



RADIO WORLD

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Radiate Maps Road to Traffic Growth

TruTraffic System parent looks to future with backing of new owner GTN

NEWS MAKER

BY RANDY J. STINE

MALVERN, PA. — Radiate Media executives believe the traffic reporting service now has the pieces in place to challenge market leader Total Traffic Network.



President Ivan Shulman at the NAB Show.

Radiate, which provides on-air traffic reports for radio stations in the United States, recently entered an agreement to be acquired by Global Traffic Network, a company that supplies traffic update services to Canada, Australia, the UK and Brazil.

The companies describe the next step in the sale process as the “due diligence” phase. The sale is expected to close soon. A final sale price has not been disclosed.

Radiate’s TruTraffic system delivers on-air traffic reports to some 1,000

radio stations in approximately 160 markets in the United States, according to its website. It is the exclusive provider of traffic info for all Cumulus Media radio stations. Radiate says it controls 25 percent of revenue generated by traffic reporting services in this country.

The other major player in the market is iHeartMedia’s Total Traffic Network. It provides traffic information to iHeartMedia radio stations and numerous U.S. stations not owned by iHeartMedia.

Radiate, which also provides visual

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Producer Karena Love

TogiNet: Your Podcast Goes Here

Texas platform began as a hobby, now has 100+ weekly one-hour shows

INTERNET RADIO

BY KEN DEUTSCH

The internet empowers us to bypass the gatekeepers in our society to book our own airline reservations, read or watch news stories that appeal to us and check local weather on demand. Now, the power of the internet also allows us all to have our own talk shows and podcasts, should we wish to do so. And apparently, many of us do.

TogiNet — rhymes with yogi-net

— is a “professionally produced internet talk radio network” that offers live programs and podcasts via its Tyler, Texas-based website on subjects such as homemaking, writing, psychology, medicine, career guidance, photography and about 40 other subjects that have little in common other than the passions of the individual hosts.

“We started this company about 11 years ago as a hobby,” said TogiNet partner Scott Frazier. “It has grown into a business with more than 100 weekly one-hour shows available. The man who is key to this growth is Erik Anderson, a technician who

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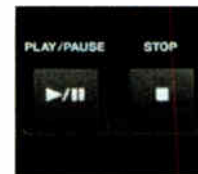
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RADIATE

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traffic maps for radio station websites and mobile applications, is privately held and does not release financial results. Its lead investor is Level Equity, a New York-based growth equity firm, according to company officials.

"POISED FOR GROWTH"

Ivan Shulman, president of Radiate Media, said the agreement with GTN provides Radiate with the financing to aggressively seek affiliates.

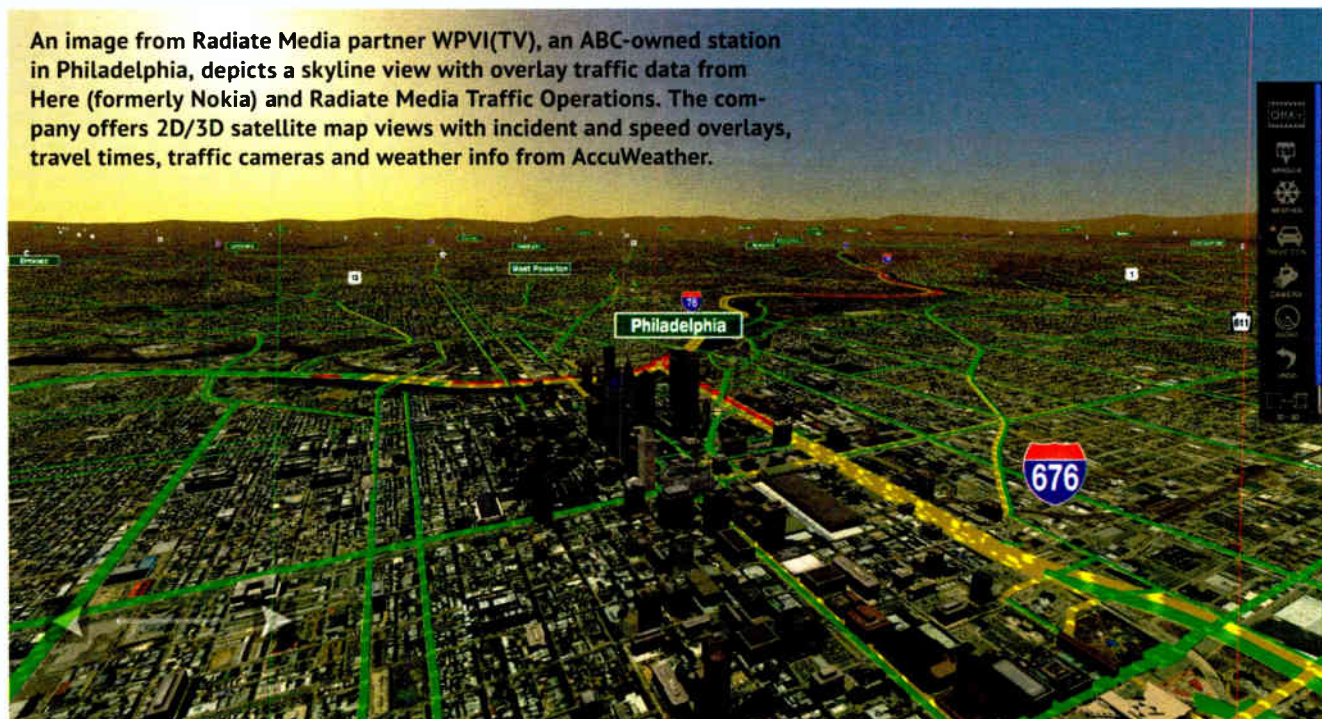
with over 800 local traffic reporters, in the United States, Canada and Mexico."

Radiate's history dates to 1998, when current CEO Chris Rothery founded Traf-fic.com. That company was acquired in 2007 by NAVTEQ, part of the Nokia family, and later known as NAVTEQ Media Solutions. NAVTEQ is a geographic information system provider of electronic navigable maps. In 2011, Nokia sold NAVTEQ Media Solutions to Matchbin, a CMS solutions company that hosted websites for radio and television stations. The newly consolidated company was renamed Radiate Media.

provided by Nokia, Shulman said. Radiate has exclusive rights to use Nokia's speed and flow data, which consists of cameras, traffic sensors, GPS data and other sources.

Shulman described TruTraffic as a "white label" traffic service that radio stations can brand any way they wish. "It's our reporters who deliver the traffic report but the radio station generally identifies the traffic as their own content. We want it to look like each radio station has the resources to gather all this data and disseminate it. Our reporters become personalities on the radio

An image from Radiate Media partner WPVI(TV), an ABC-owned station in Philadelphia, depicts a skyline view with overlay traffic data from Here (formerly Nokia) and Radiate Media Traffic Operations. The company offers 2D/3D satellite map views with incident and speed overlays, travel times, traffic cameras and weather info from AccuWeather.



"This is not consolidation. This is growth. GTN wants to be the largest traffic provider in the world. By adding a U.S. component to their other countries, GTN believes we are ready to grow. This gives Radiate a much larger footprint in the global marketplace," he said.

Shulman sees major changes coming to the traffic space for broadcasters in the United States and abroad.

"Radio broadcasters will now have a viable and well-funded competitor to Total Traffic Network. Broadcasters won't be stuck giving away their inventory to a competitor.

"We are poised for growth. We haven't grown a lot the past few years; some of that was due to product development and making sure our content was the best. And quite frankly, we had some bad deals with affiliates that we had to get out from under," Shulman said.

Contacted by Radio World for this story, an iHeart spokesperson said the company does not comment on its competition. She said Total Traffic & Weather Network provides services to some 2,000 radio affiliates in approximately 200 markets. "TTWN operates the largest traffic data gathering network, staffed

The company is headquartered in Malvern, Pa., with sales offices in four major U.S. cities. Radiate has approximately 290 full- and part-time employees.

GTN expects to close the purchase of Radiate this summer. GTN was co-founded by Bill Yde and Dale Arfman in 1997. In 2011, the company was acquired by GTCR LLC, a private equity firm based in Chicago.

DATA-DRIVEN

TruTraffic Radio on-air traffic reports are filed from a series of operations hubs across the country, Shulman said. Each traffic report contains a 15-second commercial slot controlled by Radiate. Most of the company's agreements with radio station clients are straight barter.

"We work out individual arrangements with stations. We generally sell the inventory and pick up the costs. Then we either work on a revenue share model with the broadcaster or a straight comp model," Shulman said.

TruTraffic Radio uses Radiate Media's traffic incident, travel time and map data technology, Shulman said, most of it aggregated through resources

stations. The report is delivered with our sponsor's message," Shulman said.

Radiate has several major operations centers plus numerous smaller ones where reporters are positioned. "Many of our traffic reporters work from their own home studios," Shulman said.

Its audio distribution technology has evolved over the years from dry-pair 8K analog lines to ISDN and private digital audio circuits to standardized configuration of audio over IP, according to Radiate's technical staff.

Radiate utilizes a number of codecs but its preferred device is the Telos Z/IP One. "We've got quite a few of these installed at our operations centers and also at work-from-home reporters. We

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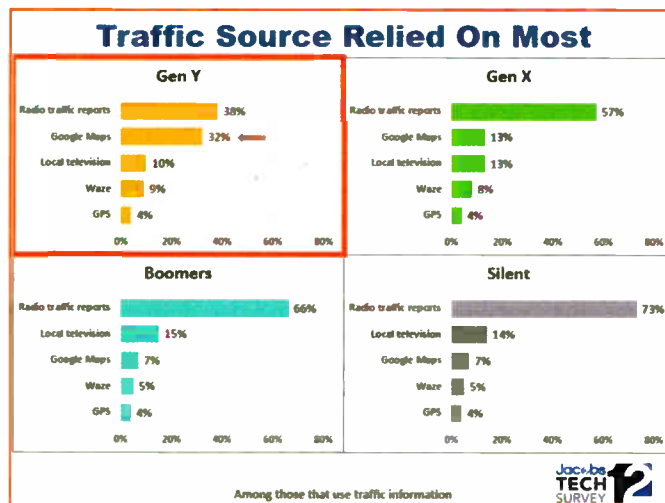
BY TOM VERNON

Radio World spoke with Jacobs Media President Fred Jacobs to dig a bit more deeply into the results of the consulting company's recently released Techsurvey 12. Themes include the importance of sharing, podcasts, the competitive media landscape and the coming of autonomous cars.

The annual survey seeks to identify key trends in the mobile, social and "connected car" spaces. They enable radio stations to better understand their audiences and brands

in rapidly changing times. Jacobs conducts Techsurveys among commercial radio (this one), public radio and Christian music radio.

For "TS12," some 39,000 listeners to 245 radio stations in the U.S. and



Radio was the leading source for traffic information among groups surveyed but local television is a strong competitor.

Canada were surveyed in January and February 2016. Most are members of station databases, and some replies were gathered via station websites and/or social networking pages. All were collected online and weighed using metro

population data. The web survey doesn't represent all radio listeners or even each station's audience. Because it's an opt-in, no margin of error is calculated.

A SHARING ECOSYSTEM

Despite the onslaught of new media, AM/FM radio continues to hold its own, even gaining ground in some areas.

There are several reasons, Jacobs said: "Hearing favorite songs (64 percent); the DJs and hosts (58 percent); and keeping up with what's going on locally (36 percent)." By a nearly 2:1 margin, AM/FM radio has momentum; and only one in 10 listen respondents less. That being said, 20 percent of total station listening now occurs digitally. That's up from 17 percent a year ago.

Station websites are becoming an increasingly important connection to listeners. "Nearly half of them visit at least weekly, and 15 percent stop by every day," Jacobs said. The station website is also in a three-way tie with text and "call in to win" for contest methodologies.

FROM THE EDITOR



I asked our contributor Tom Vernon to dig into the latest Jacobs Media Techsurvey. In interpreting the data, remember that respondents are members of station email databases and/or were gathered via station websites and social networking pages (so while it's interesting, for example, that radio tops charts in the first image, we can't necessarily extend that conclusion to all consumers). Nevertheless, the findings are highly informative about preferences of U.S. and Canadian radio listeners. The survey has plenty more slides at <http://jacobsmedia.com/techsurvey-12-results/>.

— Paul McLane

The number of respondents who share things with family and friends continues to rise. Starting at 17 percent with TS9, it has increased steadily to 38 percent with TS12. Most active in this trend are women and net promoters.

