



RADIO**WORLD**

HD Radio in the Connected Car

What role will the digital platform play in this crucial, fast-evolving consumer environment?



Sponsored by



January 2016

A Special Supplement
to Radio World





HD Radio[®] Ahead

Digital AM & FM

Nearly **35%** of new vehicles sold will ship with HD Radio technology



On the road to HD Radio broadcasting? Nautel has you **COVERED.**

Maybe you're turning on an HD station for the first time. Or possibly you're increasing the power of your existing digital signal or adding multiplexed channels. Or maybe you just want to know that the investment you're making today can get you to digital someday or even 10 years from now. Nautel has you covered thanks to field proven, high performance HD Radio solutions you can trust. All by a company with a 4 year warranty that has never discontinued support on any product ever. Learn more at Nautel.com/HDradio

Nautel HD-Radio Innovation:

- Invented the **1st** high-power solid-state HD Radio transmitter. Nautel's successful NV Series.
- **1st** with even more HD power thanks to Nautel's patented hybrid peak/crest reduction. We call it HD PowerBoost™
- **1st** to deliver asymmetrical HD sidebands.
- **1st** to deliver MER HD Radio instrumentation.
- **1st** to address HD Radio feed requirements with HD Reliable Transport.
- **1st** to deliver highest hybrid IBOC efficiency with the new HD Spectrum/Efficiency Optimizer

nautel.com

Making Digital Broadcasting Work.



HD Radio is a trademark of iBiquity Digital Corp. All rights reserved.

- 4 Dashboard Remains Focus for HD Radio**
Jury says DTS acquisition will help create a better experience for the consumer in the car
- 9 HD Radio Is a Data Delivery Service**
Sam Matheny sees the platform as well suited to the connected car
- 11 In This New World, Radio Is "Just an App"**
Glynn Walden says HD Radio is poised to help
- 14 Solve Problems for Clients Through Integration**
Erica Farber says experiment and don't be afraid to fail
- 16 Broadcasters Need To Step on the Field**
Scott Burnell of Ford sits at the center of connected dashboard developments
- 18 Focus on the Things You Control**
Roger Lancot encourages stations to ask themselves good questions
- 20 Consortium Sees Open Lanes for 2016**
BTC's revenue from HD Radio data services has now surpassed its analog data revenue
- 24 The Modern Audience Expects Metadata**
Steve Johnston weighs the online, on-air audience experience
- 26 Pandora Seeks to Engage Audiences**
Geoff Snyder provides insights into the company's dashboard strategy
- 28 Think Like a Consumer, Not a Broadcaster**
Mark Ramsey says effective presence is about consumer demand
- 29 The Circle of Life, Radio Style**
Pondering reports on the demise of terrestrial radio and other interesting tidbits

Cover Art:
iStockphoto.com/stellalevi
iStockphoto.com/MrPlumo

HD Radio in the Connected Car



Paul McLane
Editor in Chief

If the connected car is becoming essentially a "smartphone on wheels," radio's presence in both is a matter of critical concern. What role should HD Radio play in this future?

Nearly a third of all audio listening occurs in-car, according to Edison Research data cited in a recent Westwood One report "The State of American In-Car Audio." AM/FM radio still represents 7 out of 10 minutes of daily listening. This dominance surely will continue under assault, so what role should HD Radio play in the industry's response?

"Most auto manufacturers believe HD Radio is a conduit to a better consumer infotainment experience." That statement was made more than two years ago by Jacobs Media, Strategy Analytics and what was then Arbitron. And since that time, the connected dashboard has become, if anything, both more sophisticated and more daunting to consumers. What

does all this mean for HD Radio?

For this eBook, we approached leading observers to ask their opinions. The list of respondents is an impressive one and includes a range of organizational perspectives such as broadcast, automotive and competitive.

Also, with the recent acquisition of iBiquity by DTS, we wanted to hear from Jeff Jury, who was named recently to succeed Bob Struble

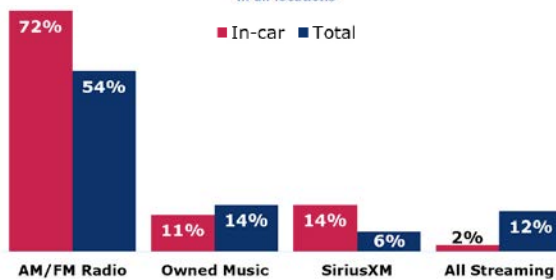
as head of HD Radio. What does new ownership mean from a strategic perspective for HD Radio and its automotive presence?

The Broadcasters Traffic Consortium is a nationwide network that distributes location-based data including local traffic, weather and fuel prices to navigation devices and automobile in-dash systems. HD Radio is part of its infrastructure; how are those two platforms working together after several years? What do the radio companies on BTC want or hope from their HD Radio relationship?

And we conclude the eBook with an essay from our own longtime contributor and industry thinker Michael LeClair.

In the car, AM/FM is the king of the road

Share of audio time spent in-car versus total share of audio time spent in all locations



Source: Edison Research, "Share of Ear," Q3 2015, 18+.

AM/FM remains dominant in the car, as shown in a slide from a Westwood One presentation "The State of American In-Car Audio," but that position will continue to be challenged. What role should HD Radio play as radio seeks to protect this advantage?

Dashboard Remains Focus for HD Radio

Jury says DTS acquisition will help create a better experience for the consumer in the car

By Randy J. Stine

As more smart products move into automobile infotainment systems, the new owner of the HD Radio brand says it is prepared to compete in the space against all comers.

Consumer demand for technology is pushing the in-dash revolution, according to technology trend watchers. Center stack dashboards are being loaded with

All 36 automotive brands available in this country, including more than 200 vehicle models, offer HD Radio, according to DTS.

In 2014, iBiquity's technology was built into about a third of cars sold in the U.S. DTS now becomes the exclusive developer and licensor of HD Radio technology.

DTS, which has experience in the mobile, motion picture, headphone and home theater fields, is attempting to expand the company's reach in the

auto market and auto infotainment integration. Its DTS Play-Fi app allows users to play audio on wireless speakers using in-home Wi-Fi. HD Radio becomes a "brand" of DTS, company officials say.

The acquisition presents some overlap opportunities for DTS, which is a company whose marketing emphasizes a commitment to improved audio quality.

The purchase is drawing the attention of radio broadcasters eager to see how HD Radio's role in the dash will develop further. Longtime media researcher Fred Jacobs said the acquisition of iBiquity "creates game-changing

conditions" and said this year should be "fascinating to watch" as DTS integrates iBiquity.

DTS executives say the acquisition shows their confidence in radio and its investment potential.

"IT'S ALL GOING IN"

Jeff Jury, former COO of iBiquity, is now DTS general manager for automotive and HD Radio. He says the new oversized touch screen infotainment centers in today's



Jeff Jury, at center with NAB's John David during the CES show, has taken leadership of the HD Radio brand under new owner DTS.

additional audio, smartphone, navigation and safety functions along with options like Apple CarPlay and Android Auto.

In addition, more cars are offering built-in 4G connectivity, which opens a range of streaming features.

DTS Inc., which acquired HD Radio developer iBiquity Digital Corp. in October 2015, says it's confident its HD Radio product will remain an integral component of center console infotainment systems.

connected cars are growing more crowded.

"It's all going in (the dash). The streaming services are in there now. It's inevitable. But there is no reason to believe radio won't be a part of these systems going forward and maintain a prominent place," Jury said.

"What we need to do is make sure the feature set for over-the-air is compelling for car companies. They know there is still a massive amount of radio listening in car. They just want the best technology for their customers going forward."

Jury said there will be a few new opportunities for the HD Radio brand under the DTS banner — including the use of DTS Neural Surround, an in-car surround sound system that was demoed at the Consumer Electronics Show in Las Vegas in January — though he didn't describe a big splashy debut of new HD Radio technologies in the near term.

"We think DTS has the technologies that can come together to improve what HD Radio offers, including datacasting and navigation, to create an overall better experience for the consumer in the car," Jury said.

