control, automated mixing, discovery/control, and much more. Format agile: MADI, AES/EBU, TDM, Analog, and AoIP. AES67 compatible.

Learn more: wheatstone.com/consoles

NEW!

VoxPro Crushes It In The Ratings Thing

Getting rid of ALL your dead air makes better shows. Research shows that tighter programming dramatically retains listeners. Retained listeners = higher ratings. Download our free white paper, "*The Business Case for VoxPro*" at the link below.

Speed To Air

VoxPro's software tools let you edit, remove silence, re-record your voice, add effects, and be ready to go...in seconds.

Obsessive Organization

Hot buttons put a library of clips and tracks at your fingertips. Have your entire LIVE show programmed before you even start.

Creative Controller

With VoxPro hardware, you control every aspect of the software. Designed and laid out for maximum speed and agility.

VOX 7 PRO

RECORD/EDIT/PLAYBACK AUDIO LIVE, IN REAL-TIME, ON THE AIR

Learn more: voxpro.wheatstone.com

NEW!

Bring Your Sound Into *This* Century with Phase Linear Audio Processing, RDS, & Built-In HD Time Alignment

Wheatstone crafts powerful, persuasive modern sound by developing integrated processing tools like: Mastering Limiters, Intelligent AGC, BassTools, Multipath Control, and Baseband 192 for the all-digital processor-to-transmitter chain. All algorithms share data interactively, constantly optimizing your settings for remarkable consistency, track after track. Our new flagship, the AirAura X4, has a built-in HD tuner for automatic Time Alignment as well as full RDS capabilities. New Phase Linear processing delivers detail and transparency unheard of in on-air processors. Brilliantly modern.

Learn more: wheatstone.com/processing

*Includes on-site commissioning, in-factory total system proof-of-performance testing, installation support, and real 24/7/365 service. We don't mess around.

Designed and built in the USA | Phone +1-252-638-7000 | wheatstone.com | sales@wheatstone.com

Service Monitors Repurposed as Wideband Receivers

IFR FM/AM 500-A is a great buy for the frequency-agile user

RADIO ENTHUSIAST

BY MARIO FILIPPI

Service monitors, sometimes referred to as communications service monitors, are used in the communications industry to align, tune, optimize and troubleshoot the many types of transmitters and receivers that are part of daily life.

Service monitors have been on the communications scene for several decades and were (and some still are) manufactured by familiar firms such as Motorola, Ramsey, IFR, Marconi, Wavetek, Cushman, etc. As with other electronic devices, as they age these service monitors get replaced by new state-of-the-art models with improved circuitry and additional bells and whistles. Eventually many of these older, outdated but fully functional units are yanked from test benches and enter the secondary market for sale or auction at prices that are a fraction of the original selling price.

The radio hobbyist can take advantage of the numerous older service monitors up for sale or auction once they are jettisoned into the secondhand market.

In short, these radios are gems can be repurposed as general-coverage receivers and have the heft, size and charm of old-school models.

EYE CANDY

After many months of requesting quotes from electronics resellers and monitoring eBay auctions, I came across this Instrumentation Flight Research FM/AM 500-A service monitor, described by the seller as in good working condition. I made an offer (much lower than the asking price, I may add), which to my delight was accepted.

This particular model was manufactured in 1995 and its cost at the time was several thousand dollars. It was a popular model in its day because the weight with internal battery was about 22 pounds, making it easily transportable while traveling or doing field work. Fortunately, the unit's previous owner had taken exemplary care; it was in excellent cosmetic and electronic condition. The optional carrying case and front cover were missing though, and I'm still hunting for those, which are as rare as hen's teeth.

IFR FM/AM 500-A Service Monitor

The IFR-500A is a basic communications service monitor that covers 150 kHz to 999.9 MHz and receives AM (amplitude modulation), FM (frequency modulation) and SSB (single sideband), much to the delight of any radio enthusiast who loves to navigate the broad range of the radio listening spectrum. This range includes the AM/FM broadcast bands, shortwave for international broadcasts, amateur (ham) radio, CB (Citizen's Band), aircraft band and the public service (police, fire, EMS) bands. It's basically one-stop shopping for individuals who are frequency-agile and enjoy cavorting from one end of the spectrum to another.

In addition, the 500-A's built-in beat frequency oscillator is a plus for those interested in SSB voice transmissions, Morse code and other digital transmissions that may be of interest to radio hobbyists, such as RTTY (RadioTeleTYpe) and WEFAX (Weather Facsimile), to name a few.

The busy dashboard of the IFR-500A is eye candy for radio aficionados who shun the soft tactile keys and digital displays of diminutive, modern-day wideband receivers but delight in twisting knobs, dials, thumb switches and peering at genuine d'Arsonval meter movements (named after physician/physicist Jacques-Arsène d'Arsonval) .

This radio makes no bones about its presence and boasts a commanding 12-by-13-by-7-inch footprint with internal electronics all housed in heavy-duty metal construction; you'll have to dedicate some serious space on your radio desk for this "boat anchor" (ham speak for those venerable, hefty radios of old). It exudes old-school workmanship and class.

My IFR-500A eBay acquisition now proudly occupies the radio bench for tuning in to shortwave broadcasts such as Radio Habana, Trenton ATC communications on 120.7 MHz, the local ambulance and fire companies, NOAA weather station KWO-35 from New York, WOR(AM) from New York City, the local ham repeater in Cherryville, N.J., or wherever the radio action happens to be.

All in all the IFR is one great performer for the frequency-agile. Communications monitors such as the IFR come in many different models and vintages, some with built-in oscilloscopes, spectrum analyzers and perhaps even few memory channels.

Used service monitors generally sell from a few hundred dollars to just over one thousand dollars, depending on their age and level of complexity. Models with built-in oscilloscopes command higher prices. Checking eBay auctions will give you a good idea of what is available and selling price trends.

Mario Filippi is a freelance writer, radio amateur (N2HUN) and an avid shortwave, longwave, VHF/UHF and satellite enthusiast.

WORKBENCH

(continued from page 14)

We'll wrap up with an interesting situation that New Hampshire Public Radio's Steve Donnell encountered. We'll call this an oddball outage!

A while back, Steve got an alert of a transmitter fault. The AC line voltage looked OK on the remote control, but he was only looking at one leg of the 220 V. Also puzzling: According to the remote control, the generator was not running.

Fig. 6: A broken crimp/pin connecting one of the service drop cables on a pole pig transformer

Steve switched to the single-phase backup transmitter and headed for the site. When he arrived, he found that one leg of the 220 V AC feed was low, but not low enough to cause the generator to start automatically.

Steve manually started the generator and switched over to it. The main transmitter came back up without any problems. Upon arrival, Steve noticed that the generator belonging to another site tenant *was* running.

When the utility company repair crew arrived, what they found can be seen in Fig. 6. The photo shows the crimp/pin that connects each one of the service drop cables to the LV (low voltage) side of the pole pig transformer. It had broken, so the building distribution panel was only seeing one leg of the 220 V feed.

The story just goes to show that utility companies have connection troubles, too!