"This increase is due in part to content creators making it easier to share, and it is a great opportunity for stations

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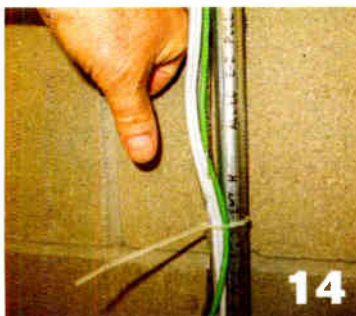


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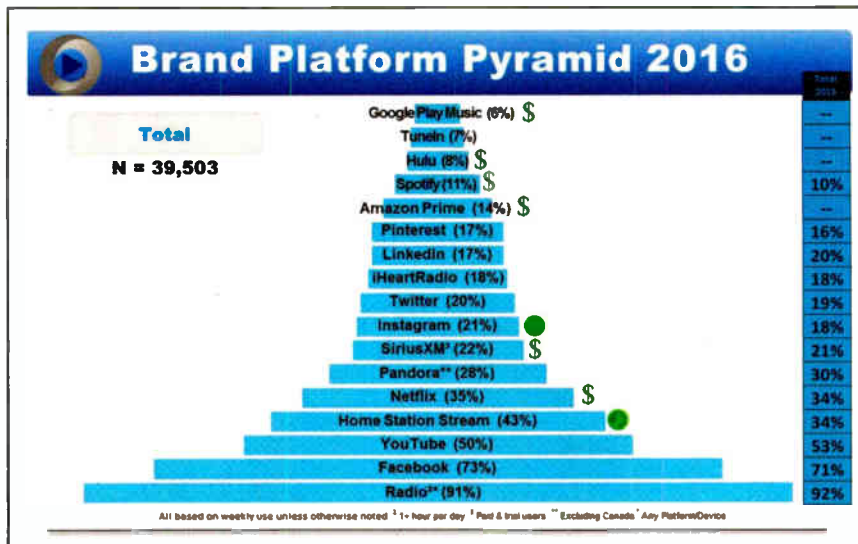


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Radio continues to lead brand platforms in weekly use among those surveyed.

to build a good relationship with its audience," said Jacobs. There is a relationship between recommendations and sharing; and both are on an uptick.

TS12 reveals both threats and opportunities.

On the plus side, Jacobs notes an increase in on-demand video and audio, including podcasting; 28 percent regularly listen to podcasts, up from 21 percent in last year's Techsurvey.

"This is a huge opportunity for radio. When we talk to traditional podcasters, they often say they've got great content, but don't know how to promote themselves and get the word out. For radio, on-air promotion is the easy part."

As to subject experts, Jacobs says they may be in a station's backyard — or even its studio. See what special talents or hobbies your staff has. For instance, "Maybe the morning jock is also into gourmet cooking and posts recipes on the station website — there's a huge opportunity for a cooking podcast, with

the promotion already built in."

Jacobs said podcasting has evolved and is becoming mainstreamed. Some management perceptions may be out of date.

"It's no longer about a guy in a closet studio talking about coin collecting. Today's listeners, with high-end sound systems in their vehicles, expect better sound quality and a more professional presentation." So another advantage to stations entering the podcast arena is

their existing ability to create a professionally produced product.

Jacobs said podcasts are important not only for their content and promotional value, but also as a new source of income.

"Most stations are maxed out on the number of commercials they can play in an hour. A podcast with sponsorship can bring in additional revenue."

WHO IS THE COMPETITION?

The survey also points out some threats.

"Many stations aren't good at effectively mapping out their competitive landscape. Most see 'competition' as the cluster across town. Today, streaming stations, Pandora and satellite radio are all out there, but this survey reveals two particular blind spots. Christian radio is the number one recommended format among respondents, and has been as long as we've been doing Techsurveys. Many commercial stations may consider Christian as a fringe format, but their listeners clearly do not."

Jacobs adds that stations ignore local television at their peril.

"Television has been moving into localism, starting about the same time as radio was backing out with consoli-

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SURVEY

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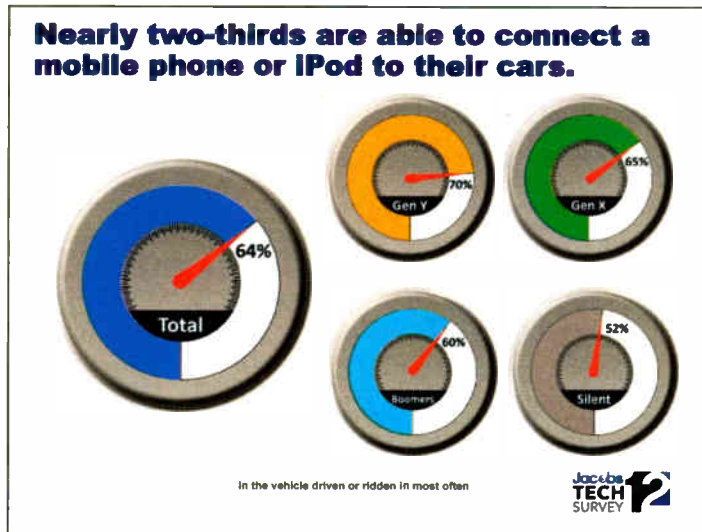
dation. They are heavily invested in local news and sports, and often have a presence at events like parades, festivals and fund raisers. TS12 also shows that, overall, they are second behind radio as the source for traffic information.”

Connected cars are still a hot topic as the battle for listeners in the mobile environment continues; this year’s Techsurvey also examines respondents’ reaction to autonomous cars.

“This technology will be a reality sooner than most people realize. Once the driver of a car is effectively a passenger, the mobile entertainment environment will be transformed. We may expect virtual reality to become a big player; and radio will need to up its game and rethink mobile entertainment from the passenger’s perspective.”

Opinions about autonomous cars were all over the map; only about a quarter are positive. But Gen Y respondents and male

Nearly two-thirds are able to connect a mobile phone or iPod to their cars.



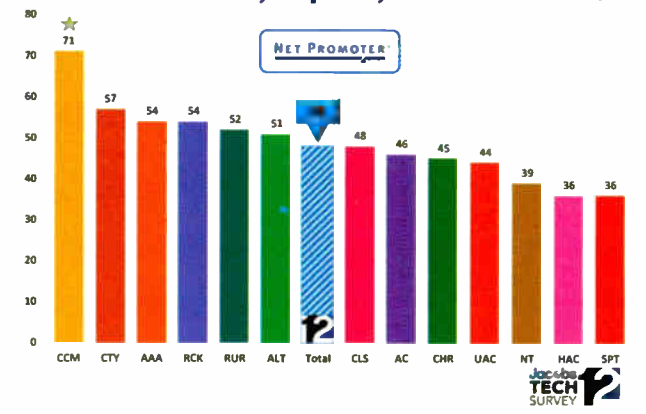
In-car listening has already changed dramatically. But, says Jacobs, “Once the driver of a car is effectively a passenger, the mobile entertainment environment will be transformed.”

respondents tended to express more enthusiasm. These will probably be the early adopters of autonomous cars.

Finally, as listening through streaming media on computers or mobile phones continues to increase, the traditional AM-FM radio as a household appliance is starting to disappear.

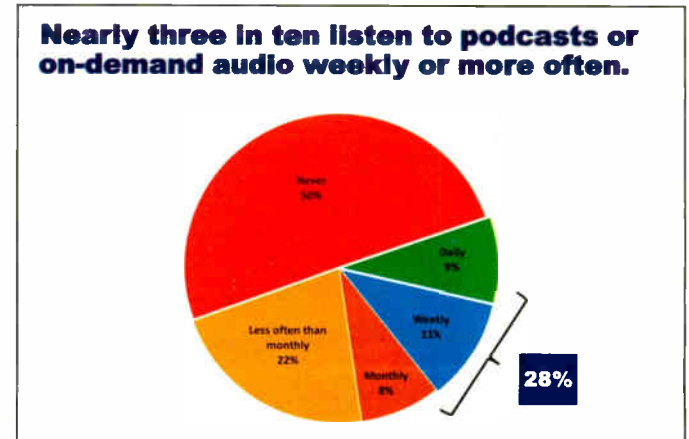
“Virtually everyone has a television, but there are fewer radios at home, particularly among Millennials, where it is down to 7 percent,” notes Jacobs. “And for the first time this year, more people are awakened by ringtones on a mobile phone, about 41 percent, than with a clock radio, at around 21 percent.”

Best “recommendation” scores: Christian, Classic Rock/Hits, Triple A, Mainstream Rock



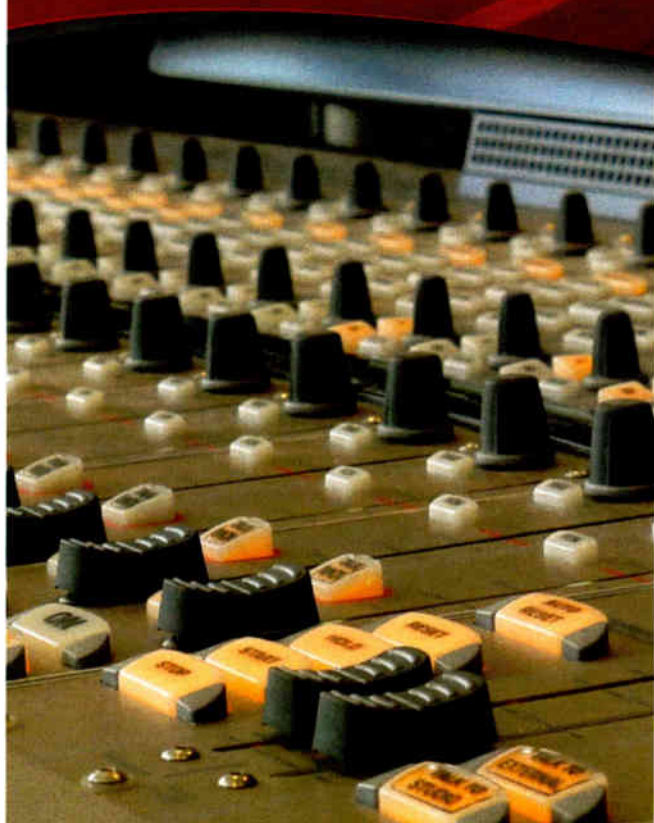
The Christian format is the most recommended by the commercial radio listeners responding to the Techsurvey.

Nearly three in ten listen to podcasts or on-demand audio weekly or more often.



Podcasting is a growth opportunity for radio; 28 percent of respondents listen at least weekly.

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RADIATE

(continued from page 3)

prefer using audio over IP as it gives us the capability of quickly providing service to clients, on-demand, and then connecting to other clients for subsequent reports in a way similar to ISDN dial-up," Shulman said. "That flexibility is now available without any kind of routing hardware that was needed in the past."

Radiate uses generic, wired, internet connectivity to make the link, although it has cellular 4G LTE fallback, just in case, Shulman said.

In addition, a lot of the audio is loaded to FTP sites, which can be accessed by clients with automated operations. Radiate can also package audio into an MP3 file and email it to a client.

Radiate traffic reporters typically use Electro-Voice RE20s, although some clients prefer the sound of their standardized mics, which they will provide, Shulman said. "The mics are then connected into a small USB-capable mixer, which allows a reporter to record and edit on their computer workstation."

Collection of traffic data has been revolutionized, Shulman said, with the famil-

iar "eye in the sky" no longer needed.

"Traffic data reporting today is very technology driven. We rely on data from about a hundred sources, including road sensors, GPS data, traffic cameras and

and Android devices.

"It's all about getting our traffic reports on as many products as possible. That's on-demand, geo-based traffic information as people need. Services like Shout

This is not consolidation. This is growth. GTN wants to be the largest traffic provider in the world.

— Ivan Shulman

official accident and incident reports," Shulman said. "Some of our ops centers have walls of monitors that could rival NASA."

Mobile applications have been a growing focus for Radiate, which announced partnerships in 2015 that it hopes will help drive new traffic audio platforms. The company is joining with the Shout to Me messaging platform to develop crowdsourced geo-audio traffic products. An agreement with Rivet Radio will allow it to deliver on-demand audio traffic reports via the app on iOS

to Me need content and we can provide that. It also provides us with additional commercial inventory," Shulman said.

Radiate also has a strategic partnership with AccuWeather to develop traffic and weather graphics for broadcast media, mostly for the TruTraffic TV platform. Shulman said.

Once the sale to GTN is complete, Shulman said Radiate plans to pursue additional radio stations in the marketplace aggressively.

"In order to grow, we need access to more capital. GTN has always wanted

to enter the U.S. market and this was a chance to move in with a ready-made operation in place that is functioning and profitable," he said. "Radiate will be better funded and an option to Total Traffic Network. We know we won't get the iHeartMedia stations, since they own Total Traffic, but we will be going after all their other affiliates."