DTS will continue to look for ways radio broadcasters can monetize HD Radio, he said, by focusing on further developing the current capabilities of HD Radio.

"We are really focused on commercializing the capabilities we have out there today. We are focused on making sure over-the-air radio maintains a prominent place. We are confident traffic services and multicasting opportunities will allow broadcasters to earn additional revenue from the digital platform."

The Artist Experience, which allows HD Radio stations to display art and station logos matching the audio content on the unit's display, continues to show growth, Jury said. In mid-2015, iBiquity reported there were 1,150 HD Radio programs being broadcast with Artist Experience support.



Jury leads a meeting at CES.

"The big screens in today's vehicles make [Artist Experience] even more compelling. Song, artist and title and station graphics continue to be popular with consumers," he said.

Broadcast traffic services, like the Broadcast Traffic Consortium, a partnership of 20 radio companies, and Total Traffic from iHeartMedia, remain critical in-dash navigation components, Jury said.

"Traffic services are becoming more prominent in Honda, Toyota and Mazda models. It's a great success story.

CONTINUED ON PAGE 8 »

Veteran Presence

Jeff Jury, former COO of iBiquity, transitions to his new role at DTS as general manager for automotive and HD Radio. His office is in Columbia, Md., where iBiquity had been headquartered. He reports to Geir Skaaden, DTS senior VP for corporate business development.

Prior to joining iBiquity in 1997, Jury was vice president for digital broadcasting and director of

strategic development for Westinghouse Wireless Solutions Company. Before Westinghouse, he was with Touche Ross & Co., and involved in operational improvement planning.

Jury, 54, earned a BS degree in information systems and industrial management from Carnegie Mellon University and an MBA from the Darden School of Business at the University of Virginia.

Jury is married with three children. He resides with his family in Ellicott City, Md.

nautel GVSeries - THE Choice for HD Radio®



Nautel's GV Series is the culmination of years of Nautel digital/analog transmission innovation.

Nautel's field-proven, high-power FM architecture is mated with advanced RF technologies, the award-winning AUI and a new Spectrum/Efficiency

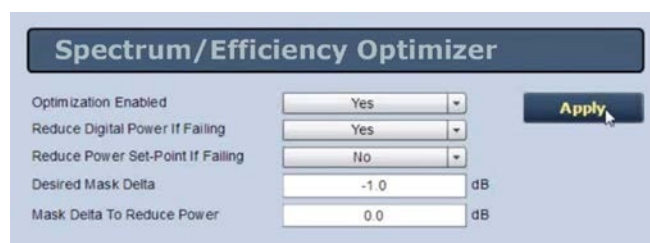
Optimizer to set a new standard for digital performance, efficiency, serviceability and unmatched functionality.

Highest Hybrid IBOC Efficiency

With the GV Series Nautel has charted new ground for digital transmission efficiency. Traditionally, digital hybrid modes have displayed much lower efficiency compared to analog-only broadcasting. The GV addresses the need for analog/digital hybrid efficiency as well.

HD Spectrum/Efficiency Optimizer

The Spectrum/Efficiency Optimizer dynamically optimizes digital transmission parameters to achieve optimum spectral performance and efficiency. Digital efficiencies have improved by up to 15%. High digital efficiency can result in tens of thousands of dollars savings over the life of your transmitter.



70%
at -20 dB

60%
at -14 dB

55%
at -10 dB

MER HD Radio Instrumentation



Nautel's award-winning AUI enables real-time measurement of MER including the ability to diagnose issues such as interference with the MP3 carriers near the analog signal due to FM analog signal over-modulation. Measurements follow the new NRSC standards and require no external equipment.

Learn more at nautel.com/MER

Try Nautel's Exclusive NPR HD Radio Calculator



Calculate a proposed IBOC power increase using Nautel's exclusive Asymmetrical IBOC Sideband Elevated Power Calculator from NPR Labs®.

Try the NPR HD Radio Calculator at rftoolkit.net

HD PowerBoost™ GEN4

Nautel's award-winning HD PowerBoost GEN4 is a revolutionary technology that increases HD Radio power output while increasing efficiency, and addresses the FCC HD injection level increase ruling. It uses an intelligent peak to average power ratio (PAPR) technique to squeeze more hybrid power from any given transmitter and increase hybrid-mode efficiency.

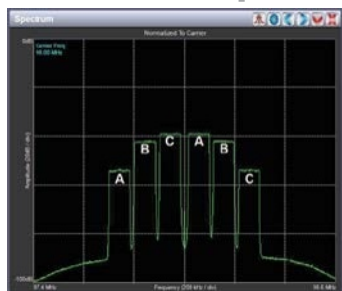
Learn more at nautel.com/HDPowerboost

More IBOC Power at Any Nameplate Level

Nautel's GV Series offers more IBOC power than any other transmitters available today. In a single cabinet, Nautel GV transmitters can provide up to 36 kW of analog power with a -14 dB injection level and up to 26 kW with -10 dB injection. In fact they can even make their nameplate power at -16 dB. (e.g. a GV30 can make a full 30 kW of analog power with digital carriers at -16 dB).

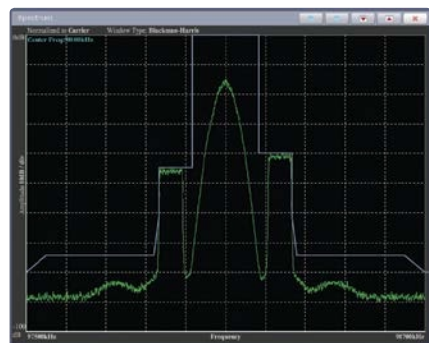
Pushing HD Radio Transmission Boundaries

HD Multiplex



This new experimental technology is a spectrally efficient and energy efficient means to implement all-digital radio utilizing a multiplexed implementation of iBiquity's Gen4 HD

Radio™ transmission technology. It enables the placement of up to 15 audio streams or stations within 600 kHz of signal bandwidth or up to 9 audio streams in 400 kHz of signal bandwidth. [Learn more at nautel.com/HDMultiplex](http://nautel.com/HDMultiplex)



Asymmetrical Sidebands

If interference issues prevent the use of increased IBOC injection levels on both sidebands, broadcasters can use Nautel's award-winning asymmetrical HD Radio transmission capability to increase only one sideband while leaving the other at levels that do

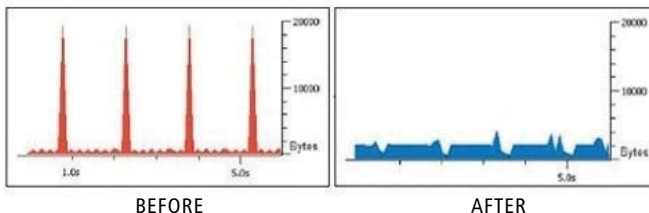
not cause interference with adjacent stations, and still achieve maximum coverage of their digital signal.

[Learn more at nautel.com/AS](http://nautel.com/AS)



HD Reliable Transport

This software solution helps eliminate IBOC audio drop-outs. It is applicable to every HD Radio deployment and allows various multiple exciter configurations to be implemented, such as main standby exciters, multi frequency networks, single frequency networks and satellite distribution applications.



» CONTINUED FROM PAGE 5

It shows how radio can take its localism and do things that other services can't. It's an example of how to make HD Radio a better experience for consumers," he said.

"We are using that development model to see what other advances can be made using the localism advantage."

EXPLORING HYBRID RADIO

DTS will continue to build out the HD Radio Monitoring Network launched by iBiquity in 2015, Jury said, which will allow it to identify potential gaps in product and implementation in the field. The company

We are using that development model to see what other advances can be made using the localism advantage.

—JEFF JURY

partners with DaySequerra to build monitors and with Media Monitors for installation and maintenance in the field. DTS plans to roll the network out to the top 50 markets eventually.