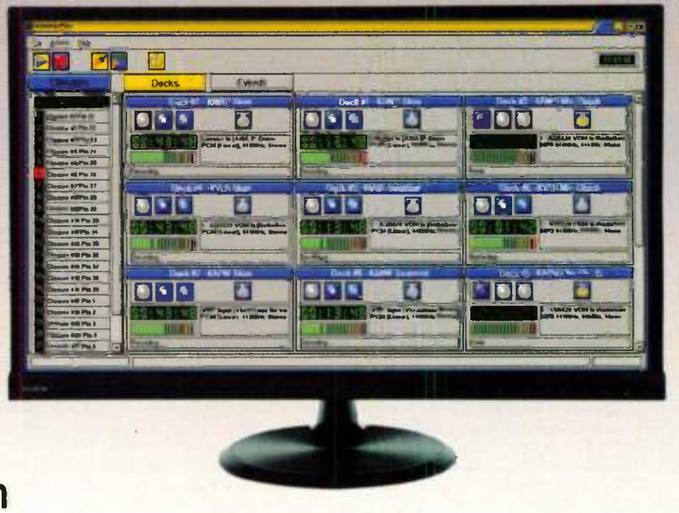
Contribute to Workbench. You'll help fellow engineers and qualify for SBE recertification credit. Send Workbench tips to johnpbisset@gmail.com. *Fax to (603) 472-4944.*

Author John Bisset has spent 46 years in the broadcasting industry and is still learning. He handles West Coast sales for the Telos Alliance. He is SBE certified and is a past recipient of the SBE's Educator of the Year Award.

Need more from your audio logger?

SkimmerPlus has it!

- Long form and compressed file formats
- Talent air checks
- "Best of" show recording
- Podcast Creation
- Continuous program skimming
- Remote file verification through a web interface



Call (888) 274-8721

(888) BSI-USA-1

or email us at sales@bsiusa.com

Find Out What Your Listeners Want

It's simpler (and cheaper) than you think

PROMO POWER

Mark Lapidus

I'm not proud of this, but I once got into a screaming match with a program director who didn't want to do an on-air giveaway of $50 gift cards for free gas.

No, there wasn't a catch. A listener would just have to take the gift card to a local gas station and fill up, until she used up the entire $50.

The reason this generally intelligent PD rejected the prize? He informed me that "his" listeners were environmentalists and that aligning the radio station with a corporate oil company would permanently stain our brand's reputation. (This wasn't 1966, by the way; it was the mid '90s.)

When I asked him how he thought our listeners drove around without gasoline, he told me that this fact was irrelevant. I quickly polled those around us: Anyone want $50 of free gas? Every hand in the room shot up.

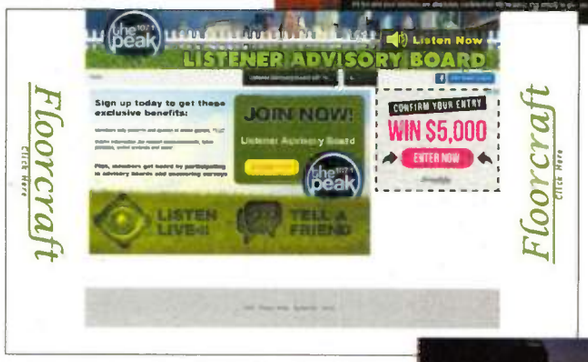
It was on that half-tank-full day that I became convinced that nobody can routinely and consistently intuit what listeners are thinking. Sure, I can understand that smart people can observe human nature and know that folks want to connect, be entertained and say what they feel …

Ding ding ding! That's right! To find out what your listeners are thinking, *ask them.*

GO STRAIGHT TO THE SOURCE

If you have a research budget, a half-dozen focus groups and two perceptual studies a year should do the trick. But if your budget is limited, you can still go grassroots to obtain the feedback you need to make better decisions.

Before we go into the "how," let's focus on what you're watching out for. Keep it simple by looking for large trends in what your listeners are telling you. If hundreds of random people sampled from different areas of life are saying the same thing to you, pay attention. Ignore the one-off haters. There are plenty of them, but they typically hate different things.

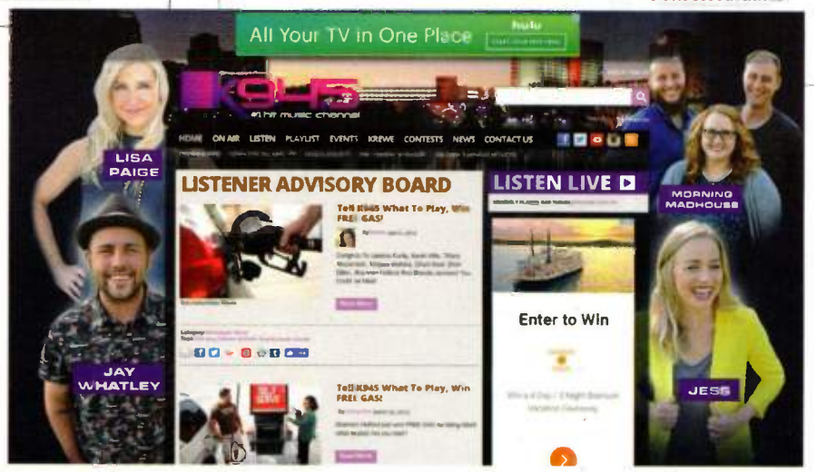


Fortunately for you, unlike other businesses, radio stations have the means of engaging the audience for free on the air with announcements asking for their thoughts about whatever subject(s) to which you want answers.

You can then use your on-air power to amplify your questioning on social media and your website just by mentioning it. You can create a two-minute multiple-choice survey, which you run for a few weeks. Make it entertaining with a funny question or two. Consider adding a cool prize to incentivize listeners to fill it out. Once done, disclose the answers, but only if it won't compromise your competitive situation.

After a survey has run its course, try text messaging simple "yes" and "no" questions. Collect them over time. Look for duplicate numbers and eliminate them. Tabulate the results.

An oldie but goodie that still works is drafting a "listener advisory panel" of a dozen people whom you invite to the station for a behind-the-scenes tour, free pizza and then 30 minutes of questions and answers.



Listener advisory boards are a tried and true way to get feedback from your listeners.

Congratulations! You've just conducted your first free focus group.

Want more involvement? Stream your panel live on Facebook and ask viewers to offer their perspective on various topics. Do four more of them. Listen for trends in answers, especially regarding emotional topics.

On "Get Smart," Chief once famously asked: "Max, are you thinking what I'm thinking?" Max smartly responds, "Actually, Chief, I'm thinking what *I'm* thinking."

There's only one way to know what someone else thinks. You gotta ask them!

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

We are mobile.

"We get to **work** on **our stations wherever** we are!"

Aquira2GO® Zetta2GO Selector2GO®

RCS Sound Software rcsworks.com

See us at the Radio Show Booth #113

SUMMER OF PRODUCTS

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

ORBAN OFFERS NEW OPTIMOD

The latest from Orban is a new member of its Optimod processor family, the 8700i.

It is designed for analog or digital missions. Its I/O complement includes Dante AES67 plus a 192 kHz AES3 MPX output along with two digital SCA inputs.

Orban says that a new program-adaptive subharmonic synthesizer ensures punchy bass, even with older program material. In addition a phase skew corrector/multipath mitigator ensures crisp reception when receivers blend to mono and minimizes energy in the stereo subchannel without compromising separation. The phase skew corrector uses a proprietary multidimensional processing algorithm that can simultaneously correct multiple phase problems, like a combination of analog tape gap skew and comb filtering caused by multiple-microphone pickup of a single instrument in the original recording session.