Shulman said the breakdown of the revenue in the radio traffic reporting industry, according to their data, has Total Traffic at 70 percent market share, Radiate at approximately 25 percent and another 5 percent coming from independent producers.

"Total Traffic Network does CBS Radio traffic, but the rest of the major groups are split fairly evenly. We have Emmis in some cities, Cox in others and Hubbard in some others. It's really a city-by-city decision by many broadcasters. We want to grab more market share," Shulman said.

Radiate, which has a range of national and regional advertisers, does not have an automated sales process yet, "but programmatic ad inventory will come one day. I'm just not sure when," Shulman said.

NEWSROUNDUP

A roundup of headlines from Radio World's NewsBytes. Sign up at radioworld.com/subscribe under "Subscribe to email newsletters."

NOISE: Will a new FCC effort bring improvement in the spectrum noise situation? Its Technological Advisory Council is asking whether there is an increasing noise problem; the scope and quantitative evidence; and how a noise study should be performed. This is not a broadcast-specific initiative but likely will be of keen interest in radio. The SBE pleaded recently for an interference management plan for the AM band; FM engineers have said noise is a problem there too. Among those calling attention to the initiative is Tom King, president/CEO of equipment manufacturer Kintronic Labs. "I cannot emphasize too strongly the opportunity that this NOI presents to AM, FM and TV broadcasters to submit to the FCC TAC well-documented measurements of noise interference that is adversely impacting the reception of their broadcast services."

NAB HQ: What is now a gritty, vacant street-corner lot will in two years be the site of a new



NAB VIPs and guests pose at the June groundbreaking for the association's new Washington headquarters.

headquarters for the National Association of Broadcasters — perhaps completed in time for the Major League Baseball All-Star Game next door in 2018. NAB broke ground for its HQ in the fast-developing Capitol Riverfront neighborhood of Washington, D.C., not far from the Anacostia River and about 1 mile from the U.S. Capitol, visible from the site.

BROADBAND: Invoking President Kennedy's call for a "New Frontier," FCC Chairman Tom Wheeler called for a new 5G Spectrum Frontier and is putting some action behind the invocation. Wheeler said he would propose new rules to open up "vast amounts" of spectrum for 5G (fifth generation) wireless broadband. A vote would follow in July. (Read the text at radioworld.com/wheeler-5G.)

DRONES: Commercial unmanned aerial system operators will soon be able to take to the air with the FAA's blessing; the administration finalized the first operational rules for routine commercial use of small UAS. Part 107 offers safety regulations for UAS weighing less than 55 pounds that are conducting non-hobbyist operations.

NONCOM DATA: Noncommercial broadcasting entities asked the FCC to reverse a January order that was billed as improving the data collected from broadcasters to help the commission analyze ownership and diversity issues. The FCC wants to improve



Visitors to the headquarters will become familiar with this intersection.

the reliability and comprehensiveness of its media ownership data, including on diversity — including noncommercial station reporting. But America's Public Television Stations, PBS, CPB, and NPR all said the decision to require members of noncommercial radio and TV governing boards to disclose "highly sensitive personal information" is "ill-founded and must be reconsidered."

EAS CHANGES: The nation's largest broadcast association welcomes discussions about improving the Emergency Alert System but it raised cautions regarding notifications of false alerts, cyber security and multilingual EAS. The NAB submitted comments to the FCC. One theme: Don't micromanage local efforts to test and publicize EAS. NAB hailed the initiative but asked the FCC to consider costs and burdens on broadcasters. It supports an idea that stations and other participants be required to demonstrate their security efforts based on best practices or similar means. But the association worries that some aspects may be unduly burdensome. It supports wider dissemination of multilingual EAS alerts but noted that broadcasters still function primarily as passive conduits of alerts from emergency managers; stations should not be required to translate EAS alerts at the station level anytime soon, it argued. Read more at radioworld.com/nab-eas. Separately, most of America's state broadcast associations told the FCC that some of its proposals could "chill full participation" and place unreasonable alerting burdens on SECCs.

SBE BOARD: The Society of Broadcast Engineers recently filled a vacancy on its national board. Carlos Marcelo Sanchez, CPBE, replaces Kim Sacks, CBT, and will serve the remainder of her term, ending Oct. 27. Sanchez is director of broadcast operations and engineering for WFOR/WBFS(TV) in Miami.

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TV Repack Draws Attention of FM Radio

Process raises questions of safety, relocation and operational disruptions

BY RANDY J. STINE

The TV spectrum reallocation in the United States could bring challenges for FM radio stations that share tower space with TV stations being reassigned.

The transition plan will take time to unfold since the Federal Communications Commission has not set any final deadlines for new channel assignments, but observers say now is the time for FM broadcasters collocated with TV to make alternative plans if disruptions do come.

The goal of TV band repacking is to create contiguous blocks of cleared spectrum for wireless use in the upper portion of what is now the television band. Observers say hundreds of TV broadcasters potentially face changing out antennas in order to operate on new channels in a smaller post-auction television band.

Tower modifications or construction could dislocate other tower users, including radio stations with broadcasters' FM antennas and transmission lines affected. Radio broadcasters may have to relocate antennas temporarily for TV tower antenna work or use auxiliary backups.

Industry watchers say once the auction is completed, the release of the FCC's repacking public notice will begin a 39-month post-auction transition period in which those TV stations that must change channels will be required to do so.

Equipment manufacturer GatesAir estimates that there are 1,200 tower sites in the country that accommodate shared TV and FM operations. The company said it calculates the number of FM and translator antennas on those sites at 2,368. Approximately 1,300 of those serve full-power FM radio stations.

REVIEW YOUR CONTRACTS

The impending television channel reassignment may lead to operational disruption, said Todd Schlekeway, executive director of National Association of Tower Erectors.

"In many cases, the tower loading

will change, requiring structural modifications. Meaning larger and stronger components will need to be added to make the tower stronger. There may be some FM stations that will be forced to find other broadcast facilities, if the tower cannot meet the new loading requirements through modifications alone," Schlekeway said.

"I can assure you that tower owners would prefer any rental income to continue, but if the tower cannot pass a structural analysis without removal of equipment, concessions must be considered."

Schlekeway said many tower agreements have provisions that protect the FM station from arbitrary disruptions, so it's important to review a contract for clarifications.

Radio broadcasters faced similar disruptions during the analog-to-digital TV switchover, observers said, which caused sporadic shutdowns of some radio stations that shared tower space with TV. The shutdowns allowed tower crews to work in safe environments.

"The key to minimizing impact to FM broadcasters on any project is planning," Schlekeway said. "Crews working on TV broadcast facilities must be able to access the tower and maintain an RF-safe environment during work on the tower."

That can be accomplished by RF mapping, which can calculate RF power levels in the aperture and throughout the tower when at full and reduced power, he said.

Communications attorney David Oxenford wrote in his blog this spring that he heard substantial discussions about the TV repack at the NAB Show in Las Vegas, and some of it centered on the potential for impact on FM broadcasters.

"If tower crews are climbing around towers to replace TV antennas, and those towers also provide space for FM

antennas, some FM operators may need to reduce power or even cease operations to avoid excess RF exposure to the tower crews," Oxenford wrote. "Radio stations need to be considering these issues now to plan to minimize the disruption that will be caused."

However, if a radio station has its antenna mounted on a tower owned by a TV station, information about plans of the TV station may be difficult to come by, according to Oxenford.

The TV station "may not be able to say much right now, given the quiet period imposed [by the FCC] on any TV station that may be participating in the auction while the auction is ongoing," he wrote in an email to Radio World in May.

Electronics Research Inc., a manufacturer whose products include AM, FM and TV antennas, towers and combiners, is fielding questions from FM broadcasters with TV neighbors, said Bill Harland, VP of marketing.

"We are hearing from clients who are collocated with TV stations that may be repacked or are operating from nearby towers. Most of the questions we get revolve around auxiliary facilities at other locations and the impact of rigging and reinforcement activity on their operations," Harland said.

Martin Stabbert, vice president of engineering at Cumulus Media, said proper advance communication and coordination will be key to limiting disruptions and ensuring the safety of tower climbers. "We would obviously prefer to limit shutdowns to overnight hours, if possible," he said.

Stabbert recommended radio broadcasters check their tower lease agreements for language that protects them from service interruptions.

"I have seen disruption-of-service language in some leases, but that language can vary. One particularly well-written lease I remember actually stipulated a discount or even a rebate to the

tenant if usage of the site was impaired by tower work for more than a certain number of hours per year," Stabbert said. "The tenant installed a timer on the lock-out panel to track the number of hours their system was inhibited. Once the timer reached a certain number of hours, they were 'in the money.'"

PLAN YOUR RESOURCES

The FCC says it will reimburse TV station owners for relocation expenses before or during the two-part spectrum auction process, but no such promise has been made to radio broadcasters affected by the spectrum repack.

However, it is possible that a radio station forced off the air for a time period, or forced to relocate an antenna, may be entitled to recompense, according to John Garziglia, a communications attorney with Womble Carlyle Sandridge & Rice LLP.

"Such a compensation payment would either result from provisions in the radio station's tower lease agreement, or from payments the TV station would offer to the radio station to induce it to move," Garziglia said.

If a radio broadcaster's tower lease gives the radio station an ironclad right to specified space on the tower without disruption, it would be up to the TV station to make the radio station an offer to move in exchange for compensation, he said.

Garziglia warns that once TV repacking begins, available tower crews may be sparse, which will likely mean a bump in the cost of their services. Therefore, obtaining an FCC authorization now to construct and license an auxiliary antenna, if potentially needed, would be prudent.

"Now would be the time to apply for an auxiliary transmitter site or at the very least, an auxiliary antenna at a different height on the same tower far enough away from TV antennas so that work on them does not require the radio station to leave the air," he said.

How does the repack affect you? Email us at radioworld@nbmedia.com.

MORE REPACK READING

Read a more detailed Q&A with attorney John Garziglia about this topic at radioworld.com/irepack4.

Also, Rich Redmond, chief product office of GatesAir, wrote a Radio World commentary in April about "Preparing for TV Repack in the FM Universe." He wrote that taking immediate action and jumpstarting plans "will significantly lessen the impact." Read it at radioworld.com/irepack.

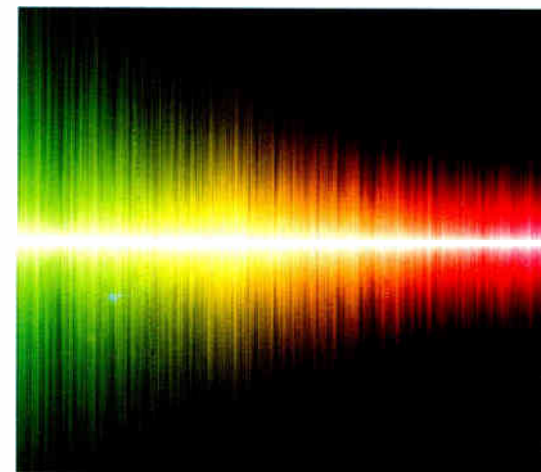
And our sister publication TV Technology looked at implications of the repack on tower workers and safety in a December article at <http://tinyurl.com/tv-repack>.

The incentive auction is a means of repurposing spectrum by encouraging licensees to relinquish spectrum usage rights in exchange for a share of proceeds from an auction of new licenses to use the space. Read an overview at an FCC resource page: www.fcc.gov/about-fcc/fcc-initiatives/incentive-auctions.

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The Mystery Tool Everyone Identified

Also, your old transmitter might not be a lost cause after all

WORKBENCH

by John Bisset

Read more Workbench articles online at radioworld.com

Well, there's no fooling Workbench readers!

The mystery tool pictured in the June 8 column was identified almost simultaneously by three readers. Congratulations to Mark Peterson, an engineer with WCTS(AM), in Plymouth, Minn.; Tom Holmes, market chief engineer for Cumulus Media's Columbia/Jefferson city cluster in Missouri; and Wayne Smith, director of engineering for Cox Media Group in Tulsa, Okla.

Yes, Fig. 1 is a handy device that Tom Van Gorkom of Radio Esperanza put together, under the direction of veteran Consulting Engineer Jack Sellmeyer. The handle screws into the bottom of an AM field intensity meter. It allows you to carry the meter upside down easily, and by swinging it from side to side, you can "see" the meter peak as you pass over a buried ground radial. Remember, there is current flowing in these radials.