"We have committed to the car companies to address whatever issues they have with broadcast implementation. As more and more technology goes into infotainment systems there is also more of a chance that something may not look right. The monitoring network will help us do that," he said.

In addition, HD Radio's partnership with NextRadio is expected to continue, Jury said. iBiquity and NextRadio smartphone app developer Emmis had announced an agreement early last year to combine FM over-the-air radio services with the visual and digital capabilities of the NextRadio smartphone app as part of its in-vehicle platform development, according to Radio World reports at the time.

The integration presents opportunities for FM radio in

the growing world of connectivity, Jury said.

"We are still looking at ways of proceeding forward with what we are calling hybrid radio. It's the trend of combining the best of that digital pipe of over-the-air radio with what can be delivered over IP and a cell phone. Again, it's all about how it benefits the experience of the consumer in the car."

FRANTIC CHANGE

DTS' move to purchase the HD Radio brand comes as competition in the dash is increasing at a frantic pace, according to electronic tech trend watchers.

Apple CarPlay and Android Auto continue to make large strides in deployment, they say. The services will be integrated into all 2017 Ford vehicles equipped with SYNC 3 and they're already available in the new 2016 Chevy Malibu's MyLink infotainment system.

Apple's moves should be alarming to radio broadcasters and HD Radio developers, some industry observers feel. Media strategist Mark Ramsey blogged that beginning with 2017 auto models, the new car will essentially become a smartphone with wheels. "CarPlay and Android Auto are not about simply substituting one type of audio content (radio) for another; they are about literally installing wheels on that most precious and personal of electronic devices, the smartphone." And that will hurt radio listening, he says.

Calabasas, Calif.-based DTS acquired iBiquity Digital Corp. for \$172 million, according to the Wall Street Journal. The privately held iBiquity, which counted iHeartMedia and CBS Radio among its investors, was formed when USA Digital Radio merged with Lucent Digital Radio in 2000.

Jury said most former iBiquity employees remain with DTS. Former iBiquity President/CEO Bob Struble is now an advisor to DTS Chairman/CEO Jon Kirchner.

"It's significant when you have such a large company coming in and making a large investment in radio. That's not something anyone has seen in the past few years," Jury said.

"DTS is committed to growing the digital HD Radio platform and making sure this is a good business opportunity for all." ■

HD Radio Is a Data Delivery Service

Sam Matheny sees the platform as well suited to the connected car

Q
A



Sam Matheny is the chief technology officer and executive vice president of the National Association of Broadcasters. Prior to joining NAB in 2014 he was vice president of policy and innovation for Capitol Broadcasting Co.; he also has worked at CBC New Media Group and Microspace Communications.

RW: What role can we expect HD Radio to play in the “connected car” environment at this stage of the technology’s development?

Matheny: HD Radio is in essence a data delivery service and is well suited to the connected-car environment. As an audio delivery platform, HD Radio delivers to the connected car dozens of subscription-free audio channels that are tailored to the local area and not reliant on broadband connectivity. These HD Radio audio channels can serve listeners and advertisers as well or better than any broadband-delivered streaming audio service due in large part to the local nature of the service.

In addition to these audio delivery capabilities, the HD Radio platform supports advanced data services with a one-to-many architecture that is being used today for delivery of local traffic and weather, and these uses will likely expand in the future.

RW: Are there revenue streams for broadcasters in HD Radio that haven’t been developed yet?

Matheny: The HD Radio Ad Network, being developed by DTS, promises to bring new revenue to stations that are broadcasting HD2/HD3 multicast channels. This is a work in progress and it will be interesting to see the impact on multicast operations.

I expect that additional advanced data service opportunities will arise that take advantage of the one-to-many architecture of the broadcast platform, especially as connected car platforms proliferate. HD Radio has a

significant advantage over other delivery mechanisms in cost per bit of data delivered to a connected car, and this has yet to be fully taken advantage of by car makers or others.

RW: What should we know about the recent CES Show, regarding HD Radio or connected cars?

Matheny: For automakers, this year’s CES was as much or more about autonomous driving systems than about entertainment and car connectivity.

Having said that, it was clear from this year’s show that most automakers are now embracing the Android Auto/Apple Car Play duopoly of connected car interfaces. Also, it appears that the broadcast radio feature is holding its own in the connected car environment, not surprising given that listeners overwhelmingly turn to their radios for entertainment in the automobile. And car occupants will certainly have increasing needs for entertainment and information as autonomous vehicles begin to enter the market and less attention is needed for operating their vehicles. The media-rich HD Radio experience fares quite well with the other services available on broadband networks.

RW: If radio managers want to respond to these developments, what steps should they take?

Matheny: It’s really about engagement and building a strong relationship with listeners. In that vein, one of the most important things for radio managers to realize is that broadcast radio needs to provide a solid user

experience to most effectively compete against new services, in particular mobile broadband-based streaming services. This means that all stations need to provide metadata-based services that listeners have come to expect including song title and artist information, and Artist Experience.

RW: Based on your work at NAB Labs, are there other questions or developments that we or the industry should be exploring?

Matheny: FM radio in smartphones continues to be an exciting success story for broadcasters, led by NextRadio. The addition of AT&T and T-Mobile will represent solid steps forward in terms of the activation of FM in smartphones and we should see listening continue to increase as these carriers activate the FM chips. When these activations are in place it will mean Android phones are in a superior position to Apple as it relates to the audio entertainment options they provide, as Android users will have access to thousands of local radio stations delivering the best music, talk and sports available. Additionally, having access to FM radio via your smartphone in times of emergency is an area we continue to promote.

HD Radio has a significant advantage over other delivery mechanisms in cost per bit of data delivered to a connected car, and this has yet to be fully taken advantage of by car makers or others.

—SAM MATHENY

RW: I'll ask a question from our connected car session at the Radio Show last fall: Is the future of "free, over the air terrestrial radio" assured in the car environment, or is it at serious risk?

Matheny: Radio in the car is doing quite well, especially when it comes to adoption of the HD Radio platform by automakers. The car radio has weathered numerous competitive challenges from 8-track and cassette tapes to CDs and iPods, and it will continue to be the platform of choice in the streaming age as well. ■

In This New World, Radio Is “Just an App”

Glynn Walden says HD Radio is poised to help



Glynn Walden, former senior vice president of engineering of CBS Radio, was a founder of USA Digital Radio — funded initially by CBS, Westinghouse and Gannett — where he worked on specs and designs for the in-band, on-channel technology that grew to become HD Radio. From 1996 to 2003 he was VP of broadcast engineering of USADR successor iBiquity Digital Corp.; there he directed broadcast industry-related activities associated with HD Radio tech development and regulatory approvals.

RW: Are there revenue streams in HD Radio that haven't been developed yet?

Walden: When I worked at USA Digital Radio and iBiquity, I spent a lot of my time thinking of ways to monetize the digital data information inherent in the system. Dan Mason used to say, “Glynn, there has to be a way to monetize the digital data in the HD Radio stream.”

The day-to-day operations in my job at CBS did not afford much time to think about new uses; and to be honest, as quickly as new schemes came up to deliver HD Radio data, other means that were two-way data systems emerged to disrupt any new plans.

As the listening audience grows more fragmented through the increased music “shelf space” offered by competing delivery methods, it will become increasingly difficult for analog radio’s limited number of channels to deliver the high rates of listening we see today. By the next decade broadcasters will be begging for the all-digital solution to satisfy a more highly fragmented audience.

RW: How will Apple CarPlay and Google’s Android Automotive change the outlook for HD Radio in the car?

Walden: The radio manufacturers still want radio as part of the “center stack” as it delivers the most users; however, they want it to look like their other offerings, with rich

visual content and the ability to safely interact with the driver. HD Radio and NextRadio provide those ancillary services; and the car manufacturer wants radio as long as the drivers want radio.

RW: If a radio manager wants to act to respond to these developments, how should operations change?

Walden: Radio will have to deliver to the audience, on any device that they are using, exciting, compelling content that is enhanced with visual representations and real-time interactivity

RW: Is the future of “free, over the air terrestrial radio” assured in the car environment, or is it at serious risk?