The 8700i also has split architecture, branching after the stereo enhancer and AGC, providing for separate FM and digital processing. There are two equalizers, multiband compressors and peak limiters, allowing the analog FM and digital media processing to be optimized separately.

It contains a set of Optimod 8500 presets, Orban's Xponential Loudness algorithm along with Bob Orban-designed MX presets that take advantage of the onboard MX peak limiter.

Other features include an RDS/RBDS encoder, dual power supplies, remote control, SNMP alarms and a loop-through connection for insertion of a ratings encoder (such as Nielsen Audio) to be inserted between the output of the audio processing and the input to the stereo encoder.

Info: www.orban.com

TIELINE UPDATES VIA FIRMWARE

Codec maker Tieline has firmware updates for its newest field codec, ViA.

The free upgrade adds touchscreen routing of audio sources to XLR and digital outputs, as well as analog and digital output level controls.

ViA is a portable five-input mixer/IP codec with additional features such as a Wi-Fi interface, onboard processing, Tieline's SmartStream connection redundancy scheme and a touchscreen. It also offers optional ISDN and POTS modules.

Info: www.tieline.com

MOSELEY INTROS TOPANGA

Moseley Associates Topanga is a dedicated digital composite STL box. According to the company, Topanga has a system gain advantage of greater than 20 dB over analog composite systems, which should guarantee improved signal to noise rations and stereo separation.

Besides the MPX feed, Topanga has an Ethernet interface for HD Radio data along with RS-232 channels for RDS. It can be operated through the front panel or remotely over the internet.

Info: moseleysb.com

V-SOFT OFFERS UPDATED CENSUS DATA

V-Soft COMMUNICATIONS®
R.F. Communications Software and Engineering Consulting

Broadcast RF engineering and propagation software developer V-Soft has announced the availability of 2016 U.S. census estimate data for use with its AM-Pro 2 coverage and interference and Probe 4 propagation modeling programs. This new data set will keep users updated with the latest and most accurate numbers for calculating market coverage and station reach.

V-Soft said, "Each year, the U.S. Census Bureau's Population Estimates Program uses current data on births, deaths, and migration to calculate population changes since the most recent decennial census and with this data it produces a time series of estimates of population, demographic components of change, and housing units. These official U.S. Census estimates go down to the county level and have multipurpose uses."

It explains, "The data we distribute is produced on a block level, using block centroids and density distribution from the 2010 decennial census as a baseline and adjusting that data using the census estimate figures. This data contains all the same major data categories as the 2010 census — i.e. population, county/racial breakdown, housing units, etc."

Info: www.v-soft.com

LOGITEK HAILS THE HELIX

New from Logitek is the Helix console, aimed at radio and TV duties, operating from touchscreen and physical motorized control surface. It also has a tablet/smartphone app.

The system operates with Logitek's JetStream AoIP network. JetStream routers can provide 128–240 I/O channels.

The Helix Radio, shown, offers up to 24 mix-minus busses; the number of busses and faders can be lower if requirements are less. There are motorized faders and 7-inch touchscreens for each six-fader bucket. The touchscreens access dynamics, assignments, metering and more. The buckets can be split.

A monitor module provides a speaker, monitor and cue volume faders along with cue and studio/guest volume control knobs, in addition to a touchscreen providing meters and assignment buttons.

Thanks to software-driven architecture, Helix offers numerous customization options.

For those willing to go all the way, Helix Surface is a 28-inch Microsoft Surface Studio that eliminates the physical fader complement.

Logitek President Tag Borland said, "Glass cockpits are becoming ubiquitous throughout all industries, and users everywhere are now accustomed to touch interfaces on many devices."

He added, "You can take Helix with you as you walk around the station, do a remote, or connect to the studio from across the country."

Info: www.logitekaudio.com

THE PRO AUDIO EXHIBITION AND TECHNOLOGY EVENT OF THE YEAR

MAXIMUM AUDIO

Studio & Home Recording, Broadcast, Live, Theater, Post, Software, Games, VR and more

Workshops, Tutorials, Demonstrations and the latest Audio Technology

REGISTER NOW
USE CODE: AES17REG

Free Exhibits–Plus Pass with above Code, a $75 value
Includes Co-located NAB New York Show Core Package

Exhibits: 18 – 20 October 2017
Program: 18 – 21 October 2017

AES NY

Javits Center, New York, NY

#AESNY

aesshow.com

Facebook.com/AESorg

BROADCAST BIONICS INTRODUCES SKYPE TX FOR RADIO

Building on the phone, SMS and social media capabilities of its PhoneBOX4 studio communications suite, Broadcast Bionics says Skype TX for Radio is an add-on developed in partnership with Microsoft.

It connects Skype users such as reporters, commentators or listeners via their mobile phone, web browser or desktop, into the studio desk for broadcast in real time. Key benefits include quality audio, multiple Skype calls to a single skype ID and an integrated workflow, designed to meet the needs and workflows of radio broadcasters who want to use Skype live on air.

A Windows server PhoneBOX4 can deliver up to 12 separate lines of Skype connectivity, such that each can be individually added to program output. Supplied in six- and 12-line versions, the system is in beta and is to be available in September.

Broadcast Bionics highlights its OASIS social media management system, which it says provides information to station staff on the mood and mind of their audience and directs them to the best social media content. The Virtual Director visual radio system automatically switches cameras to visualize and live stream to Facebook live, YouTube live or Periscope. The system promises to allow users to trim and share video clips to social media.

Finally, Broadcast Bionics in partnership with Speechmatics now delivers voice transcription and text search of one's audio, while the company's MOR> multi-object recording software, allows station staff to open the link into a multitrack editor and repurpose content rapidly for other platforms.

Info: www.bionics.co.uk

VOXPRO 7 DEBUTS

Wheatstone said the latest version of VoxPro's purpose-built editor/recorder for live radio now has signal processing to let talent clean up phone calls for on-air presentation quickly.

This dynamics and EQ toolset includes parametric EQ, de-esser, compressor, expander, limiter and noise gate for processing call-in and talent tracks independently or jointly. It comes with a standard library of presets.

Also included with VoxPro7 are new FX Macros for creating one-button presets to call up frequently used effects. FX Macros can trigger one or a chain of actions — for example, start by removing silences in a call-in using VoxPro's GapBuster (which now automatically detects noise floor), then running the result through Dynamics and EQ, and finally normalizing both host and caller channels for final broadcast, all with the push of a button.

VoxPro7 also streamlines the system's effects menu, making effects like chorus, reverb and distortion more easily accessible and rendering recent settings "sticky" for faster recall. Improved file navigation with a QuickSearch box and the ability to color-code files and hotkeys make resources easier to locate in long lists of items. Other new features include support for 24-bit files and a new animated display.

Info: www.wheatstone.com

FUTURI MEDIA LAUNCHES TOPICPULSE CONTENT STREAM

Cleveland-based audience engagement technology provider Futuri Media has introduced the TopicPulse content stream, currently available for the TopicPulse desktop app. The feature will be live in the mobile app soon. According to CEO Daniel Anstandig, the new feature adds "science to the art of show prep and story selection" through data.

Content stream scans local social media posts and news sources to deliver demographic-specific insights to broadcasters.