This little trick works well, though I never thought of a handle. I just bent over and held the meter close to the ground, watching the needle to indicate as you pass over a radial. Jack's device saves your back, especially if you are identifying a lot of radials, as at multi-



Fig. 1: Made inexpensively out of PVC pipe, this tool facilitates checking buried copper radials.

tower directional AM arrays.

The buried ground system is so important in AM systems: and the field meter is a great way to see if any radials are cut or missing.

Michael Patton, principal with Michael Patton & Associates, has some great news for owners of the Harris SX-1, -2.5 or -5 kW transmitter.



Fig. 2: The MP&A SX Retrofit Display Card solves many of the metering problems of the SX transmitter.

Although a popular transmitter in the 1980s, its Achilles heel was the premature failure of the digital alphanumeric LED displays used for diagnostics. The problem presents itself as missing LED segments, so one wonders if the reading is a 0, an 8 or some other number — frustrating when you are trying to troubleshoot the transmitter. Replacement display chips are essen-

tially unobtainable.

To make matters worse, there are no pilot lights. These displays are the only window into the inside workings of the transmitter. If the display isn't working, you can't get a clear picture of the transmitter's operation, much less repair it.

Given the large number of SX transmitters sold by Harris, Patton and his staff embarked on an aggressive retrofit project.

The MP&A SX Retrofit Display is a color LCD board using a modern micro-controller. The retrofit board not only eliminates the problems of the original LED board, it brings enhanced functionality and reliability. Burn-in on the LCD display is eliminated, with the display automatically turning off after several minutes. The Retrofit board monitors two parameters, and either can be changed to monitor something else. The new display also lists the selected channel name in plain text, so there's no need to cross-reference codes from the table in the manual. In addition, the retrofit board displays the selected channel's name in plain text, along with the normal reading for that channel.

Installation is simple: the retrofit board mounts onto the old display's mounting studs, plugging into the board's ribbon cable. The old keyboard can be reused, or if you need a replacement, MP&A has those too.

The MP&A SX Retrofit Display board is now shipping. Get more information by emailing mike@michaelpatton.com or call (225) 752-4189.

Brian Urban is a coordinator with the Television Studio Lab at Austin Community College. A while back, we mentioned putting white dots on USB connectors to ensure proper alignment, especially among non-technical folks who may unwittingly force the plug into the jack.

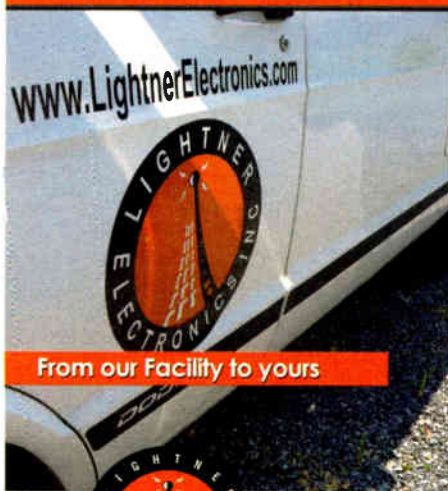
Should the connector be mounted upside down, an easier identifier is to mark both the equipment and the USB plug. This ensures proper plug alignment, regardless of the socket orientation.

Brian says this is not really a new idea: camera lenses have been marked this way for years.

You probably have plenty of good ideas of your own. Contribute to Workbench! You'll help fellow engineers and qualify for SBE recertification credit. Send tips to johnpbisset@gmail.com. Fax to (603) 472-4944.

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

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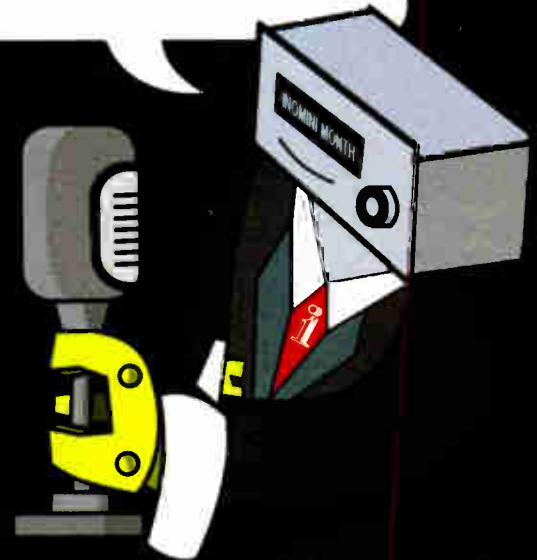
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FM/HD Confidence Monitor

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Take Pride in Your Workmanship

I advocate for a facility maintained and updated to the standards on which it was built

TECHTIPS

BY MARK PERSONS

Back in the 1960s, when I started working in broadcast engineering, a fair amount of attention was paid to the "quality" of work at radio stations.

Quality work was usually done by a full-time engineer at "his" radio station, before the era of the contract engineer. Wires were laced together into bundles. That was before cable ties. Documentation showed where every wire went.

Not all stations were like that. Neatness demonstrated pride, or lack of it, on the part of the person doing the work.

Today I see a mix of bad and good.

NOT JUST SLOPPY

On the bad side, I often find low-voltage wires and cables tied to electrical cables and electrical conduits. The National Electrical Code prohibits low-voltage wires from using power cables



Fig. 1: Thumbs down on illegal wiring.

or conduits for support.

The thumbs-down example in Fig. 1 shows a 120 VAC electrical cord mixed with low-voltage wiring on an electrical conduit. That is a double no-no! Always keep low-voltage wiring separate from

other wiring. A short could develop between cables, putting dangerous 120 VAC on low-voltage wires. The short could come from a lightning strike or accidental abuse.

The National Electrical Code also says you *will not* lay cable on a suspended ceiling. Firemen need to be able to "blow out" ceiling panels with water to get at a fire above. Cables resting on ceiling tiles may prevent that. You could be involved in a lawsuit.

On the good side, I see computer and audio cables run in an organized fashion with nice, rounded 90-degree corners and no odd-angle shortcuts in most new installations.

I preach and personally like to see a facility maintained and updated to the standards on which it was built.

Minnesota and a few other states require licensing of low-voltage technicians, which includes broadcast engineers. I became a Power Limited Technician and my company was an official electrical contractor. That happened after Minnesota state law was changed to require it; see an article I wrote for Radio World on April 11, 2001 (www.mwpersons.com/articles/3-12-01-licensing.html).

Licensing of that kind is likely coming to a state near you. I mention this because anyone with an electrical license is expected to know and comply with wiring codes. There isn't much room for sloppy work when an electrical inspector visits for another reason and then inspects low voltage cables too.

LABEL IT

Try to identify everything (Fig. 2). My labels include strips from a Brother brand label maker, writing on Pan-Ty Marker Ties from Panduit, and just plain writing on cables with a liquid pen. Most pens work fine, but their



Fig. 2: Use a good marking pen to label everything.

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Fig. 3: Plastic boxes from electrical tape make excellent hardware holders.

markings fade with time. Pilot brand SCA-UF Ultra Fine Point Pen markings last many years. Cut cable ties off flush so they don't scratch or break your skin when working around them in the future.

Take pride in what you do.

One of the things my clients noticed and complimented me on is how clean I left a site. Yes, a broom and dust pan were part of the tool set in my service van. Work was always done on a "time and material" basis, so the client wound up paying for the cleaning, whether he knew it or not.

It is difficult to keep a transmitter site clean if mice get in. Some engineers set traps or ingenious high-frequency sound devices in an attempt to drive mice away. The best answer is a bit more difficult. It involves keeping mice out so they can't get in to mess things up.

I encountered this many times and often used 1/4-inch hardware cloth screen to block openings. Also, space between a door and door threshold can be large enough for mice to enter. The goal is to keep the mice out so they don't get in and chew wires, then stink up the place after they die!

If you pull a tube out of a transmitter, mark the anode with its condition, such as "makes 90 percent power." Even if you are the only one servicing a transmitter site, these reminders make life a lot easier at 3 a.m. Do *not* mark on a tube ceramic insulator with a pencil or any other writing instrument. Pencil lead is conductive and can cause an arc-over when the tube is installed.

GROUND-UP

Whenever I built a new station (12 total over the years), I always started with the grounding. Yes, it wasn't as glamorous to onlookers, but it was the "ground up" approach. I've seen installations where grounding was left to the end and then not done at all. Suddenly, lightning took out major components. You don't want egg on your face if someone points that out after a disaster.

File all equipment manuals alphabetically by manufacturer. Keep the manuals in the same building as the

equipment. It doesn't make any sense to have documentation at a studio when you are 10 miles away at a transmitter trying to repair something in the middle of the night. Remote control manuals should have penciled-in programming notations so they can be changed to suit a new situation. Again, the books need to be where the equipment is.

Make a punch list of hardware and other items that you need to pick up for your next visit. That might be caulking to keep water out, paper towels, light bulbs or more rack screws so they are on hand when you need them. When you

"kluge" in a temporary part to get a station back on the air, put it on your work bucket list to bring an exact, or very close, replacement so you can make the equipment 100 percent right next time.

Use small, low, flat containers (Fig. 3), such as from electrical tape, to organize hardware so it doesn't get lost while it is removed temporarily from equipment. This procedure will save a lot of time and trouble when you reassemble it.

Safety first. When workers will be on an AM tower, turn off the transmitter and short the tower to ground. The one in Fig. 4 has #6 copper stranded wire

and label so not to be accidentally discarded. A battery jumper cable will do just as well. This is especially important if the tower is a part of an AM directional antenna when other towers in the array are still hot with RF.

Think ahead and do a good clean job. You can then point back and say it was another installation to be proud of. That is one of the things I like about engineering: Anyone can see the result. Even non-engineering types will notice shoddy work ... and may think less of you for it.

(continued on page 18)