Walden: Each app that they add to the stack further fragments the use of other apps; and in this new world, radio is just an app. As long as the drivers continue to want the radio app, it will remain in the center stack.

RW: What else should we know about where HD Radio is right now, and about the connected car future?

Walden: The geniuses at USADR created a highly flexible delivery system with capabilities that have yet to be tapped. There are features and properties of the system that could be implemented, for example there are only 3–4 of the modes of operation currently in use, with most of the modes yet to be implemented. ■

Why HD Radio Sounds So Good to DTS, Inc.

By John Kirchner, CEO of DTS, Inc.

October 1, 2015 was a great day for DTS, Inc. Since our founding in 1993, DTS has been dedicated to making the world sound better by providing leading edge technology and innovative solutions. On that day, we expanded the scope of our business with the acquisition of iBiquity Digital Corporation and entered the world of broadcast radio. HD Radio Technology represents the biggest advancement in terrestrial radio broadcasting since the advent of FM radio and is poised for a very strong future in the USA and abroad.

As a technology company, we have a long history of innovating in well-established fields of consumer entertainment. We achieve this through a combination of cutting edge R&D along with strategic partnerships and acquisitions. Over the years we catalyzed a revolution in the motion picture entertainment experience, developed widely acclaimed solutions for the mobile market, and have helped redefine the entertainment experience in the home, in cars, and on the go via mobile and portable entertainment devices.

With a rich history of innovation, we are proud to have developed game-changing audio technologies like DTS Headphone:X, which delivers fully immersive sound through any headphones, and DTS:X, a next-generation object-based audio technology for cinema and home theaters, that will play an important part in how entertainment is delivered and consumed over the next decade. This is important because the platform technologies we have developed serve as a key bridge to how we think about innovating within the radio space—where offering a more compelling, useful, interactive and value-added solution for broadcasters and consumers alike sets the stage for wider adoption of HD Radio and various DTS technologies. Also important ensuring our efforts are geared to help preserve the business and future of the well-established and ubiquitous radio medium.

Fundamentally, we believe that iBiquity Digital and HD Radio Technology provide a strong growth opportunity for DTS. The companies

have very similar business models, serve many of the same customers in the automotive and consumer electronics space, and collectively are well-positioned to operate an independent and neutral platform for the radio industry. The fact that we are so similar gives us high confidence that we will be able to facilitate a smooth and fast integration, paving the way for us to focus our energies on addressing the challenges in the market and better serving our radio broadcaster, automotive and end-consumer customers. This transaction is expected to increase overall awareness of DTS and perceived listener value. It also gives DTS a bigger footprint in the automotive space, which over time we believe that cars will become an ever more important intersection point for technology as consumers seek to have seamless, integrated multi-device content experiences across various listening environments.

One of the key considerations in this acquisition was the strong support of HD Radio technology by both U.S. broadcasters and major car manufacturers. More than 2,300 radio stations have licensed HD Radio technology and have demonstrated a commitment to growing the market for digital radio services over the last 10 years. In fact, HD Radio technology has enabled the launch of more than 1,700 new HD2/HD3 radio stations.

HD Radio Technology brings numerous new features, all 100% subscription free.

Local radio is a fixture in daily American life—consumers love and depend on local radio. According to Nielsen, more than 90 percent of Americans listen to broadcast radio weekly, for more than 13 hours on average. This represents a huge share of relative entertainment consumption. Further studies show a high percentage of listening occurs in the car, which is one of the best places to truly immerse oneself in music and directly engage consumers on the go. With the size and scale of these numbers, any technology and solutions that provides a better, more content-rich and compelling experience to such

As we move into an ever-more network-connected world, the range of technologies that reach connected devices continues to evolve. Cars are increasingly being connected and thus, it's strategically important for DTS to broaden our reach in both the radio broadcast and auto markets where we can play a bigger role in the coming age of deeper mobile and auto infotainment integration. Advances in sound technologies and data-driven services are increasingly converging in today's "digital dash," and new services and businesses will develop as a result of never before-seen levels of connectivity.

"HD Radio Technology represents the biggest advancement in terrestrial radio broadcasting since the advent of FM radio"

a wide audience provides clear opportunity now and in the future.

Importantly, all 36 automotive brands available in the U.S. now offer HD Radio Technology in their vehicles across more than 200 different models. In 2014, HD Radio receivers were integrated into approximately 35 percent of all cars sold in the U.S. To date, just over 10 percent of the cars on the road in North America have HD Radio receivers, numbering approximately 25 million vehicles. That figure is increasing every day.

DTS is firmly committed to being at the heart of these next generation opportunities, and to supporting and building an ever-broader future for the HD Radio Technology platform. We look forward to working closely with our industry partners to roll out HD Radio solutions, educate consumers and invest in future enhancements to meet the needs of broadcasters, automotive and mobile manufacturers and consumers, making your radio experience better and more compelling in every way.

Digital Sound

HD Radio broadcasts deliver crystal clear, CD-like digital audio quality to consumers.

HD2/HD3

Adjacent to traditional main stations are HD2/HD3 Channels, providing new original formats on the FM dial.

Program Info

Program Info provides song name, artist, station ID, and other relevant data.

Artist Experience

Visual images, such as album art and station logos, of over-the-air broadcasts from HD Radio stations.

iTunes® Tagging

iTunes Tagging provides users the means to "tag" broadcast radio content for later review and purchase from the iTunes Store.

Bookmark

Bookmark is a music & product discovery feature that enables users to store information about content on the radio and delivers interactive information via QR codes.

Station Guide

Station Guide displays all the HD Radio channels available in the current market, enabling the listener to discover all the digital programs available in the local area.

Instant Info

News, sports, weather and more useful information at the touch of a button.

Traffic

HD Radio Traffic delivers more in-depth traffic data and travel conditions – as much as 10x faster than other broadcast methods.

Emergency Alerts

Delivers critical and life saving messages to the public during emergency situations.

Solve Problems for Clients Through Integration

Erica Farber says experiment and don't be afraid to fail

Q
A



As president and CEO of the Radio Advertising Bureau, Erica Farber is perhaps the U.S. radio industry's most visible salesperson. Prior to joining RAB in 2011 she spent 15 years at Radio & Records, becoming its president, publisher and CEO. She was also an executive at Interep and founder of a radio consulting and Internet services provider.

RW: What will the revolution in dashboard connectivity mean for broadcasters' long-term business model?

Farber: Dashboard conductivity is really being driven by Internet-connected devices. As an example, with Android Car and Apple Play users can "mirror" the experience from their cellphone when they enter their car. When a car is connected either through an in-dash Internet device or smartphone, it opens a lot of new possibilities for broadcasters.

How all of this evolves is really hard to predict. Radio remains the free over-the-air option. Local, unique content relevant to the driver will be critical. Radio stations that have "apps" will have additional locations on the dash through connected devices. Where this goes from here will be driven by our listeners and advertisers as broadcasters look for new and creative ways to engage these audiences.

RW: At this juncture in HD Radio's implementation, how do you answer the question: "Is there a revenue stream for broadcasters from HD Radio? If so, what is it?"

Farber: There absolutely is potential for driving revenue from HD Radio and there are two primary revenue opportunities: HD sub channels and data. Broadcasters have been experimenting for several years with HD2 and HD3 sub-channels. These channels open the opportunity to experiment with new and innovative programming including experimental formats and native content, known to many as sponsored content. On the data side, broadcasters can use their HD data channel to push traffic

data, sports updates, news alerts, weather warnings and more. All of these opportunities have the potential to drive new revenue.

RW: Where and how should HD Radio fit in the connected car environment?

Farber: The answer to this question isn't so much about HD Radio as it is about programming and content. Just like a smartphone, connected cars require mobile data. That comes with a significant price tag. Radio remains free and simple to use — both are incredibly important value propositions. Radio fits with the connected car by providing access to unique and engaging content. HD Radio provides even more options through high-quality audio and HD sub channels. And in all cases, listening is free and easy to use.