TopicPulse users can now see a live stream of content ideas specific to their format and target audience, based on TopicPulse's data and also curated by Futuri's writers and producers. Additionally, format-specific content is emailed to users twice per day, intended to help with prep for morning and afternoon drive show prep.

According to the company, content stream material is intended to translate well on air and on social media.

Info: futurimedia.com

AXEL PUTS A TIGER IN THE RACK

Axel Technology's Tiger 5 processor is based on a new generation of processing boards and can manage any type of feed to radio transmitters, the firm says.

The Tiger 5 can handle up to four inputs, such as MPX, L+R and IP streaming. Each input can be used as a backup source, with the Tiger 5 automatically routing the signal from the most appropriate source to the transmitter output.

Should the selected signal become unavailable, the Tiger 5 switches to another input. In addition, the Tiger 5 features comprehensive monitoring capabilities, routing complete information on the status of any input and on possible alarms. It includes also an RDS encoder, an SD card reader for back-up purposes and an audio streamer to loop back any of the available signals.

Info: www.axeltechnology.com

SUN'S OUT FOR WORLDCAST

WorldCast Systems recently rolled out a self-contained, turnkey solar-powered FM retransmitter.

Solar FM offers hybrid AC power up but can broadcast up to 10 hours on solar alone.

Designed for areas with limited electrical infrastructure or for temporary installations, the Solar FM retransmitter can receive audio from a number of sources such as its built-in satellite and FM receivers or analog and AES inputs.

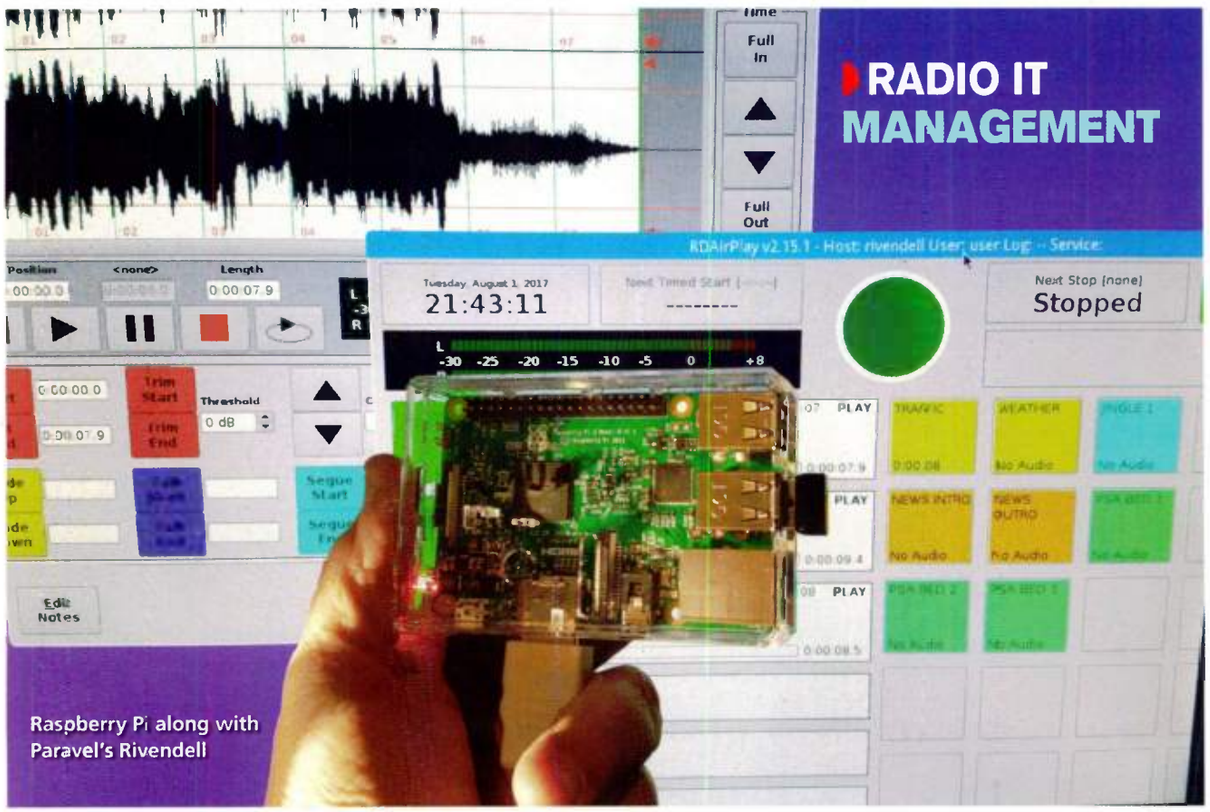
The company says the system is versatile, easy to mount and resilient when operating in difficult environments. Solar FM is supplied as a turnkey system with solar panel, FM antennas, satellite dish or antenna and the FM transmitter. A NiMH battery and built-in smart battery management system help optimize the amount of time a broadcaster can stay on air.

Solar FM has a remote and mobile device app for configuring the transmitter, satellite receiver and FM receiver; scheduling operating times; and providing an overview of real-time status while enabling monitoring of parameters such as preamplifier power, the current/voltage for each power source, etc.

Info: www.worldcastsystems.com

Linux & Radio: What You Can Do With It *Now*

Al Peterson shows you liberation from the Windows and Mac tyranny



Raspberry Pi along with Paravel's Rivendell

BY ALAN R. PETERSON

Now and again, you'll see a Linux article here in RW ... just like this one. They don't come around very often for a few reasons: First, the earth still orbits around the twin suns of Windows and Apple, and most readers have already made major investments in gear that operate under both, so why change?

Second, the distraction known as Android. It's nimble and fun, it's mobile and cheap, and it "just works" without having to take the cover off to tune things up. Amusingly, while not Linux-like, the heart of the Android OS is actually the Linux kernel (see sidebar, page 26).

Third, there is a belief that Linux apps are still too primitive to get anything productive done. Besides (whiny voice), "I tried Linux in 2005, and it was just too *ha-r-r-d*."

Sorry. A lot of those objections are no longer valid. Linux is solid, stable, free for the most part and has become as easy to navigate as Windows. And those old apps are all grown up now.

You may have skipped over previous Linux articles we've run, but don't skip this one. We're not going to crow about Linux like it's something brand new, because we both know it has been on your radar screen for 20+ years. This time, we'd rather you read about what you can do with it at your station — and primarily in your production studio — *right now*.


Screenshots from Ardour's DAW suite

OKAY, NO ONE'S LOOKING ...

Every station has a stash of retired computers. Grab a dual-core PC out of mothballs, max out the RAM, then head on over to *http://distrowatch.com*, where you can download any free Linux distribution best suited to your hardware and the tasks at hand.

But which one?

Over at Radio Free Asia in Washington, which delivers programming in nine languages to the Eastern Hemisphere, Ubuntu is the preferred distro. Here at Radio America in Arlington, Va., we let CentOS drive all behind-the-scenes functions.

You might be better off with something else, such as SUSE or Fedora. Or even a specialized multimedia distro (more on that later). Grab a few different ones and see which one you like. All it will cost you is a little time and the cost of blank DVD media.

You may have skipped over previous Linux articles we've run, but don't skip this one.

Now ask IT nicely to connect you to the LAN so you can access the internet. Then look around your studio and let's get busy!

How much did you pay for that DAW? If it's Pro Tools or Audition, you're probably still paying for it on a rolling basis. How much are you paying to put it on desktops around the station so anyone can get work done? Oops, you're *not*? They *can't*?