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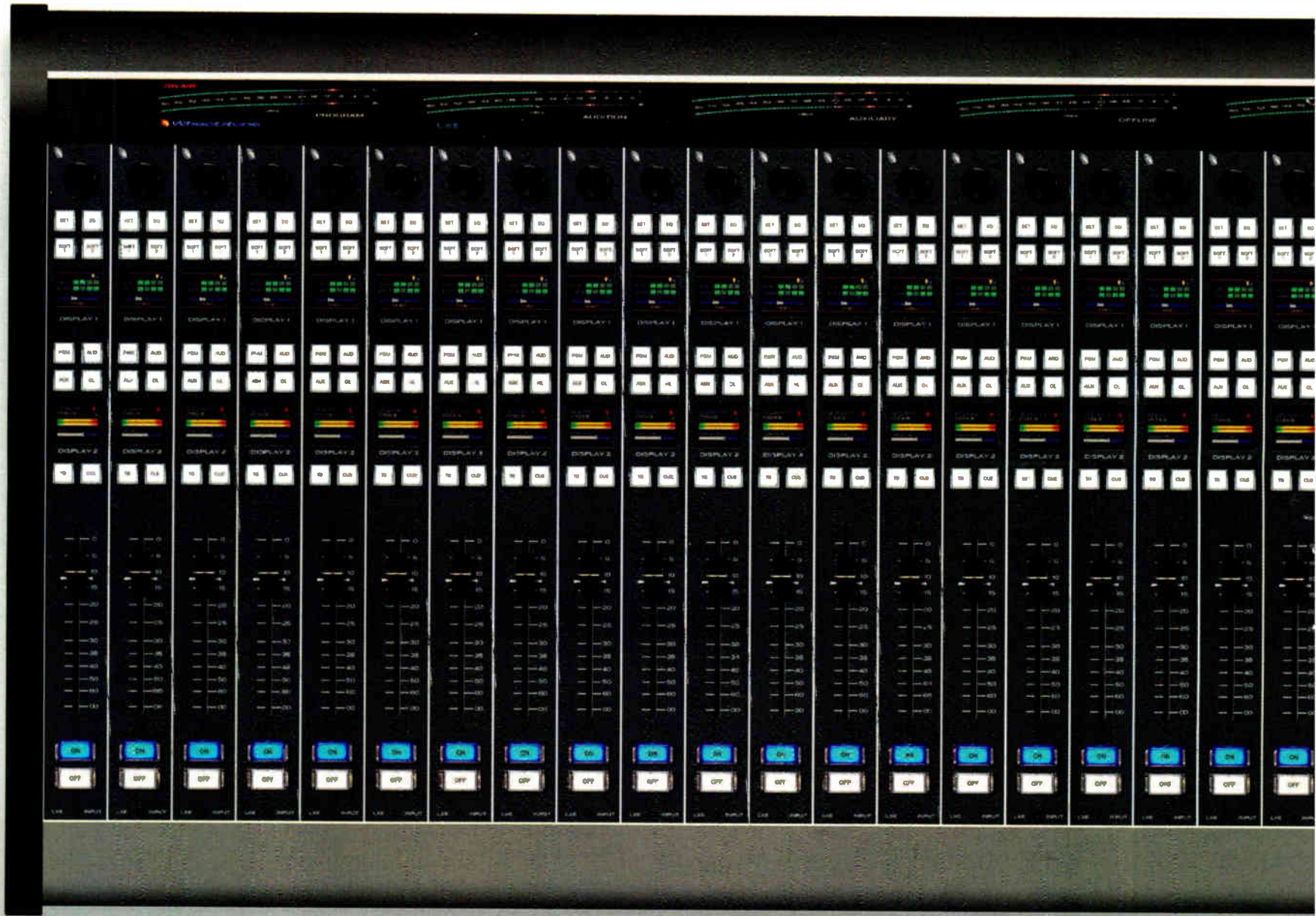
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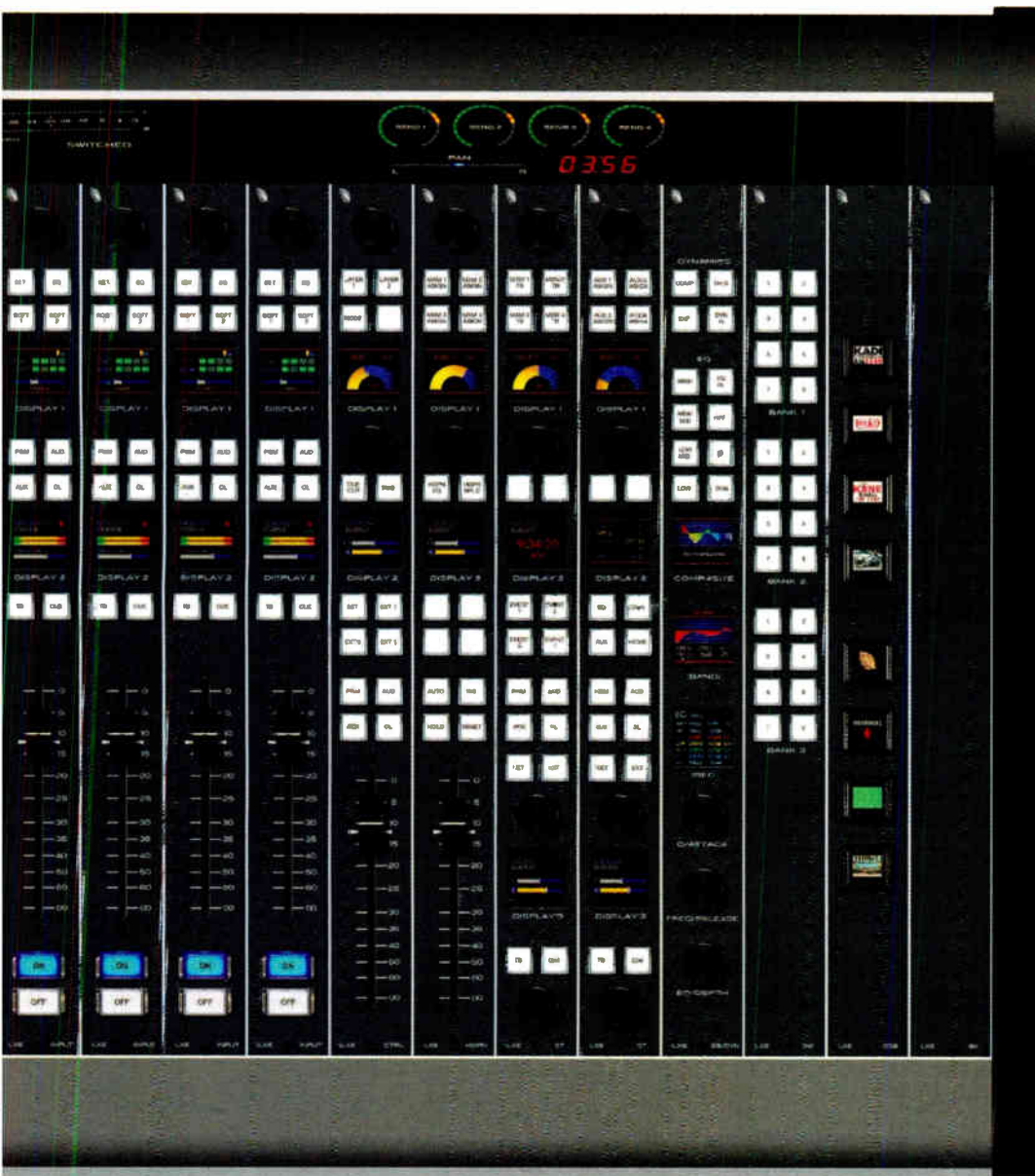
The Evolution of LX Radio Control Console

Wheatstone's new LXE console brings control surface configuration to a new level. Going far beyond the usual "any source to any fader" network concept, the LXE is a fully flexible control interface, where every switch and rotary control is programmable to perform any desired function. This means console architecture is completely customizable to client requirements, and limitations to functionality are no longer a factor. Physically compact, the LXE is available in several different form factors including countertop, countertop sunken, and split frames (split sections are not confined to one room, they can actually be in different studios).

Any Way You Want It

ConsoleBuilder software allows every switch on the surface to be programmed for function, mode, and even color (switches are RGB led illuminated). In fact, built-in software allows every button to be scriptable, letting you create powerful macros for as many controls as you want. Multiple full color OLED displays on each panel keep pace with ongoing operations, and event recall allows painless one touch console reconfiguration at the press of a button. With its inherent control flexibility and ability to access thousands of signals (sources and destinations are limited only by the size of the network) the LXE takes facility work flows and audio control to a new level.





The World At Your (Motorized) Fingertips

The LXE can have up to 32 physical motorized faders, with full DSP processing available on all 32 channels. Surface(s) interface seamlessly into the WheatNet-IP Intelligent Network, and utilize BLADE-3s for audio control and associated logic data flowing on single CAT6 interconnecting cables. The system can ingest and convert virtually all audio formats: analog, microphone, AES/EBU, SPDIF, AoIP, MADI, SDI and even AES67. Loudness metering, phase control, and full EQ/Dynamics are included.

All New Graphical User Interface

LXE's new GUI has pre-built screens for everything you normally use— metering, clocks, timers, dynamics, EQ, assigns, and more. All are touch-screen accessible with gestures you're used to using on your smart devices. And, the GUI is just as customizable as the LXE surface. Using our ScreenBuilder-LXE software, you simply drag and drop objects and define their functions via a simple wizard interface. You can store multiple custom screens, if you like, to go with your custom LXE setups.

THE ALL NEW LXE BROADCAST AUDIO CONSOLE

TOGINET

(continued from page 1)

built all the components. He's the one who showed us how to record really good sound via the internet and play it back in podcast form."

Another team member is California-based Sandra Beck, who not only hosts four different one-hour weekly shows, but also created software that helps TogiNet's other clients use social media to build larger audiences. While most talk podcasters start out with an idea of what they want to talk about and then look for an audience, Beck does the opposite.

"I decide on the desired demographics first and then make a list of the content those people care about. After surveying people in social media to find out their preferences, I build my shows around what they want to hear," said Beck. "The least important variable in my formula is me. I don't care about the number of 'friends' I have on Facebook because for my listeners, 'liking' and 'friending' are a colossal waste of time. That's for the 20-somethings with a lot of time on their hands."

When TogiNet talk hosts use Beck's audience-building expertise, she asks them two fundamental questions.

"I want to know who cares about your topic and what they want," she said. "If you don't ask those questions, you are not ready to do a show for an audience."

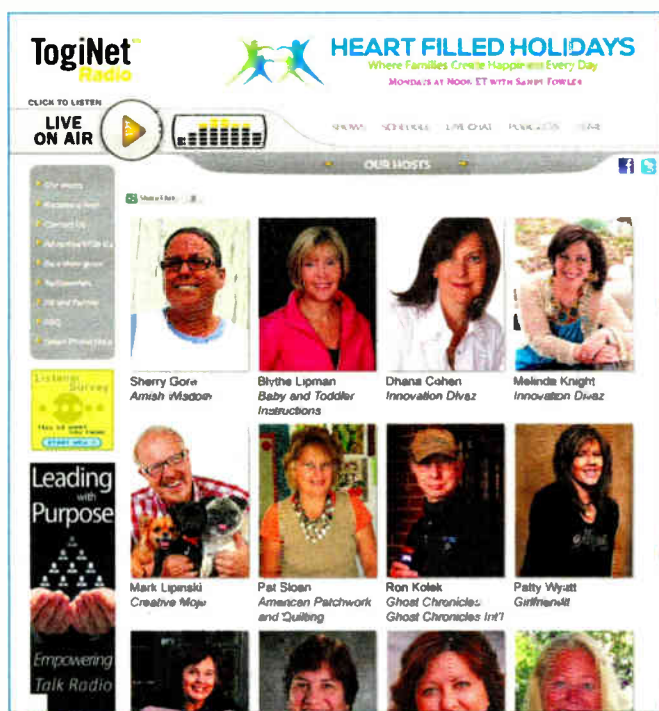
As rapper Puff Daddy put it in 1997, "It's all about the Benjamins." And that applies to podcasters and terrestrial broadcasters alike: More listeners lead to more advertisers.

TogiNet Radio marketing is up front about this. Its website tells potential hosts that the platform can deliver "more leads, more sales, more referrals, more opportunities, more money... We offer more than just airtime. We offer professionally produced, content-specific, streaming audio and 24-7 downloadable shows backed by the consumer confidence of an internationally ranked internet radio station. You own the content that reaches your audience. You sell your products and services and you establish yourself as the thought leader and expert in your field."

After working for Disney and CBS Beck knows how to create what she calls an "advertising delivery system," and she does it with each of her personally hosted shows. Her target audiences get what they expect and want. Then



President/Operations Erik B. Anderson



Just a few of the hosts, as shown on the TogiNet website.

Beck uses three metrics to provide her advertisers with solid statistics on her listenership: Podtrac, TogiNet Specific and Google Analytics.

THE HOSTS WITH THE MOST

The current crop of TogiNet show hosts primarily is based in the United States, but some hail from Canada, Australia and other countries. Listenership is likewise global.

"I'm going for world domination," said Frazier with a smile. "We just launched our first Latino show with host Jacky Lopez and it is all in Spanish."

Some talk shows are recorded in TogiNet's studios in Texas where the facilities allow for up to seven hosts and five incoming Skype calls at once. Hosts pay a fee to own a time slot for a live, one-hour weekly broadcast, and TogiNet will shortly thereafter convert it to a downloadable podcast as part of the basic service. Each host also gets his or her own Web page and an audio player.

However there are two additional

levels of client service, each involving more assistance with marketing and promotion. The highest level involves the personal internet brand strategy developed by Sandra Beck, and can help hosts reach up to 500,000 listeners with their live shows and podcasts.

"The internet doesn't require people to have hundreds of thousands of dollars to start a show. They don't have to get involved with the terrestrial radio system, working their way up from a disc jockey," said Frazier. "They just have to have a passion for a particular subject and desire to talk about it. Listeners today don't need more information; they need to find what they're looking for as quickly as possible. So terrestrial radio has its niche, but it's all changing. What we are doing here is the future of communication."

WHAT IT COSTS

And exactly how low is the barrier to entry into the field of podcasting for TogiNet client/hosts? The basic package

THE ONLY SIX REASONS TO HAVE AN INTERNET SHOW

Sandra Beck says these are the only six reasons to have an internet show.

- To establish yourself as a professional
- To generate business leads
- To increase networking opportunities
- To create a revenue stream selling products and services
- To feel powerful and important
- To advocate your ideas or those of others

"If you don't fall into those categories then you're not monetizing it and you're just a hobbyist," according to Beck, who has logged more than 600,000 listeners for a single show.

is \$4,800 for 26 weeks for a one-hour podcast, slightly less if the entire fee is paid up-front. There is an additional discount for the second year.

Beck, like many hosts, works via the internet from a small room in her home. Her gear includes a factory-refurbished Mac (\$300), a Blue Yeti USB microphone (\$100), a Knox pop filter (\$19) and a pair of Skull Candy headphones from T. J. Maxx (\$14). Add in some off-the-shelf software like Skype (free), Audacity (free) and SAM Broadcaster PRO (\$300 or less), and a would-be

(continued on page 20)

PRIDE

(continued from page 15)

Fellow Radio World contributor Charles "Buc" Fitch says, "A professional does his best work all the time, even if no one is watching, if no one really cares, and even if he really doesn't want to do it."