RW: RAB tells us "digital" revenue is the piece of radio's pie that has grown most quickly in recent years. How much of this is attributable to HD Radio vs. streaming and other "digital" sources?

Farber: While HD Radio does not currently fall under the digital revenue umbrella, national marketers and radio's programming partners such as sports organizations continue to leverage HD multicast channels to provide exclusive branded content only available on HD2 or HD3 channels which means extra dollars for broadcasters.

RW: Is there meaningful revenue from radio running direct ads on multicast channels (rather than rebroadcasts of side

channels on main-channel translators)?

Farber: The RAB spent time at DASH in Detroit and at the recent CES. We have found marketers continue to reinforce the desire for “personal connections” with their potential customers. Niche formats available on side channels can hyper target and help create those connections. Some broadcasters have chosen to use a translator to rebroadcast an HD sub channel to listeners who don’t have access to an HD Radio. This also opens a sub channel to potential new audiences.

RW: *When radio salespeople are in the trenches every day, are clients even talking about “digital” platforms, HD Radio, streaming etc.? What new or notable obstacles are salespeople coming up against in pitching those?*

Farber: Clients both nationally and locally talk about “digital” all the time but digital has different meanings to different business segments depending on the size and sophistication of their company. Keep in mind radio remains an industry of ideas. Salespeople are always trying to find ways to help their clients reach their customers and build their businesses. It is our hope that radio salespeople are continuing to evolve as consultative problem solvers. I believe the key to solving problems for clients is integration. And this may cross multiple platforms including HD, streaming, website, mobile and social platforms. It is about tailoring programs based on the specific needs of their clients and utilizing the collection of new channels through which we can introduce a client’s advertising message. The only limitation is our own creativity.

RW: *What did you see at CES that we should know about?*

Farber: The key motivators for the connected car seem to be two-fold: safety of the driving experience and data collection.

The move to partially autonomous driving, such as adaptive cruise control, and self-parking, these are all driven by a desire to reduce accidents. Toyota gave a presentation and stated the reason they are spending a billion dollars in R&D is to eliminate the 30,000 lives lost

each year. They want to develop a car that is incapable of getting into an accident.

The second part of the motivation is data connection. Cars that are connected provide invaluable information about a driver’s likes, dislikes, preferences and all sorts of information that will allow companies to “hyper target” those customers.

RW: *If a manager wants to respond to all these developments, what steps should they take?*

Farber: Embrace and experiment. Learn about the technology. Read about it, study it, attend conferences like CES and understand that innovation in technology will drive this evolution. Don’t be afraid to fail, and measure success by watching incremental progress. In many cases, digital platforms, even HD Radio, represent a learning curve. Encourage teams to think innovatively about integrated campaigns, testing limits with each

*Don’t get hung up on the platform.
Focus on reaching customers where they
are and delivering results.*

—ERICA FARBER

new effort. Constantly be looking for ways you can use technology to further enhance and strengthen your brand. And baby steps are ok. What is important is that we all start taking steps forward.

Secondly, ensure you have a product that is engaging, and provides a compelling reason for your audience to stay with you rather than explore other options. Content will drive the consumer choice, and demand and will drive loyalty.

Perhaps most important, don’t get hung up on the platform. Focus on reaching customers where they are and delivering results. ■

Broadcasters Need To Step on the Field

Scott Burnell of Ford sits at the center of connected dashboard developments

Q
A



Scott Burnell is with Ford Motor Co., where he created the world's first "automotive developer ecosystem." The Ford Developer Program brings thousands of developers to cooperate with Ford's AppLink team, which in turn connects the driver's world of smartphones to the company's SYNC platform. He creates partnerships with app developers, wireless operators and handset manufacturers. His title is global lead of business development & partner management.

RW: Much attention is paid in radio to the role of HD Radio. How is that platform viewed from your perspective working so closely in dashboard connectivity and apps?

Burnell: Since I work mainly with applications, I see HD Radio as being a choice in the vehicle for our owners. I view it similar to the way that Ford offers many choices of streaming applications via AppLink, such as Pandora, Spotify, iHeartRadio and Aupeo. We don't pick a single solution and force them to choose that solution; instead we seek out quality solutions that allow our owners the ability to consume their favorite content in the method they prefer.

RW: You have said that broadcasters often ask you how they can compete with the likes of Pandora and Spotify, yet that they still seem to rely too much on an "over-the-air" business mindset. How should radio managers think differently?

Burnell: If broadcasters want to compete, they need to first step on to the playing field. They must address the single most important "thing" in a listener's life: their mobile device. Streaming platforms have the advantage of being born in to technology, but most of the incumbents didn't start in mobile, they had to learn and adopt as mobile data matured and became good enough to handle streaming music and other content. They didn't fight mobile and try to stay as desktop-only streaming services, they adapted and followed their users to mobile and they continued to deliver content.

There is a lot of discussion today about how the

car is the last bastion for broadcast radio and that AM/FM has a stronghold in the dashboard still. So I would question broadcasters to examine the other places where broadcast radio has already "lost" the competition with streaming. Is that the home and office? I think it could be quite possible that the decline of broadcast listening at home and at work is due to users streaming music on their headphones while typing away at their desk and then going home and streaming over Sonos or Airplay.

The mobile device consolidates the world in to a single, hand-sized, always-connected Swiss Army knife of life. No need to bring a digital camera, a video camera, a laptop for email, or even credit cards on the go anymore. So too goes music, news and other content. Without the need for a separate device in order to consume content, the traditional physical radio fades away. The reason the vehicle is the last stronghold of broadcast radio today, may very well be because it is simply the last environment to fully embrace mobile.

The average vehicle on the road today was purchased when the very first iPhone was hitting the market. I would challenge broadcasters to think about where their industry stood at that point and how it has changed since. SYNC was just hitting dealerships in that same year. AppLink didn't exist for another 4 years!

Today, 2016 Ford models have SYNC 3, with an amazing interface for streaming content, and owners are taking advantage of it in record numbers. Other OEMs are not

far behind, and within the next three years, nearly every vehicle sold will have some sort of mobile connectivity solution for streaming content. If consumers are already using streaming services outside of the vehicle, then the ease of connectivity in the vehicle is simply a logical step for them.

RW: What has your company learned in your research, that radio managers should pay attention to, about how today's consumers like to interact with the connected car environment, or what they want more of?

Burnell: Consumers want their content and they want it delivered in the fashion they already consume it. Not only as I said before, on their device that is with them 24/7, but also in a similar or familiar interface. When you look at the evolution of vehicle HMI you can see that all OEMs have displays that are similar to the look and user interface of a mobile device. Part of this is due to the fact that the use of any display in a moving vehicle should be intuitive and familiar (2 billion mobile phones sold globally) and part of this is that if the vehicle doesn't provide a familiar interface, users will simply pick up their device while driving and interact with that screen.

Without the need for separate device in order to consume content, the traditional physical radio fades away.

—SCOTT BURNELL

RW: Where and how should HD Radio fit in this fast-developing environment?

Burnell: Embrace the technology and find ways to evolve with the consumption habits of mobile. I think HD Radio has some unique opportunities due to the very nature of their content delivery capabilities within the vehicle. The technical abilities inside vehicle software are now at a point where some very cool features can be explored.

RW: We hear about Apple CarPlay and Google's Android Auto. Do you consider these third parties to be "tech partners" or "encroachers"? What change do these services bring, and what do they mean to broadcasters?

Burnell: Offering third-party solutions, as I said, is about offering choice to Ford drivers, and since mobile



A screen from Ford's SYNC 3 communications and entertainment system as seen in a Lincoln model.

devices are with us all day long, some drivers may want a solution based on their device OS. At Ford, AppLink is our OEM product, it provides more capabilities to mobile developers, which in turn creates more compelling features for our drivers.