Change that right now with a copy of **Ardour** *(www.ardour.org)*. Full multitrack audio and MIDI recording and editing, loads of free plug-ins, and you can get versions that work on Windows and Mac as well as Linux. Some of the keystrokes are going to be very different from what you use now, but three hours on a Saturday are all you'll need to become a master 'tracker on Ardour.

Free? No, but cheaper than cheap.

(continued on page 26)

LINUX

(continued from page 25)

You can buy a copy of Ardour for whatever you want to pay for it. If you know how to work with source code, then it's totally free.

You already know about **Audacity** *(www.audacityteam.org)* and you may be using it on Windows. But pull down the Linux version for your new machine. Why? More plug-ins that do more stuff.

Still like to do stutters in your productions? Then **LinuxSampler** is for you *(http://linuxsampler.org)*. No? Vocoding is your thing? Lucky you: There's a free one in Audacity. And for you autotuners, **GSnap** has a beta Linux version out *(www.gvst.co.uk/portpage.htm)*.

How about a free audio processor to make your webstream sound as punchy as your FM signal? Load up the **JackRack** virtual audio rack that's included with many Linux distros, populate it with **CALF** Gate, Multiband Compressor and Limiter plug-ins *(http://calf-studio-gear.org)* run some tapped audio from a DA into the sound card and stream the output using **B.U.T.T.** *(http://danielnoethen.de)*.

If that computer is a laptop, you can do remotes with it. **LinPhone** *(http://linphone.org)* uses the Opus codec, which means it should be able to talk to those AEQ, AETA, Comrex, Digigram, GatesAir, Tieline codecs back at the studio. You got nothing to lose by experimenting — that's what Linux is all about.

Oh, and about that laptop? As long as you're out and about with it, load it with **MIXXX** *(https://mixxx.org)*, free DJ software that spins and segues tunes, and does everything that dumb wedding DJ paid hundreds of dollars for.

TECHNICALLY SPEAKING

In the interests of technical accuracy, "Linux" is actually a *kernel*; the nucleus or elemental core of a computer operating system. Not a lot happens until a *shell* is added, which is the interface between the kernel and the user; and *libraries*, consisting of functions, routines and templates which are called upon to execute a desired result.

In general use, especially throughout this article, references to "Linux" imply the open-source Linux operating system and not necessarily the kernel.

— *ARP*

You know that cool video the intern shot of the morning team stunting at the mall? Edit it down to a nice compact package with fades, titles and transitions, using **ShotCut** *(https://shotcutapp.com)*, **OpenShot** *(http://openshot.org)*, **KDEnlive** *(https://kdenlive.org)* or **Cinelerra** *(http://cinelerra.org)*. Premiere Elements for Windows or Mac is a bargain at $70 or so, but if you don't like the flow or the feature set, tough bananas. These apps are all free and while the feature set is not as extensive, you can find one you like.

So let's see … a DAW, remote broadcasting, streaming and processing, video editing *and* the operating system. All in a hand-me-down computer you've already paid for and all potentially free. What might that have cost in the Windows World?

But then, why kill yourself looking? Do a search for "Linux multimedia distros," discard the ones that turn your computer into a cable TV box, and you'll find essentially the guts of a modern day production house crammed onto a single DVD. Among them, **AVLInux**, **UbuntuStudio**, **KXStudio** and **Apodio** (which also comes with a slew of synthesizers and effects for amazing radio production).

OUT OF THE STUDIO

Down the hall a ways, it looks like everyone's "Office 365" suite just got hit with a Windows update over the weekend, and won't start until you plug the Product Key or license code into the nag box yet again.

Really, how many features in Microsoft Office do you need on the station level? Is OneNote, Sway or Teams in use enough to justify the expense? If your needs are conventional word processing, spreadsheeting, drawing and perhaps a PowerPoint or two, suites such as **LibreOffice** and **Apache Open Office**

are more than capable. And you don't have to switch to Linux to use them — there are Win and Mac versions available, with a Libre Android viewer still in the developmental stage but now available.

Then of course, there is the 800-pound gorilla in the room: station automation and audio management. Once upon a time this was a DOS affair, and other than a minor diversion into Mac territory (MegaSeg and AudioRackSuite, neither of which are free), it's an all-Windows task today. And sometimes a pricey one as well.

In the past you've seen me write about the free Paravel Systems' **Rivendell** radio automation suite for Linux — (*www.paravelsystems.com/rivendell-broadcast-appliance*) — which is also the driving force behind RFA, Radio America, and numerous Salem radio stations. Probably the biggest surprise to come down the line about this software is that at least two independent developers are working on optimizing it to run on inexpensive ARM-based computers, such as the $35 Raspberry Pi.

Try to imagine your main control room with absolutely no computer heat or fan noise; with the ability to swap out defective devices immediately for less than 50 bucks; and with the ability to connect easily to a network and communicate with other automation computers and the music server.

And with the rollout of a new six-in eight-out soundcard designed for the Raspberry (*www.audioinjector.net/rpi-octo-hat*), it soon won't be that hard to imagine.

In summary, there's a lot you can be doing right now to be creative, to improve workflow and to get your message to your audience whether streaming or OTA. Just stop reading and start downloading.

Linux has been here since 1991. Where you been?

Alan Peterson is second engineer and production director for the Radio America Network in Arlington Va., and a longtime contributor to Radio World. His presentation "Run Your Entire Station From Two DVDs" has been a staple at college radio conferences for seven years. Reach him at apeterson@radioamerica.com.

BROADCAST EQUIPMENT EXCHANGE

ACOUSTICS

ANTENNAS/ TOWERS/CABLES

CCA FM8000G Trans 107.9, great cond; 4-Bay Jampro antenna w/deicers; 3-bay Shively antenna FM. D Brockman, 606-965-3436.

100' of Andrew HJ750 air Dielectric 1-5/8" transmission cable; (5) 6' Philistran insolator cable substitute; 5000' roll of galvanized ½" cable for guying tower; 3-bay almost new medium power Cablewave circular antenna on 92.1 MHz; ERI 3-bay antenna on 93.5 MHz circular, polarized; 375' Andrew LDF750 1-5/8" Andrew cable, let's make a deal, 318-224-4442.

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.

AUTOMATION EQUIPMENT

WANT TO BUY

Western Electric 25B input console & amplifier (speaker). Li, vanhanli@yahoo.com.

MICROPHONES/ HEADPHONES/ SPEAKERS/AMPS

WANT TO SELL

1934 RCA 77A double ribbon microphone, originally used by Arthur Godfrey at WFBR Baltimore. 100% perfect condition. Contact Bill Cook, 719-684-6010.

WANT TO BUY

RCA 77-DX's & 44-BX's, any other RCA ribbon mics, on-air lights, call after 3PM CST, 214 738-7873 or sixtiesradio@yahoo.com.

MISCELLANEOUS

WANT TO SELL

I'm selling between 150 and 200 cassette tapes that consist of old-time radio shows, sports shows, some local New York radio talk shows, etc... Must take entire collection and the price is negotiable. Please call me for details and, my phone number is 925-284-5428.