Making the station the first priority, instead of myself, got the job done right. This attitude kept me employed as a contractor for 35 years. It makes perfect sense.

Mark Persons, W0MH, is a Certified Professional Broadcast Engineer and has more than 40 years' experience. He has written numerous articles for industry publications over the years. His website is www.mwpersons.com.

Photo by Mark Persons



Fig. 4: Cable with alligator clips for shorting an AM tower to ground.

A yard sale may not be the best way to liquidate radio collections.



Photo by James O'Neal

“I Have This Old Radio ...”

How to dispose of those unwanted “radioiana,” equipment and artifacts

BY JAMES E. O'NEAL

A while ago, Radio World Editor in Chief Paul McLane forwarded me a letter of a type that he frequently gets. It asked for help in disposing of a collection of old radios, radio parts and radio-related

memorabilia that were part of a parent's estate.

I've been a lifelong collector of radio/television artifacts (which range from vacuum tubes to microphones, receivers and even one broadcast transmitter), so Paul asked me to try to help the person. Radio World continues to receive such inquiries. Perhaps you're looking to dispose of such items yourself or, more likely, someone has asked you for your own advice. Paul asked me to update my response for publication.

The first question I have regards cataloging or inventorying of the collection. Has this been done? Having a complete and accurate listing of what you want to dispose of is important. Regardless of whether it's radios, vacuum tubes, microphones or whatever, you will need a comprehensive list of what exists — make and model or type, where known. A serious collector will not typically respond to an ad listing an “old radio or TV.”

Other necessary information concerns the physical size (volume and number of pieces) of the collection. Is it all out on display, or mostly packed away in boxes? Would it fill a minivan, or would it require a 18-wheeler tractor-trailer to accommodate it all?

In our internet age, the first thought of many people in your situation is to start listing pieces on eBay, Craigslist or maybe even in the classified section of a local newspaper or similar publication. However, this is not really a good idea if you don't have some idea of what the pieces are worth. You stand to (1) lose money by setting too low an asking price, or (2) discourage potential buyers by setting the price artificially high.

(continued on page 20)

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COLLECTIBLES

(continued from page 19)

There is a fine line here and it would behoove you to find someone you can trust to appraise items properly.

I need to offer an additional strong warning before you start any form of advertising. There are many opportunists and predatory persons who exist only to take advantage of individuals in your situation.

There are numerous stories in the world of collectibles about such persons and their scams. One involved a pair of "collectors" who worked as a team to take advantage of a collector's family members. One "collector" would respond to the ad offering equipment for sale and set up an appointment for viewing the items. The other party would then schedule an appointment that overlapped with that of the first "collector." A reasonable price would be established for a particular piece or pieces by the first team member and then the other person (who pretended not to know the first) would interrupt by stating that the price for the piece was unreasonably high and then offer to sell the first "collector" a similar or identical piece from his own collection at a much lower price. Human nature being what it is, the family member would usually drop her price to match or better that being offered by the "shill."

In other cases, the "collectors" would pay separate visits to view the collection and convince the owner that the items were of little value, causing the family member in desperation to sell for any price offered.

I don't mean to frighten you, but I hate to see anyone get hurt. The individuals who I mentioned managed to con a number of people into selling some priceless gear at junkyard prices.

I also advise against giving anything to anyone for sale on a consignment basis, unless you know them to be honest. I know of several people who have been burned by consignment sellers that reported much lower sale prices than actually received, thus depriving the owners of substantial amounts of money.

GET EXPERT HELP

With these warnings in mind, what should you do?

My first suggestion is to contact a

local radio collectors' group for assistance in assessing the value of the collection. Collecting and restoring old radios and similar gear has become popular during the past several decades, and a number of clubs and associations exist in many states.

There is at least one publication that deals exclusively with radio-related collectibles — *Antique Radio Classified* — and offers a comprehensive listing of such collector's organizations on its website: antiqueradio.com/clublist.html. This would be a good starting point for anyone seeking assistance in placing a value on a collection and/or disposing of a collection at realistic prices.

There are a number of museums in the United States devoted to radio and television history. Personnel at these establishments should be able to help establish the value of antique gear.

Many of these are chartered as non-profit/tax-exempt organizations and accept donations in the same manner as charitable groups. Depending upon one's tax bracket and the value of the donation, gifting your collection to such an institution may be of some value in reducing your income taxes if you don't wish to sell the collection outright. An internet search may turn up one or more in your area.

Also, the National Capital Radio & Television Museum, located in Maryland, does provide a fairly complete list of similar museums, as well as collectors' clubs and related groups on its website, with links to each of these.

You will find this listing at <http://ncrtv.org/links/historical-electronics>.

If you want to dispose of a really large collection (I'm thinking of hundreds of pieces — a barn, several rooms or considerable commercial storage space filled with old radios/TVs), you might want to consider enlisting the help of a professional auction company. If you elect to go this route, make sure that the company has experience in liquidating radio/TV collectibles, otherwise you're back to square one in terms of establishing fair values for such items. Radio/TV collector groups and museums may be of assistance in directing you to a qualified auction company.

TAKE YOUR TIME

I leave you with a few "don'ts":

- Don't be in too great a hurry to dispose of the collection. Get several appraisals or at least several opinions from knowledgeable persons as to the fair value of the equipment.
- By the same token, don't list items for online auction unless you have a good idea of their value.
- Don't get suckered into selling at unrealistically low prices. ("I'll give you a hundred bucks for the whole lot!")
- Don't automatically assume that just because it's old that it's valuable. Drive through most any neighborhood on trash collection day and you're likely

to see 1970s/'80s TV sets piled on the curb with the CRT computer displays.

- Last, don't discard anything that could be of value to a collector or museum. There are way too many horror stories of one-of-a-kind or otherwise priceless relics winding up in landfills when they should have gone to the Smithsonian or a similar institution.

James O'Neal is a regular contributor who frequently writes about radio history. Share your own tips. Email radioworld@nbmedia.com with "Old Gear" in the subject line.

TOGINET

(continued from page 19)

podcaster is in business.

TogiNet, with four full-time and four part-time employees, has annual billings under \$500,000. For those who are curious, the word "Togi" in Japanese means "the master who sharpens the samurai sword."

Visit toginet.com and sandrabeck.com to learn more. A 60-second video illustrating TogiNet's operation is available on YouTube; search for "TogiNet 2.0."

Ken Deusch is a former terrestrial radio talk host who in 1973 interviewed Moe Howard of the Three Stooges. He says his life has been downhill ever since.

WHO'S BUYING WHAT

ALLEN & HEATH dLIVE INSTALLED AT RTV

Dutch regional broadcaster RTV Drenthe has radio and TV channels, as well as mobile apps and a popular website. Due to expansion of its multimedia channels, the company recently moved to larger premises to house growing TV, radio and online news portals. As part of the project, it required a new audio console to manage live music, preproduction and multitracking.

RTV appointed consulting pro audio and broadcast specialists, D.I.A. Sound Light & Visual in Assen, Netherlands, to manage the audio refurbishment. Allen & Heath's dLive digital mixing system was selected.

Jan Giezen from D.I.A. said, "RTV needed a console which could work as a standalone pro mixing system, and also satisfy the requirements of a professional engineer as well as someone with no audio mixing knowledge."

The station's dLive system comprises the mid-sized S5000 control surface and DM48 MixRack. The manufacturer describes dLive is a next-generation digital mixing system with a flexible distributed system design, a powerful FPGA 96 kHz/96-bit processing core, a comprehensive array of expansion, control and networking options, and the Harmony user interface with gesture control.

The processing brain is housed in the MixRack, avail-



able in three sizes, the DM32, DM48 and DM64, along with three accompanying control surfaces. Alternative mixing control is provided via MixPad and OneMix apps, Editor on/offline software, TCP/IP control for third-party integration, and network-enabled IP fader and rotary remote controllers.

Albert Slotboom, technical coordinator at RTV Drenthe, commented on the system's tools for live and broadcast work. "Not only will it be possible to manage the system remotely on a tablet using the Editor control software but non-technical users can navigate the system, making it a very versatile mixer for a busy and dynamic newsroom."

For information, contact Allen & Heath/American Music & Sound at (800) 431-2609 or visit www.americandmusicandsound.com or www.allen-heath.com.

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IP at Center of Rogers Console Decision

Wheatstone LX consoles and WheatNet-IP network technology serve Kitchener facility

USERREPORT

BY MIKE McCABE
Engineering Manager
Rogers Broadcasting
CHYM(FM), CIKZ(FM), CKGL(AM)

KITCHENER, ONT. — Choosing a mixing console is one of the more important decisions in a new studio buildout, and that was certainly the case for our new studio in Kitchener, Ont., which went live on Friday, June 3.

It had been a while since we had actually made that decision — at least five years, as we were still using analog Ward-Beck Renaissance R2K audio consoles. A lot had changed since then. Not only was our talent much more savvy about computerized systems, but networking ranked at the top of the list for console considerations.

We were still concerned with how well the console would hold up over time because we do keep our consoles for a good many years, as previously noted. But cabling and other networking details were top of the list, especially because we planned to network eventually into Rogers Communications' main studios

in Toronto, and our AM is a full-service news/talk station with lots of collaborative activity taking place by a larger staff from 5 a.m. to 7 p.m. every day.



The "news wheel" and its Wheatstone L-12 consoles.

We needed our new consoles to be collaborative and flexible in order to service our two FMs, AC 96.7 and Country 106.7, and busy AM, 570News.

After reviewing many options and models, we decided on Wheatstone's LX-24 control surface console for the three main control rooms, and two Wheatstone L-12s for the main news control studio. We liked the consoles and

the networking system that came with, the WheatNet-IP audio network, which made it easy to cross-connect the consoles for shared control, resources and overall collaboration between talent.

The two L-12s are tied together, angled side by side in what we call the news wheel control studios, where

we have a staff of at least six doing news, sports — both local and major league — and talk. The L-12 is a simple console with lots of features, including bus-minus serviceable faders and event presets just to name a few. When one of our talents is on the air, the other is going through scripts and collecting the next broadcast.

At the top of the hour, both are on

the air. Off of the news wheel room we have separate news workstations that use a virtual console we set-up using Wheatstone's Screen Builder program with the PC-XY routing application and turret hardware control modules. Screen Builder proved to be a good option for us because we can program that surface any way we like using drag-and-drop menus for controlling mic presets, for example. Five primary faders are used for mic, local computer, telephone and PC-XY 1 and 2, which can be any available source in WheatNet. The turret hardware is used to control microphone, talkback, source monitoring and live-to-air for the two FMs and one AM station with the push of a button.

Consoles in the facility are able to share all of the same resources and presets, which make them highly collaborative. We can tie the three main control rooms together or switch on or off any of the three.

The flexibility is unbelievable. Being able to connect something is no longer a cable from point A to point B. It's the spin of the dial, the view of an LCD display.

Thanks to G.S. Broadcast Technical Services for help with the design, programming and implementation of the Wheatstone product and studio build.

For more information, contact Jay Tyler at Wheatstone in North Carolina at (252) 638-7000 or visit www.wheatstone.com.

TECHUPDATES

SIERRA AUTOMATED SYSTEMS RELEASES ISL CONSOLE

New for 2016, Sierra Automated Systems released the SAS iSL console featuring enhanced metering, Dante AoIP with AES67 interoperability and a premium Carbon Blue finish.



New SAS LED meters add a phase function and offer a setting for loudness measurement conforming to the BS1770 standard. The company says the iSL console, paired with the SAS RIO Bravo Engine, provides a complete audio system for any modern studio.

Automation computers can connect via AoIP using Dante Virtual Soundcard drivers. SAS has added AES67-capability to all of its Dante-enabled products, including the RIO Bravo DSP Engine, the SAS 32KD Digital Audio Network and the AVT THip Pro broadcast telephone system. This allows seamless communication with other AoIP-enabled products conforming to the AES67 standard for interoperability.

For information, contact Sierra Automated Systems in California at (818) 840-6749 or visit www.sasaudio.com.

LAWO GOES VIRTUAL WITH RELAY

Relay from Lawo is a virtual radio mixer software that the company says is designed to make maximum use of the power of today's powerful laptop and desktop PCs.

Mixing is done natively on a standard Windows laptop or PC. An intuitive multi-touch interface gives talent a familiar way to mix audio; behind the scenes, apps available from Relay partners supply virtualized codecs, phone hybrids, audio processors, crosspoint routers, streaming encoders and other broadcast tools that run in software, interfacing with the mixer via standard WDM or ASIO interfaces.