AppLink is built on an open source platform called SmartDeviceLink (SDL). At CES 2016 there were a number of announcements surrounding this platform which provides a single solution for bringing a mobile device in to a vehicle and enjoying content. Toyota, PSA, Subaru, Honda and Mazda all announced SDL adoption and investigation. QNX, who powers the head units in over 60MM vehicles globally (including SYNC 3), and UIEvolution are both adopting SDL in to their systems for OEM products. This means that soon a broadcaster who has an app compatible with Ford AppLink will also be able to provide that app in additional vehicles, without additional development.

I would also suggest that a broadcaster visit a few dealerships and get a hands-on demonstration of both CarPlay and Android Auto. In particular, ask how to tune to your favorite broadcast station while using each of those third-party solutions. ■

Focus on the Things You Control

Roger Lancot encourages stations to ask themselves good questions



Roger Lancot is associate director of the Global Automotive Practice of Strategy Analytics, which offers advisory services, consulting and market intelligence. He also has worked for the Consumer Electronics Association, Telematic Research Group, iSuppli Corp. and PC Data/NPD.

RW: You follow the automotive industry closely. What does car connectivity mean for broadcasters' long-term business model?

Lancot: The car is an extension of the mobile environment but it is a unique listening and content consumption proposition. It is somewhere between lean back and lean forward listening. There is a simultaneous interest in distraction and in mitigating distraction. There is access to the widest possible breadth of available content and it has become the primary place to consume radio due to the location relevance (local news, weather, sports, traffic) and simplicity/ease of use. Unfortunately this privileged listening environment is something of a black hole due to the lack of rating metrics and listening data covering auto-related consumption.

For all of these reasons it is critical that broadcasters craft their service delivery to encompass automotive listening paradigms but simultaneously develop the metrics to drive strategic decision making and the setting of priorities. No single dominant platform for content management and consumption measurement in the car exists, with the result that there is no simple sound advice for broadcasters.

RW: Where and how should HD Radio fit in this fast-developing environment?

Lancot: HD Radio is enabling an expansion in the volume and variety of content delivery, along with graphical and digital enhancements including metadata and visual elements. HD Radio is also enabling integration with

cellular streaming content sources thanks to NextRadio. Unfortunately, the rollout of HD Radio enhancements is slowed by the plodding advance of car makers. This plodding is gaining momentum, which is impeding the growing awareness of the existence of HD Radio.

Apple and Google have their own agendas, which are not conducive, long term, to advancing the interests of the driving public.

—ROGER LANCOT

RW: How can the industry grow its digital listenership?

Lancot: Stations with multicasts need to talk up that content — talk up the alternative station.

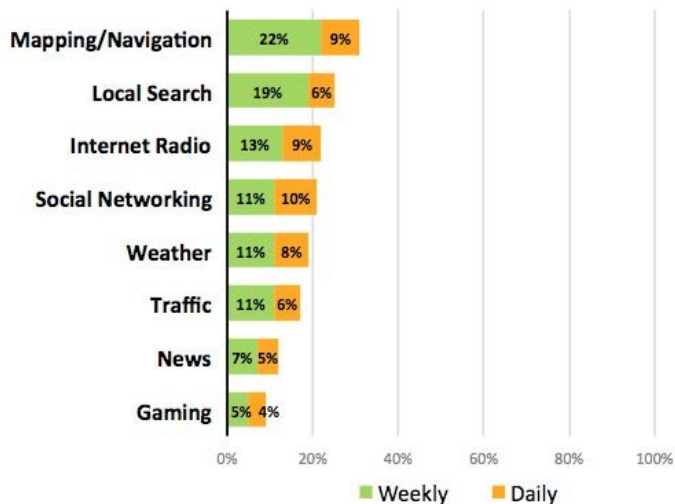
RW: What did you see at CES that is relevant to this conversation?

Lancot: Open source smartphone integration alternatives like SDL (SmartDeviceLink) are increasingly being turned to as an antidote to Apple/Google homogenization. HD Radio's advance does not lend itself to big headlines — it's a singles and doubles, base-stealing small-ball game. The tortoise defeats the hare in this case. Why do we focus on the hare? Maybe we grew up loving Bugs Bunny.



SMARTPHONE USE WHILE DRIVING

58% of smartphone owners in the U.S. report using apps while driving.



» However, on a weekly basis, usage is largely infrequent.

» Each category of app is used on a daily basis by 10% or less of smartphone owners.

Source: Data from ACI survey of U.S. vehicle owners, February 2013

17

© 2013 Strategy Analytics

This graphic helps illustrate the use of non-radio-specific content and apps.

RW: How will Apple AutoPlay and Android Auto change the playing field?

Lanctot: These solutions are simply confusing the heck out of everyone, from consumers to dealers to car makers. Apple CarPlay and Google's Android Auto are like invasive species — very hard to eradicate. They grow like kudzu, but that doesn't make them attractive or welcome. It's like the dandelions that come back in the spring no matter what weed killer you put down.

It's best to think of these offerings as apps — like Pandora — nothing more. Apple and Google have their own agendas, which are not conducive, long term, to advancing the interests of the driving public.

RW: What steps should a radio manager take to respond to all these developments?

Lanctot: It's like the alcoholic's prayer: Focus on the

things over which you have some control — your HD Radio assets, your streaming strategy.

Who are you trying to reach with your stream? Mobile users? Immobile (desktop/notebook computer) listeners? Out-of-town listeners? Are you trying to leverage the stream with promotional hooks and links through a partner like XappMedia? Are you trying to build your listenership? Do you have proprietary or premium content (i.e., live feeds, concerts, personalities, etc.)?

RW: Any other questions or developments that we or the industry should be exploring?

Lanctot: Direct engagement with car dealers and car makers. ■

Read Roger Lanctot's blog at www.strategyanalytics.com.

Consortium Sees Open Lanes for 2016

BTC's revenue from HD Radio data services has now surpassed its analog data revenue

By Scott Fybush

In the nonstop battle for real estate on the dashboard of new vehicles, the Broadcasters Traffic Consortium is hoping its offerings will help give HD Radio a better foothold while putting more dollars in the pockets of its members' stations.

As it approaches its 10th anniversary next year, BTC President Paul Brenner says the presence of a new parent company at HD Radio is helping to solidify the consortium's own presence not only in U.S. markets but also across the borders into Canada and Mexico.

ONE TO MANY

On the heels of a Consumer Electronics Show at which "connected car" functionality was a major topic, Brenner says the concept of delivering real-time traffic and other data over the HD Radio platform is turning out to be a winner when compared to other data-delivery technologies.

"Things like real-time connected traffic, nobody knows how to pay for that when it comes into a car," Brenner said. "When [auto companies] tried to do traffic, weather and fuel prices over their connected car, they ended up paying \$70 a month for data usage," using wireless companies' networks.

"When you turn around and say we can do the same thing better over HD Radio bandwidth for a one-time cost, you suddenly have their attention."

Former iBiquity Digital Chief Operating Officer Jeff Jury is now DTS general manager for automotive and HD Radio. He says auto companies are figuring out something broadcasters have long known: There's big efficiency in the sort of one-to-many transmission that radio does best.

"People have said everything's going to be streaming, everything's going to be point-to-point, but this is actually a great use of broadcast infrastructure, sending one to many," Jury said.

Brenner says iBiquity's purchase by DTS last year came

at just the right time, as automakers make the final moves away from the old idea of a "radio" in the dashboard.

"A purely analog radio is getting harder to sustain by the automaker," he said. By contrast, he says automakers such as Honda are excited about the idea of incorporating an HD Radio platform that includes both digital radio and data that comes without ongoing bandwidth charges.

FOOTPRINT

But automakers also want seamless national coverage, a challenge Brenner says BTC is trying to meet. The consortium includes more than 20 broadcast companies that now provide data service over stations serving

Early adopters of HD Radio have already gone through multiple generations of transmitting equipment, providing a more robust platform on which BTC data can travel.