Radio broadcasts of Major League Baseball, NFL, and some college football games that are on cassette tapes, approx 100 to 125 games, time period of entire collection os from the 1950's – 1970's, BO. Must purchase entire collection. Contact Ron, 925-284-5428 or ronwtamm@yahoo.com

WYBG 1050, Messina, NY, now off the air is selling: 250' tower w/building on 4 acres; collection of very old 78s dating back to 1904; 12' satellite dish on concrete base; prices drastically slashed. 315-287-1753 or 315-528-6040

CONSULTANTS

WANT TO BUY

Collector wants to buy: old vintage pro gears, compressor/limiter, microphone, mixing consoles, amplifiers, mic preamps, speakers, turntables, EQ working or not, working transformers (UTC Western Electric), Fairchild, Western Electric, Langevin, RCA, Gates, Urei, Altec, Pultec, Collins. Cash - pick up 773-339-9035 or ilg821@aol.com.

2" plastic "spot" reels 6.5 or 8" diameter, as used for quad video. Wayne, Audio Village, 760-320-0728 or audiovlg@gte.net.

Equipment Wanted: obsolete, or out of service broadcast and recording gear, amplifiers, processing, radio or mixing consoles, microphones, etc. Large lots preferred. Pickup or shipping can be discussed. 443-854-0725 or ajkivi@gmail.com.

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

I'm looking for San Francisco radio recordings from the 1920's through the 1980's. For example newscast, talk shows, music shows, live band remotes, etc. Stations like KGO, KFRC, KSFO, KTAB, KDIA, KWBR, KSFX, KOBY, KCBS, KQW, KRE, KTIM, KYA, etc, I will pay for copies... Feel free to call me at 925-284-5428 or you can email me at ronwtamm@yahoo.com.

Looking for a broadcast excerpt of a SanFrancisco Giant's taped off of KSFO radio from 1959, interviews with Willie Mays, Dusty Rhodes & some play by play excerpts, also features a homerun by Willie Mays and Felipe Alou stealing second base, running time is 18:02, also looking for SF Giants games and/or highlights from 1958-1978 also taped off KSFO Radio. Ron, 925-284-5428 or ronwtamm@yahoo.com.

Looking for KFRC signoff radio broadcast from 1930 Andy Potter, running time is 0:22 & also the KLX kitchen the program guest is Susanne Caygill, a discussion of women's affairs with a long promotion for Caygill's appearance at a local store. Anne Truax, Susanne Caygill, running time is 13:44. Ron, 925-284-5428 or email ronwtamm@yahoo.com.

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

Looking for KTIM FM radio shows from 1981-1984 if possible unscoped. R Tamm, 925-284-5428 or ronwtamm@yahoo.com.

RECEIVERS/ TRANSCEIVERS

WANT TO SELL

Johnson Electronic SCA880 module, 67/92 Khz, 417-881-1846.

WANT TO BUY

AM Stereo radio. Call 417-881-1846.

RECORDING & PLAYBACK HARDWARE

WANT TO BUY

1960s-vintage MacKenzie Repeater machines, magazines, spare parts and manuals, complete or "parts" machines considered, James, 870-777-4653.

Large or small collections of 16" transcriptions or 12" transcriptions, not commercial LPs. Bill Cook, 719-684-6010.

Schnader telescriptions 16 mm musical films produced in the early 50 s. Bill Cook, 719-684-6010.

Standard Short-tune series. Bill Cook, 719-684-6010.

STATIONS

WANT TO SELL

AM, Kentucky, Cheap! Group deal. wrecktech@yahoo.com, 478-741-1710.

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

I will buy your distressed FM, AM or LPFM radio station even if you are "silent" as long as there is time left before you lose your license, Northeast, FL or GA. Please call Michael, 401-942-8341, if no answer please leave message and I will get back to you.

TAX DEDUCTIBLE EQUIPMENT

Donations Needed: All Volunteer, Non-profit Low Power community radios stations need Equipment. Will offer tax deduction letter, You determine donation value, We will pay shipping. Equipment shared between three Wisconsin stations. Looking for Mics, Mixers, field equipment, etc. You name it. Email: Dan@WIECradio.org.

BROADCAST EQUIPMENT EXCHANGE

Submit your listings to: minderrieden@nbmedia.com

TEST EQUIPMENT

WANT TO SELL

Delta IOB-3 w/18" leads & BNC adapter, $2000; Potomac FIM-71 complete w/all access, manual, like new, $5000; Potomac FM-41 w/manual, $2000; Potomac SD-31/RX-31 w/cables & manual, $1000; Belar AMM-3 AM modulation monitor, used, xlnt cond, $300; Belar FMM-2 FM modulation monitor, used, xlnt cond, Xtals for 94.5, 98.3, 106.5, Belar FMS-2 FM modulation monitor, used, xlnt cond, $1000 for both units; Belar SCM-2 SCA modulation monitor, used, xlnt cond, $500 or $1250 for all 3 units; Delta Electronics TCA-5/10EXR RF ammeter system, new unused, in factory box, $500; Delta Electronics TCA-10/20EXR RF ammeter system, new unused, in factory box, $500; Bird 4600-037 wattmeter/4600-000 3-1/8" line section 15 kW & 30 kW Elements, RF cable, bullet, new, unused, $600; Bir 4716 wattmeter, 4712-000 1-5/8" line section 500W & 5000W Elements, RF cable, bullet, new, unused, $500. Call 410-707-3654 or mundschenk55@msn.com

TRANSMITTERS/ EXCITERS/ TRANSLATORS

EMPLOYMENT

POSITIONS WANTED

Are you a small market station needing a good nuts & bolts engineer in the Los Angeles area? I will make your station shine! CET, fully FCC Licensed. Available for Full/Part-time/Contract work. Available immediately. Mitchell Rakoff, 909-446-6820, mitchellrakoff@yahoo.com.

Experienced radio station manager seeks new management opportunity. More than 39 years experience in radio. Willing to relocate. Family-friendly format(s) preferred. Send details about your management opening to: radiogm@hotmail.com.

Extremely knowledgeable and articulate racing writer/talk show host Adam Amick is available for shows, correspondent, features, etc. Check out www.bleacherreport.com for samples. Call 214-384-5812 or email: adam@rubbinsracingshow.com.

Australian broadcast technologist authorized to work in the USA seeking employment in NY, NY. My background is in IT, Radio and TV. I worked as a Senior Engineer in Australia covering all technical aspects of the broadcast chain, from the front door to the TX and of course OBs. My skills include both hands on and project managing network design and conif, studio design, rack planning, migration, install and commissioning, alalog and digital facilities, playout systems, Cisco IP voice and data, desktops and servers, and help desk as well as good knowledge in solid state and valve TX equipment. I enjoy working in a team environment and work well under pressure. Excellent references available upon request. I live in Manhattan an can start immediately. If you would like to know more, please contact me at tech@numeralla.com or read by CV at www.numeralla.com.

Diligent, reliable worker, very comfortable with technology. Friendly, lots of energy, thrives in team settings/ behind-the-scenes. Tight boards, social/ writing skills. Andrew, 682-465-7958 or burka86@yahoo.com.

DISTRIBUTOR DIRECTORY

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

www.radioworld.com

Alexa, Should Radio Go Programmatic?

Broadcast industry needs to keep up with this technology in order to survive

COMMENTARY

BY MICKEY WILSON

The author is chief marketing officer for WideOrbit.

Google

Media company executives are bombarded with requests from clients and consumers to explore "The *New* New Thing." Programmatic advertising is one of the latest to confront radio businesses.