A slim, 1 RU audio interface from Lawo named the OnAir 4 provides analog, digital and AES67 Ravenna I/O. Each OnAir 4 hosts four mic/line analog inputs with switchable phantom power, four headphone outputs with automatically-generated mix-minus, four stereo line outputs, an AES3 digital I/O, five GPI/GPO closures and a Gigabit AES67 port. Power can be taken from the included power supply or from a PoE-enabled Ethernet connection.

At the NAB Show, the company introduced a hardware/software bundle it calls "Radio in the Bag," which demonstrates how replacing hardware boxes with software applications can reduce costs, complexity and bulk of building a complete radio studio. At its heart is Lawo's Relay VRX⁸ software mixing console, which, the company says, not only performs the functions of a radio mixer but also hosts optional software apps that perform broadcast functions such as phone interfaces, remote codecs, program processing and stream encoding. It said broadcasters have expressed great interest in using "The Bag" for temporary studios, disaster recovery and other remote applications.

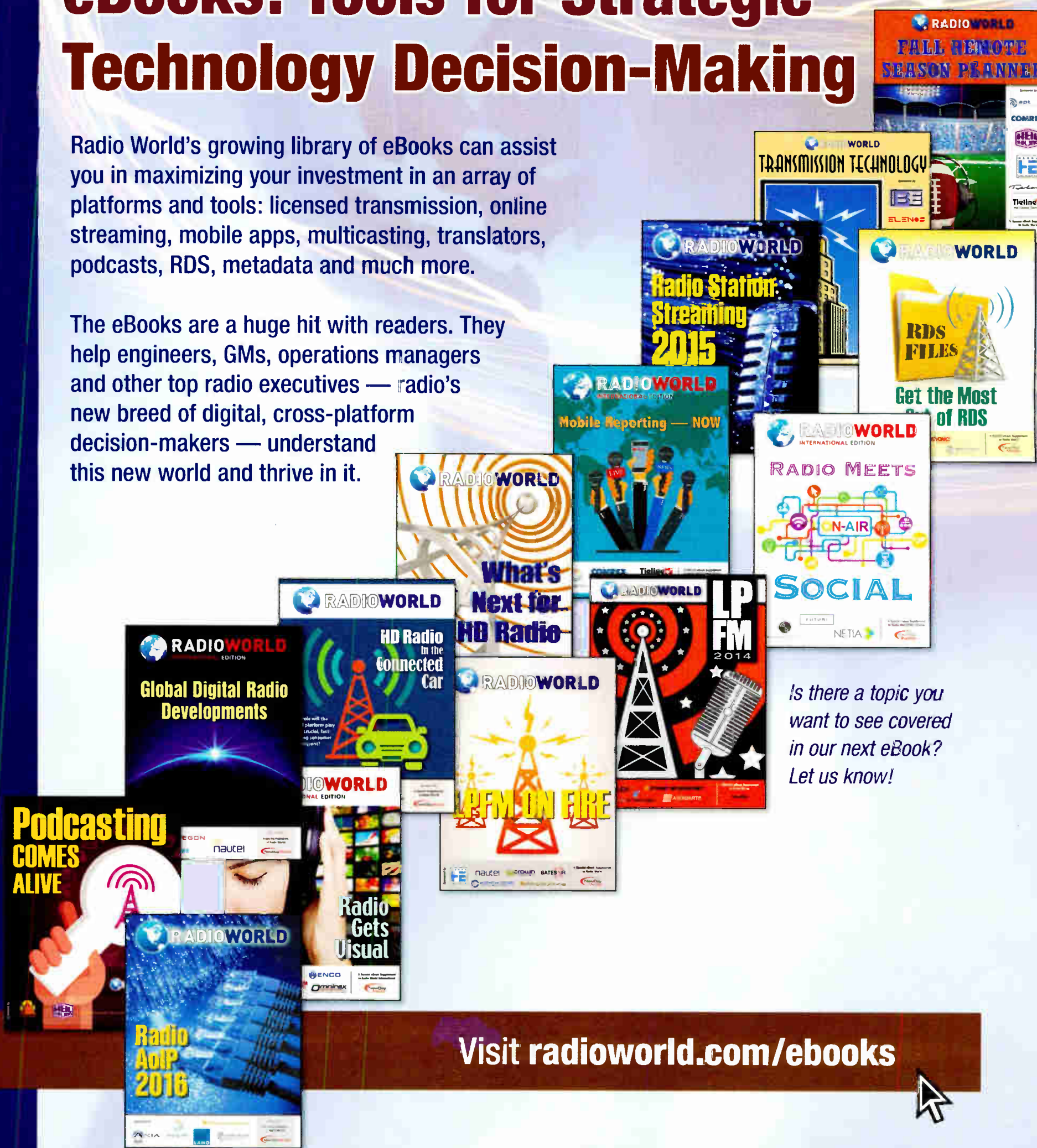
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Cherry Creek Radio Upgrades With Oasis

Seven consoles will drive a new facility for the small group owner

USERREPORT

BY JARED DICKERT
Chief Engineer
Cherry Creek Radio

GREAT FALLS, MONT. — Local radio is a lifeline for central Montana citizens who typically drive considerable distances to reach the nearest town. Along with country music, light rock and top 40 programming, our Montana radio stations air local and national news, conduct call-in shows and morning drive contests, and alert listeners to severe weather events and public safety emergencies.

Great Falls is a farming community two hours north of Butte. Cherry Creek Radio's listeners count on us for local "ag" market reports, and local businesses advertise to gain the visibility they need to compete. That's what small-market radio is all about. However, it's challenging to keep up with the technological advances that larger-market stations can afford more easily. When upgrading equipment, we consider many factors, including space efficiency, user-friendliness, scalability, ease of operation, and most of all, cost.

NEW CONSOLES

With most of our audio consoles reaching end of life, we decided to enter the digital age by buying seven new GatesAir Oasis digital 12-channel on-air and production audio consoles. The first console was purchased two years ago for our "hot country" music



The author with the KMON GatesAir Oasis console.

station, KMON(FM), which is branded Max Country. Very shortly, all seven consoles will be operating from the brand-new facility that we'll be moving to across town, powering five on-air studios, one production and studio and one newsroom.

The Oasis' compact footprint was essential to maximizing our on-air studios, which double as additional production and office space for our six DJs. We chose the Oasis because the console is ergonomic, feature-rich and easy for our DJs to learn, thanks to a design in which operational controls are laid out similarly to those on analog consoles. In addition it offers dual meters that are big, bright and easy to read.

Since the faders control every input, they're used all the time to bring in a variety of audio sources, including Shure SM7B and Heil Sound PR40 multipurpose dynamic microphones, Symetrix voice processors for the

hosts, and audio from our Broadcast Electronics AudioVault asset management and playlist automation system. ABC News feeds also input to the console, along with a DSTB that lets us broadcast the audio portion of certain TV news shows.

Our consoles have a dedicated output to our Telos hybrids, which enables us to do mix-minus functions. The mix-minus is its own dedicated output that removes the caller audio or input audio from the phone line interface. This mix-minus output, which is assigned to a specific fader, goes out to the caller so they aren't hearing themselves in a feedback loop. The mix-minus fader is programmable via the USB connection.

The Program 2 output on the console feeds our production studio, and the cue output is strictly for monitoring with headphones. We also use the console's two external inputs to provide off-air monitoring of our AM and FM signals

using tuners.

One particularly useful feature is the USB input to the board that allows us to bring in high-quality audio streaming in real-time from a desktop computer, as well as output audio from the console to our production computer. While the USB I/O consumes one of the 12 inputs, without it, we'd need to buy an external D/A converter. This saves us a considerable amount of money. When we do broadcast "remotes," we transport our live signal via internet, or via Marti RPU transmitters. This incoming live signal is routed to the console by our Ramko 16 x 16 routing switcher.

The dedicated production studio, which is a scaled-down version of the on-air studios, connects a CD player, phone and microphone to our Oasis, as well access to the AudioVault system.

In the future, we plan to connect our seven Oasis consoles together digitally as our budget allows, using GatesAir's Flexiva VistaMax networking system. This will provide the signal routing and control backbone we need to run and expand more efficiently, and to share our audio and production resources around the new facility on the fly.

KMON's console has been on the air and running reliably since installation. This high level of reliability is advantageous since people count on us to deliver valuable, local weather and public safety advisories, especially when severe Montana blizzards and windstorms impact our region. And Oasis is helping us lay the groundwork for future expansion into internet broadcasting and other new digital directions, while staying current at a price and pace that's right for us.

For more information, contact Keith Adams at GatesAir in Ohio at (513) 459-3447, or visit www.gatesair.com.

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Salem All-In With Axia in D.C.

New facility built around Livewire AoIP products



BY SCOTT FOSTER
Vice President,
Corporate Engineering
Salem Media Group

WASHINGTON — The Salem Media Group has been dabbling in the world of AoIP for a while. We started out replacing a studio here or there with Axia Audio Livewire products. We then moved to doing individual new studio build-outs with Axia. Most recently, we went all-in with Axia for our Washington facility.

We took this gradual approach to ensure the system could do what we needed, to test user experiences and to evaluate fully the costs involved.

Our D.C. facility uses Axia RAQ and iQ control surfaces, QOR32 engines, StudioEngine DSP mixing engines, xNodes along with AudioScience Livewire-compatible soundcards, 25-Seven delays, Telos ProFiler software, a Telos VX broadcast phone system and Z/IP One IP codecs.

All of these products use the Axia Livewire AoIP protocol, so we didn't do any integration using AES67 protocol. When I said we went all-in, I meant that this plant had no backup hardwired audio switchers and only had five punch blocks in the entire facility. To give you some perspective, Axia is running four terrestrial stations, one XM satellite radio channel, one nationally syndicated talk show and a news bureau that feeds about 2,000 affiliates.

The IP address structure was laid out ahead of time so when the gear was unpacked and racked, addresses were already assigned. The xNode interfaces went in easily using the Power over Ethernet feature, which allowed us to

cut down the number of outlets needed in racks and furniture. Surfaces were connected to engines and powered up.

One issue we did have was the length of the CAN bus cable. The longest offered is 40 feet, but our editor desk was going to be about 55 feet from the engine. As there is some wizardry going on with the connectors, we just spliced a chunk in the middle and everything has worked fine so far.

CONFIGURATION

All the devices have a web interface, so once the gear is up on the Axia Livewire network, it is configured easily from a computer sitting on the same network. In some of our other facilities we have Axia Element control surfaces as well as iQs. The configuration pages are not the same and don't fall in the same order between these two surfaces. This takes some thought when you are switching quickly from one unit to the next. In our D.C. plant, all the configuration pages for the surfaces worked the same. Once we learned the process, it was just a matter of getting the sources entered and destinations assigned.

In our talk studios, we like to set up the talkback so that the board operator can talk directly to the host without the guests hearing. Some of our hosts can operate their own board; the board operator controls the levels on others. The combination of these two things, plus headphones and remote mic control, runs us right up against the limits of network sources in the iQ surface.

The iQ can be configured to be the destination for eight network sources at any given time, and give eight sources to the network. It can also be configured to

be the destination for 12 sources on the surface and provide four sources to the network. To get around this limitation, we have started putting in StudioEngines to take advantage of the unlimited VMix function. This allows us to use the headphone feeds on the network and the microphone feeds on the network and mix them down to one network source. So instead of chewing up two or three sources on the iQ, we shove this off to the StudioEngine and only use up

one source. We're also looking forward to trying the xNode's new Matrix Mixer functionality, which mixes both physical and network inputs.

All in all we are very happy with the product. The tech support is top-notch and Axia goes way above what they have to do to make you happy. I don't think we would have been able to go from furniture delivery to working facilities in under 30 days without the help of Axia and Livewire.

For information, contact Cam Eicher at Axia Audio in Ohio at (216) 241-725 or visit www.telosalliance.com.



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Rádio upgrades facilities
on Mato Grosso

USERREPORT

BY LUIS ANTONIO BOTELHO DA CRUZ
Technical Manager
Televisao Centro America

CUIABÁ, BRAZIL — In November 2014, Rede Centro America Rádio (the Central America Radio Network) inaugurated its first Estúdio Glass or "glass studio concept" in the state of Mato Grosso. In this new concept of space, we seek to incorporate a higher level of technology and innovation.

To fulfill our objective, we acquired an AEQ Grand Forum digital console for our Estúdio Glass at Rádio Centro America FM Easy/99.1 MHz in Cuiabá, along with an AEQ Forum digital console for the studio network operations at the same station. To fill in other pieces of the network, we added three AEQ NetBox 32D AoIP network nodes and AEQ Phoenix Mercury IP audio codecs.