116 U.S. markets. For the most part, Brenner says, the data service — for which broadcasters get paid — is piggybacking on infrastructure that stations already had in place. So far, Brenner says BTC has had to pay to upgrade stations for HD capacity in only three of those 116 markets, and he doesn't expect that to change as BTC looks to fill in the gaps in smaller markets.

"We still want to grow the number of markets in the U.S., so that when automakers compare our services over HD Radio with satellite radio and connected cars, we're the better deal," he says. "If I have to put more dollars into analog stations to get them into HD, I will, but I don't think I'm going to have to."

CONTINUED ON PAGE 22 »

DAD

The World's Most Powerful and Flexible
Radio Automation Software



DAD gives you all the tools you need to make your broadcasts sound better, make running your station easier and give you unrivaled power and control. DAD will help you reduce costs, make the most of your time and grow with you into the future.

Visual Radio and TV Automation



Turn your radio station into a complete multimedia experience with automated camera switching, music video playout, and graphical overlays.

Manually control every aspect of your production in real time, or let ENCO's award-winning automation system take care of everything, so you can focus on what really matters.



ENCO

ENCO.COM

+1 248-827-4440

 [fb.com/encosys](https://www.facebook.com/encosys)

 [@encosys](https://twitter.com/encosys)

» CONTINUED FROM PAGE 20

After more than a decade and a half of HD Radio operation, still more upgrades are in the works at stations already transmitting BTC data.

Roz Clark, director of technical operations for Cox Radio in Tampa and Orlando and a member of BTC's technical committee, says the early adopters of HD Radio have already gone through multiple generations of transmitting equipment, providing a more robust platform on which BTC data can travel.

"That's the pain of early adoption," Clark said. "Like all technologies that advance, they're taking advantage of things that have occurred in parallel."

In addition to digital power increases at many stations, that also includes a move to fourth-generation exciter technology, hybrid crest-factor reduction to make transmitters more efficient, and the growth of Artist Experience technology that allows stations to transmit album art and other visuals to go along with music programming.

Brenner says revenue from BTC data transmission helps make it easier for stations to justify the cost of those upgrades.

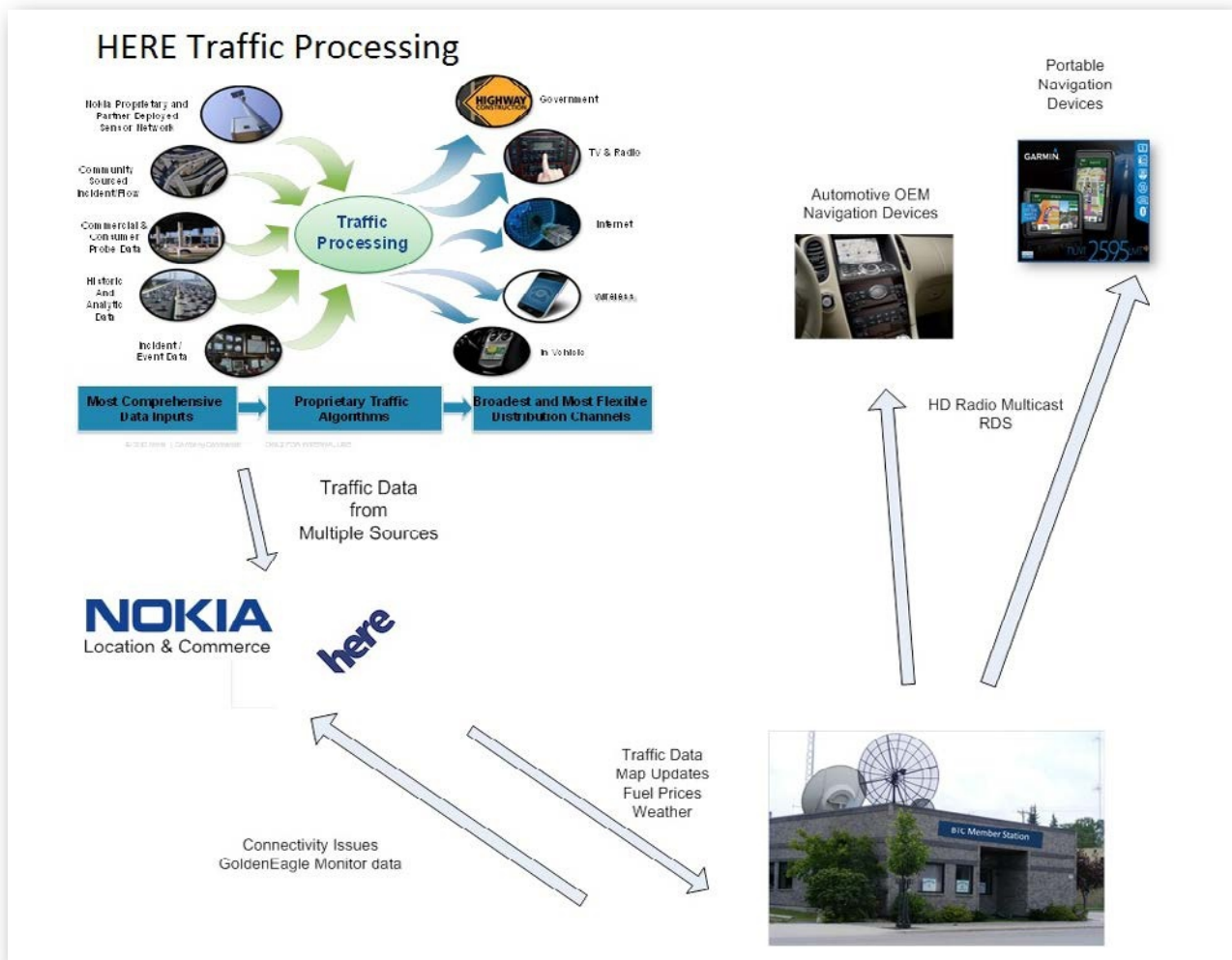
"I haven't had pushback on this," he said. "The BTC members all make money from what we do."

LOOKING NORTH

One of BTC's next big frontiers will be across the northern border in Canada, where HD Radio is just finding its footing after Canadian broadcasters tried, and then abandoned, a rival DAB system that failed to attract audiences or sell new radios. Brenner says BTC partners including Garmin are excited to be able to keep their products functioning even after they cross the border into Canada.

Brenner says DTS has helped with that push as well, thanks to its existing partnerships with car makers.

"DTS is looking for ways to exploit their own distribution network. They already had a licensing model for their surround-sound processing and the chips



A graphic from the Broadcasters Traffic Consortium depicts the exchange of data, including deployment (right) via HD Radio and RDS.

they were selling through for that. They've been very supportive with Canada, because they need that market to grow," he said.

At iBiquity, Jury says BTC's work is an important part of the puzzle as he tries to make HD Radio a more universal piece of the new-car experience.

"Now that we're in 35 percent of new cars [with HD Radio], there's a real acknowledgment that what traffic does that's very helpful is that it causes the car companies to think of broadcasters in a different light," he says. "It really helps with our story that this isn't just about audio."

At the same time, both Clark and Brenner say it will take more than just data to keep HD Radio growing.

"The way to compete is offering more compelling content," Brenner says, pointing to the dashboard screen of his new Jeep.

"I can make anything my shortcut — this Pandora app, this NPR One app, that HD2 station. I can make my screen into whatever I want it to be for my car experience."

Jury says iBiquity is committing resources to ensuring that the HD Radio part of that experience is as good as it can be.

"From the perspective of car companies, they still like the idea of radio in general and HD Radio, but they want the best possible implementation," he says. "Car companies really don't like the idea of having buyers be unhappy with the quality of their systems."

That means an emphasis on increasing HD Radio power levels for better coverage, as well as making sure digital audio is properly time-aligned with analog and ensuring Artist Experience images and other on-screen data is all accurately synced with what's on the radio.

Brenner says BTC has some new services on the way as well, including adding lane-by-lane speed measurements instead of reporting "an entire road of results." There's also new Doppler radar imagery coming to BTC's weather displays.