And as always, the New Thing brings up questions with significant business implications. How urgently do you need to move? What do you have to do to take the plunge? Solid answers are especially urgent for established media companies, as ad buyers look to target audiences move nimbly and whimsically between content platforms, many of which are competitive with their offerings.

To answer these for radio, let's start by looking at programmatic's progress in media formats where adoption is already under way: digital video and television. In these spaces, advertisers' target audiences are no longer tied to consuming content on any particular platform. They are growing more accustomed every day to switching between devices, watching their preferred programs when they want and where they want.

Media companies need to be nimble and committed to aggregate these fast-moving audiences on behalf of advertisers. That's why programmatic is already so important for video platforms. In less than seven years, programmatic digital video ads have gone from zero to more than two-thirds of transactions.

PROGRAMMATIC CHALLENGES FOR AUDIO

The audio media world is feeling the same pressure to allow advertisers to follow listeners. The growth of digital and mobile platforms is having an immense effect on how content is consumed and monetized. More than 5 percent of radio industry ad revenues will be digital this year. Companies like Univision and Entravision are thriving because they bet big and early on these platforms.

But digital and mobile are hardly the only audio platforms in town.

Now others like "smart speakers" are sneaking into view from the Internet of Things. VoiceLabs projects 24 million smart speakers like Amazon Echo, Google Home and Apple HomePod will be sold this year, with the installed base reaching 33 million units by the end of the year. Gartner predicts smart speakers will be in 75 percent of U.S. households by 2020.

iHeart Radio CEO Bob Pittman said, "Radio is taking on a new importance to people, but the buying and selling of it doesn't match the way advertisers want to do it today, which is they want it to be automated, they want it to be immediate, [and] they want data-infused buying more than just demographics.

"We definitely need automation and a programmatic exchange just for ease of buying," said Diana Anderson, SVP, group director for Network Audio Activation at Carat USA Radio, at a 2015 conference. "If you're not there, radio is going to fall off the radar."

THE GOOD NEWS FOR RADIO

The great news for radio companies is that it has the right stuff to be well positioned on these new platforms to contribute to their existing businesses and build new ones.

Smart speakers, for example, need audio content to attract audiences — and audiences will think first of the radio content they know and love. Even deep into the era of mobile and digital disruption, radio remains media's No. 1 reach vehicle with more than 90 percent of Americans listening to AM/FM radio every week. That's more than TV, tablets, connected devices and phones — and it dwarfs the user base of insurgent streaming music services like Pandora or Spotify.

Who would have guessed two years ago that some of the biggest changes in audio consumption would take place inside the home?


Amazon

These devices are producing major changes in the way that people engage with audio. According to an NPR-Edison Research study, 70 percent of smart-speaker owners say they listen to more audio at home since acquiring their device.

In the era of digital and mobile transformation, who would have guessed two years ago that some of the biggest changes in audio consumption would take place inside the home?

That's only one example of where change is being forced on media companies by novel new platforms beyond the usual digital and mobile suspects. More are on the way. Car entertainment operating systems like Apple CarPlay and Android Auto could transform the automotive listening experience, while wearables are making radio and podcasts accessible in unexpected ways.

As all these new opportunities start to bloom, it's apparent that the radio industry has not kept up, endangering its place in the media mix at the exact moment when it should be ascendant.

There are other technical factors that makes radio content desirable to new platforms. It's relatively simple to serve in digital formats, it has high loyalty and audience recognition, and it can be enhanced easily with other media platforms (like using social media to enhance audience engagement).

Meanwhile, the line continues to dissolve between traditional over-the-air radio advertising and digital audio. Ad buyers have already accepted this as the New New reality. Earlier this year, WideOrbit surveyed 4,000 media buyers who use audio ads to reach consumers. Fifty-eight percent of them told us that they were audio buyers, not just either radio or digital audio.

That's a good position for audio content providers. What can you do to cash in and assure that this new technology

(continued on page 30)

READER'SFORUM

50 YEARS AS A PD

I actually hit my 50 years in the biz in 2014, as my first DJ gig came in the summer of '64. But as I move into a new programming/formatting venture this year, I noticed it was 50 years ago (1967) that I first was given the title and responsibility of program director, to choose the music and set the flow of the station.

And here I am now, at it again. I realize I have been exceptionally lucky as one of the guys who's made a career out of something he loves doing.

Steve Warren
Creator
The New Country Tradition

This photo was taken in 1968 in the first control room where Steven Warren worked; KOTN in Pine Bluff, Ark. The station was owned by Buddy Deane. He was one of the founders of Top 40 radio.

Present-day Steve Warren.

DROP THE FICTION ABOUT TRANSLATORS

Responding to "Are Broadcasters 'Gaming' The Translator Rules," RW May 10 issue:

Good article exploring FM translator issues, thank you.

What you hinted at needs to be stated more bluntly: FM translators were gaming the system from Day One. In reality, they are a broadcasting service in their own right, not just a supplementary adjunct to the main station. They elbow their way into an already overcrowded FM radio dial.

FM translators have become the must-have prestige bauble to keep up with the Joneses to aggrandize radio property value. Full-service FM stations which complain about fringe contour interference from a translator are baring the fiction held out to their advertisers of exaggerated coverage claims. Average listeners don't attempt to listen to a station that can't keep receiver capture.

On the AM side, the notion that FM translators support AM revitalization is the oxymoron of the century. Clear FM reception seduces listeners away from the noisy AM band, thus directly subverting rather than enhancing the AM radio service. Let's quit the winking and nodding about FM translators.

As the boy in the crowd observed: "Hey! The Emperor isn't wearing any clothes!" A genuine improvement to the AM radio service would be to pull in the contour protections of Class A and B stations to allow lower-class AM stations to up their power, same day as night, and sunset their FM translators. *That* would be AM revitalization!

James B. Potter, K3NSW
Cutting Edge Engineering
The Little Spot Shop
Kimberling City, Mo.

WRITE TO RW

SEND A LETTER TO THE EDITOR:
Email **radioworld@nbmedia.com** with "Letter to the Editor" in the subject field. Please include issue date.

I LEARNED A GREAT "DIEHL"

Responding to "Entertainment Reporter Tells Story of His Life," May 24 issue:

As a former broadcaster, I thoroughly enjoyed reading the memoirs of my peers, especially about the successful, diverse career of Bill Diehl.

There is a common denominator about the veterans of the field: We began our early "career" on a real play station — a turntable, an amplifier, speakers and a microphone hooked up in our basement. And oh, 45 rpm records. I used the Yellow Pages to ad lib spots.

I digitally recorded a pair of interviews with two late radio broadcasters: Dr. Edgar Willis, former chair of the School of Communications at the University of Michigan, and Bill Stegath, a legendary UM alumnus and sportscaster for the U of M. They found broadcasting attractive at an early age. The interviews are available on my Ann Arbor YouTube page: *www.youtube.com/watchmanofthetracks*.

One wish: a book about the grand old announcers of ABC Radio news, Art Van Horn, John Cameron and the like. I would buy it!

Dale R. Leslie
Ann Arbor, Mich.

ADVERTISER INDEX

This listing is provided for the convenience of our readers. Radio World assumes no liability for inaccuracy.