The new AEQ Forum IP is an evolution of the AEQ Forum. Added features and options make the Forum IP a cutting-edge console with almost infinite possibilities. Its redesigned control surface includes new softer switches, additional programmable keys and improved access of controls for the monitoring section. AEQ Forum IP can be equipped with AoIP input/output cards of up to 64 input and output channels, compatible with the new AES67 standard through Audinate's



Dante technology. Using this optional connectivity, it can receive and provide signals from/to other consoles, routers and other input/output terminal equipment.

With the infusion of equipment from AEQ we have improved our



networking capabilities and can now accommodate analog, AES3 and AoIP signals. The overall result is a better product for our audience in terms of audio quality.

With AEQ Phoenix Mercury audio codecs we have interconnected the signals of the affiliate stations located in Cuiabá, the capital of the state along with other affiliates: Rádio Centro America Hits FM/99.9 MHz in Araguaia; 103.1 MHz in Caceres; 101.5 MHz in Rondonópolis; and 98.3 MHz in Sorriso. Since the acquisition both equipment and the technical support provided by AEQ has proven reliable. This motivated us to acquire a third AEQ Forum digital console to be incorporated in the second Estúdio Glass, this one at Radio Centro America Rondonópolis-MT.

For information, contact Peter Howarth at AEQ Broadcast International in Florida at (800) 728-0536 or visit www.aeqbroadcast.com.

TECHUPDATES



LOGITEK ARTISAN CONSOLE MIGRATES TO HIGH-DENSITY I/O PLATFORM

Logitek Electronic Systems' Artisan audio console has migrated to the ultrahigh-density JetStream Plus IP-networked platform.

JetStream Plus provides the Artisan with a 240-channel Dense Node architecture for maximum functionality, supplying HD/SDI, analog, digital and mic inputs along with analog and digital outputs in four rack units.

The JetStream Plus router offers high-density I/O that is configurable by the user to tailor audio and networking requirements with a minimum of components and with minimal rack space. It can manage multiple Logitek digital consoles and is networkable, allowing connections to other Logitek JetStream Mini or JetStream Plus units in the facility. Direct network transfer of audio from hard-disk playout systems is available via the built-in JetNet network conduit. In addition, Logitek JetStream products offer Axia Livewire connectivity and interoperability with automation systems, edit systems and many video routers.

Logitek says that Artisan is its most full-featured console and is ideal for advanced production mixing as well as small to medium TV markets. This modular control surface is configurable from two to 32 faders and provides with two master mixes, eight stereo submixes, four stereo aux mixes, 24 mix-minus outputs and three monitor outputs. All channels can be 5.1, mono or stereo.

For information, contact Logitek in Texas at (713) 664-4470 or visit www.logitekaudio.com.

D&R'S AIRENCE DROPS IN

The Airence is D&R's digitally-controlled analog broadcast mixing console, with a drop-in design for mounting in studio furniture.

The main unit offers six faders, four mic inputs, six line inputs, two telephone hybrid modules and four USB inputs for playout systems.

A built-in control section, based on the USB HID protocol, lets users control/start music and jingles in their playout software.

The Airence is compatible with various brands of playout software and is programmable for learning keyboard shortcuts of unfamiliar brands of playout software. Broadcast features include fader-start, program/sub busses and a bidirectional cue system.

A built-in "Nonstop" switch lets users use the mixer for preproduction while a USB output of the playout system is connected to the main program output.

The hardware metering inside the console is visible on a TFT screen, including a software-based clock app.

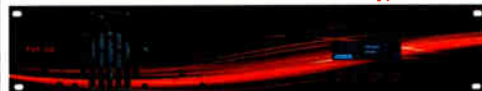
For information, contact D&R in the Netherlands at 011-31-294-418-014 or visit www.d-r.nl.



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GLENSOUND LAUNCHES NETWORKABLE AUDIO MIXER FOR ANNOUNCERS

British broadcast equipment designer and manufacturer Glensound has launched a new announcer system for studio-based announcers or for two-presenter talk studio situations.

The Express ip is a compact desktop unit with identical controls for two users. They can connect headphones using 1/4-inch jack sockets, and dynamic or phantom microphones via three-pin XLRs. Each user has a mic on/off or cough button along with two talkback buttons.



The talkback buttons mute the on-air mic and route the mic to the corresponding talkback output. In an off-TV sports position this could be to talk to an engineer or program co-ordinator. In a news talk studio, this could simply be back to an engineer or phone system operator in the control room.

Each user has four inputs for external sources to create their own headphone mix, plus their own voice (sidetone). This could be the master program output, or a stadium atmosphere mic when used for off-TV sports, or the incoming phone callers, and an engineer when used in a news talk booth, for example.

The audio link is via a Cat-5 cable to the network. This single Cat-5 connection can also power the Express ip via PoE. External DC is also available.

The audio input/output interface is the 1U 19-inch AoIP44. This also has a single Cat-5 connection to the network, with four analog inputs and four analog outputs on XLR. The network audio system is Dante, and the audio routing is controlled via the free Dante Controller software. The Express ip and the AoIP44 can also be connected directly if required.

For information, contact Glensound in England at 011-44-1622-753662 or visit www.glensound.co.uk.

DHD UNVEILS NEW GEN OF DSP CORES

DHD's new dual-core processors, 52/XD2, 52/XC2 and 52/XS2 for the Series 52 mixers and routers, promise faster logic computing and improved high-resolution TFT graphics, says the firm.

Equipped with a built-in Dante interface providing four input channels and four output channels, the 52/XC2 and 52/XS2 DSP units are designed to easily manage AoIP tasks.



The 52/XS2 DSP core is the "budget" solution for smaller broadcast applications such as community radios, small commercial stations or editing booths. According to DHD, users can build mixers with four to 16 faders featuring advanced functions such as Automix and loudness metering.

The 52/XC2 DSP core is suited for larger, public or commercial stations as well as in television studios, explains DHD. With the core's power-saving design and compact size (one rack unit) it can also be implemented in OB vans. The 52/XC2 lets operators control desks with up to 44 faders.

Finally, the 52/XD2 DSP core for use in larger mixing consoles with up to 64 channels offers multiple redundancy options.

DHD's new DSP cores natively incorporate the Ember+ control protocol. Ember+ supports fader values, logic status and routing to be set and monitored from third-party hardware and software via Ethernet. In addition, Dante interfaces with up to 64 inputs and outputs each are available for all DSP cores as an option.

For information, contact DHD in Germany at +49-341-589702-0 or visit www.dhd-audio.de.

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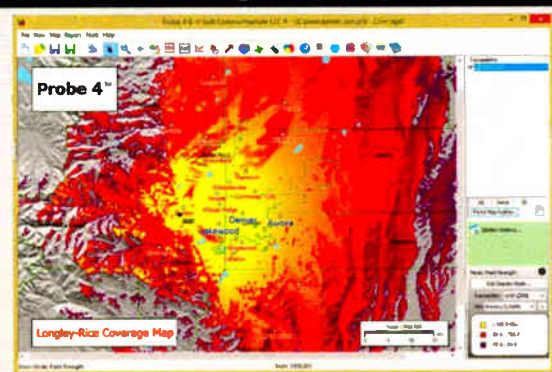


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Model 6710/6715 coaxial load resistor, \$2500 706-499-2922.

SC48 Marti STL Antenna, \$600.00, and an XLink STL Frequency Agile Receiver, \$750.00, new, both in original boxes, left over from relocation project, buyer pays ship cost from Show Low, AZ. Bob Zellmer, 970-302-0161.

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WYBG 1050, Messina, NY, now off the air is selling everything: 8-chnl consoles w/mics & access; transmitter reader meter; EBS receiver, 250' tower w/building on 4 acres, collection of very old 78's, 12' satellite dish on concrete base and (3) commercial production aid library music, sound effects and copy, complete radio advertising training course w/book, cassettes and CDs, all at great prices. 315-287-1753 or 315-528-6040.

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READER'S FORUM

DISTANT LISTENING

Regarding "Opinion on AM Revitalization: From Hard Facts to Whimsical Fantasy," RW online:

Stations' primary obligation is to the community of license. Signal "splashover" coverage in other regions that depend on skywave and atmospheric conditions should not be the barometer that could prevent other local stations from serving their markets.

The commission hopefully is aware that there is a promo running nationally on iHeart stations soliciting the public to write to the commission and cry crocodile tears over what would happen to poor little iHeart if the commission were to rule in favor of the mom-and-pop or smaller stations who are trying their best to serve their local communities.

It turns my stomach to see iHeart use its clout to convince the listeners to do its dirty work for them ... and this even on the heels of their documented and questionable activities in bullying their way into commission offices *ex parte* to have private meetings on the subject. FCC action on revitalization can become the great equalizer for the little broadcaster who serves his community of license as best he can and awaits the help of the commission to see that fairness prevails.

Regarding AM receivers in cars, a little anecdote of historical interest:

Many of the engineering community were aghast last year at the announcement by BMW that it

was dropping AM on certain receivers because of ignition noise. Are we really to believe that this is the reason when Ford Motor Company solved this issue from its notoriously noisy engines way back in the mid-'50s?

The discussion on AM revitalization truly is pretty simple. The high-power clear-channel stations were designed to serve wide areas, rural areas, with a vital communication link at a time when AM radio was "king" and there were no viable alternatives to newspapers, telegrams and the U.S. Mail. Those days are long over.

I question the validity of any methodology utilized by iHeart and others to measure the somewhat unreliable skywave audience, especially in the middle of the night, in order to claim loss of income to them.

They seem to detrimentally rely on coverage outside of the station's license area. This is a splashover benefit they are not actually entitled to. Note that they apparently seem to shoot themselves in the foot with this argument, relying on imagined loss of signal during drive time; and even if they did, drive-time content is particularly applicable and peculiar to only the local market where the station is officially licensed anyway!

Also, the deregulated marketplace has created a lack of independent voices on the public airwaves. This consolidation has proved

to be a financial disaster for those like iHeart and Cumulus, negatively impacting their ability to serve the public's "interest, convenience and necessity."



iStockphoto/Katsapura

It seems as if clear-channel stations such as KFI no longer cater to remote listeners and make no revenue beyond their ADI. So why would they care if their 1930s coverage area was diminished? Let us not forget that the big guys are entitled to stream their content or utilize the availability of FM translators to fill in signal gaps, just like other broadcasters.

I would like to offer a good antidote for all this nonsense: I anticipate a void in comments from the mom and pops because they are all too busy to write comments as they struggle to run their operations. But wouldn't it be sweet for the commission to have comments from every Class B station that could provide local groundwave service if not for the present requirements for protecting Class A stations at night saying that they would like to be able to invest in making the necessary changes to meet new FCC rules for doing that. You know they would!

Independent local voices are far more important than a distant signal in this digital age.

Don Elliot
Los Angeles

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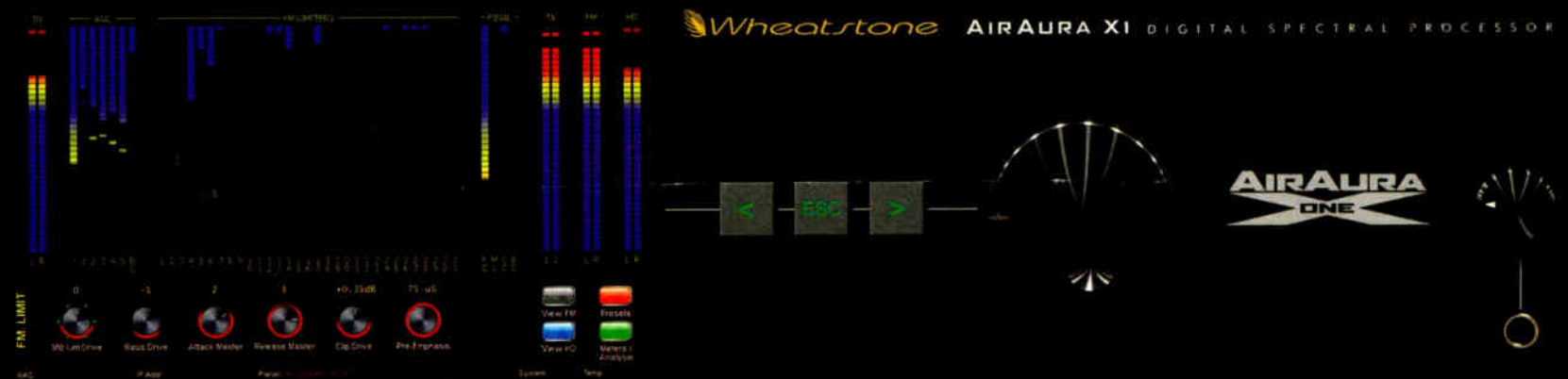
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