PAGE	ADVERTISER	WEBSITE/URL
23	AES	www.aes.org
11	Axia - The Telos Alliance	www.telosalliance.com/axia
19	BSI	www.bsiusa.com
7	Comrex Corporation	www.comrex.com
1	ENCO	www.enco.com
5	Henry Engineering	www.henryeng.com
15	Inovonics Inc	www.inovonicsbroadcast.com
6, 10, 14,18, 22, 25	Nautel Ltd.	www.nautel.com
13	Omnia - The Telos Alliance	www.telosalliance.com/omnia
20	Ram Broadcast Systems	www.ramsyscom.com
21	RCS	www.rcsworks.com
9	Tieline Technology	www.tieline.com
2, 16-17, 32	Wheatstone Corporation	www.wheatstone.com

PROGRAMMATIC

(continued from page 29)

wave won't pass you by?

As it is in any marketplace, sellers will make reasonable business changes to accommodate buyer priorities and how they want to buy. Naturally, they will want to do it in a way that protects their existing sales channels.

This is why it's so important for radio companies to get ahead of the curve on programmatic advertising. It brings the best of both worlds by letting sellers keep selling the way they're accustomed to, while giving buyers opportunities to use data to use data to target audiences across multiple platforms and improve campaign efficiency.

It's unlikely that programmatic will bring add substantial revenue to radio companies in the near term, but it will come. Analyst firm IDC projects that as much as $4 billion of radio's current $14 billion in ad revenue will be sold through programmatic platforms by 2020.

Adopting programmatic now gives radio businesses a chance to understand the market, the technology, the workflow and advertisers' expectations. Most platforms offer ways to test & learn new revenue models, meet today's customer demands, and build the systems to support the next generation of radio.

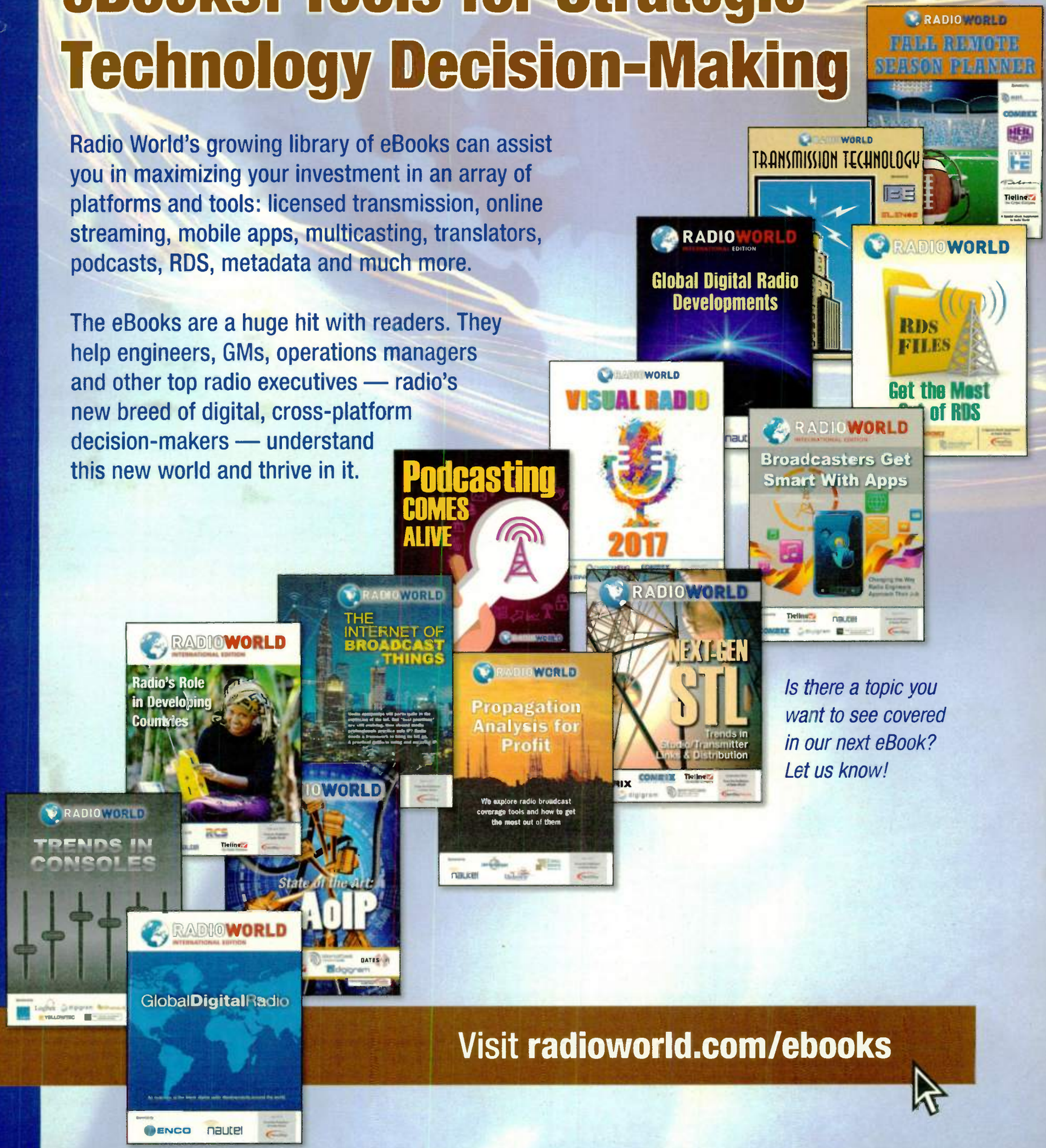
"Alexa, let's get started!"

Mickey Wilson is chief marketing officer at WideOrbit. Connect with her at mwilson@wideorbit.com, @mickey_wilson *on Twitter* or @mmw211 on *Snapchat*.

eBooks: Tools for Strategic Technology Decision-Making

Radio World's growing library of eBooks can assist you in maximizing your investment in an array of platforms and tools: licensed transmission, online streaming, mobile apps, multicasting, translators, podcasts, RDS, metadata and much more.

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.



Is there a topic you want to see covered in our next eBook? Let us know!

Visit radioworld.com/ebooks

Wheatstone

Solid Precision...
Raw Metal to Heavy Metal

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

Ultra-precise metalwork and fabrication using lightspeed-class materials and techniques. Advanced surface-mount technology for flawless circuitry. Meticulously assembled by people who've made their careers crafting these consoles for years. From concept to delivery, each Audioarts AIR Series console is a Wheatstone thoroughbred, designed and built to be the centerpiece of your studio.

AIR-1 USB

Compact 8-channel powerhouse, 2 mics/6 Lines. Great for small stations and remotes.

AIR-4

Remarkable 12-channel console, A/B, & Mix Minus. Major market features at a small market price.

AIR-5

Phenomenal 16-channel console, built for studios that have a lot of inputs. Sometimes you need a fader for everything.

Super Quiet mic preamps, built-in USB, hybrid-ready phone input channels, talkback, and much more. Perfect for any professional broadcast studios, remotes, LPFMs, podcasters, and streamers.

AIR Series Consoles: Hardcore Pro From Start to Finish

Learn more at audioarts.com/air

AUDIOARTS

EXCEPTIONAL CONSOLES. EXCEPTIONAL VALUE.

Designed and built in the USA by Wheatstone Corporation | Phone 1.252.638-7000 | audioarts.com | sales@wheatstone.com