Brenner's employer Emmis Communications, a BTC founding member, has faced some challenging financial news in recent months, reporting 2015 revenue declines and staff reductions and pay cuts for senior executives. But the company has been generally upbeat about its business outlook; and Brenner says those developments won't have any effect on BTC or on Emmis' commitment to the project.

"The structure of BTC is in its truest sense a consortium

BTC Participants

After launching with eight founding members, the BTC is a joint venture that now lists the following as participants.

Emmis Communications
Cox Media Group
Entercom
Radio One
NPR
Greater Media
Bonneville International
Beasley Broadcast Group
Corus Entertainment
Saga Communications
Cumulus
Townsquare Media
Hubbard Broadcasting
Connoisseur Media
Palm Beach Broadcasting
The Cromwell Group
Cogeco Diffusion
Summit Media
Univision Communications
CBS Radio
Scripps

— 24 broadcast companies committing their facilities and spectrum. Emmis is the face of BTC, but it has employees that are dedicated to it, and it's cash-flow positive, so there's no reason to think Emmis will change anything," Brenner said.

In the meantime, he says there's plenty of room for BTC to grow in 2016.

"The market isn't saturated. We've fought hard for what we've achieved. The middle part of 2015 was the first time our HD Radio revenue from data services surpassed our analog data revenue, and it's now growing at a rate of double digits," Brenner said.

"I expect with our work with Honda that they're going to add a lot more cars as they get away from some of the other services that they've been using to provide traffic. They're going to be the benchmark that will help us." ■

The Modern Audience Expects Metadata

Steve Johnston weighs the online, on-air audience experience



***Steve Johnston** is director of engineering and operations for Wisconsin Public Radio. He has made numerous presentations about radio data applications to the Public Radio Engineering Conference, the Broadcasters Clinic and NAB Broadcast Engineering Conference. He is a long-time SBE member, certified Senior Radio Engineer and Networking Technologist.*

RW: What role will HD Radio will play in the fast-evolving “connected car” environment?

Johnston: Each analog and HD radio station will be one of the information/entertainment streams available in the “connected car.” This means radio will have more competition for the ears of listeners in these cars, so it will be vital to remain relevant to the audience. This means continuing to produce good content that the listeners desire. This modern audience is coming to expect metadata with their content. Analog AM can’t do this, and analog FM can meet this in a limited way with RDS text, but HD Radio allows AM and FM stations to provide a rich, multimedia metadata flow to go with the programming.

RW: You’ve done a lot of work with data services and the displays that drivers see. How do you feel radio is doing at improving its “visual” presence — RDS, HD Radio Artist Experience or otherwise?

Johnston: Many automated stations have embraced the basics of slogan, title and artist, but too many good, live stations keep putting off building a metadata workflow for their station. I know it can be challenging, but remember that the system you build can work with website content management systems to produce a richer online as well as the on-air listener experience.

RW: How can the industry grow its digital listenership?

Johnston: Cross-promotion is one of the strongest ways

to build audience today — show and tell your listeners what you’ve got for them on other stations, other streams, other times of the day. And some investment in advertising on other platforms would be in order. For radio to be among the cool choices for the modern listener, you’ve got to remind them of our important place in the media landscape.

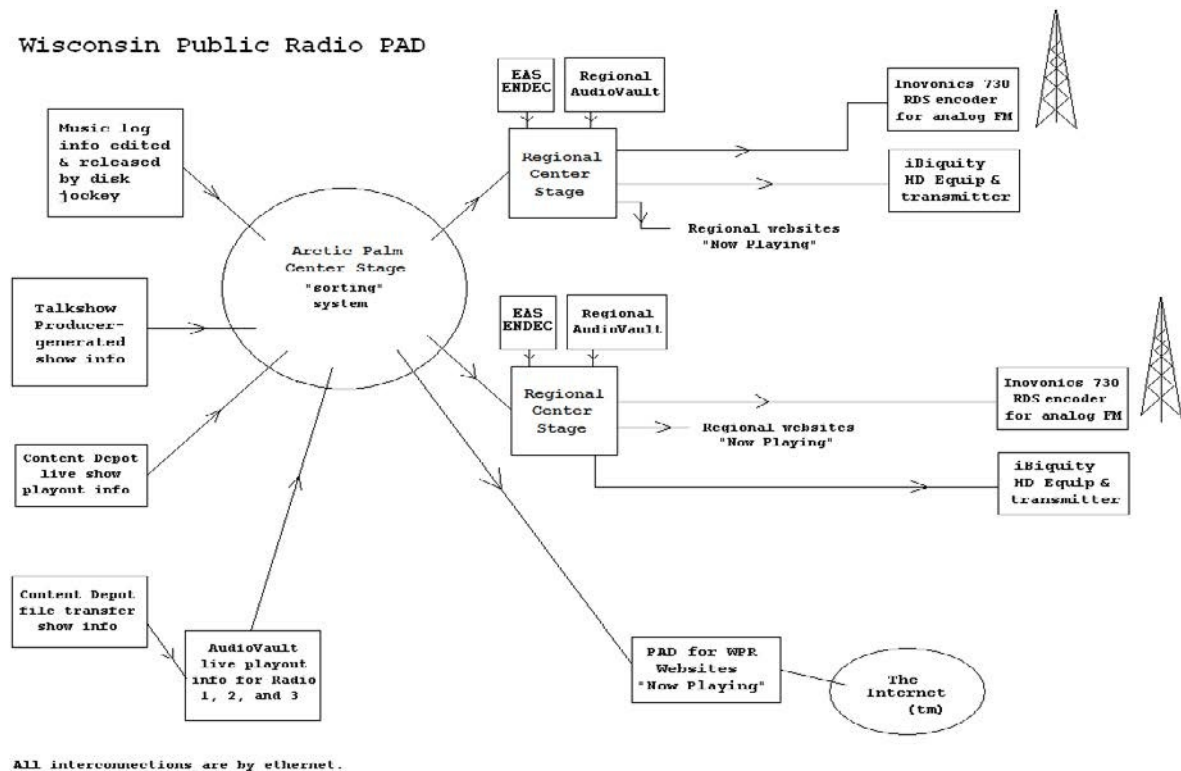
Too many good, live stations keep putting off building a metadata workflow for their station.

—STEVE JOHNSTON

RW: How does NextRadio fit into this discussion?

Johnston: NextRadio and TagStation are seeking to form a bridge between the new devices — smartphones and car dashboards — and their associated radio receivers. It is important to put a good “virtual front panel” on these systems so people can easily find the over-the-air stations. Listeners want to be able to tune to their favorite radio stations using their new devices, and these systems provide an intelligent means to search and find the signals. Program associated data is an important part of this — information about the content, visual, logos, etc.

Wisconsin Public Radio PAD



A drawing shows how Wisconsin Public Radio handles metadata flow. ([Click for detailed view.](#))

RW: If a radio manager wants to act now to respond to all these developments, what steps should they take, how should operations change?

Johnston: In addition to the static messages like call letters and slogans, show producers should be creating useful dynamic metadata associated with every program, and it should be flowing to your listeners via every platform

you use today: AM, FM and online. For example, talk show programs should have metadata flowing with the name of the host, the topic of the show right now, and what's coming up. Software packages like Center Stage Live from Arctic Palm are available to organize this workflow and automate the dissemination of the information to all the stations and streams (including NextRadio/TagStation). ■

Pandora Seeks to Engage Audiences

Geoff Snyder provides insights into the company's dashboard strategy

Q
A



*An important factor in understanding HD Radio's evolving role in the car is learning how competing audio platforms view the space. **Geoff Snyder** is Pandora's vice president of business development, automotive and connected devices. He focuses on developing relationships with representatives of automotive and CE brands, working as a liaison between engineering and business teams to "make personalized radio on-the-road and in the home a reality."*

RW: What is Pandora's top business goal in the connected car environment in 2016?

Snyder: We have been integrating Pandora into the car since 2010 and our top goal has remained unchanged over that time; specifically, we are working hard to maximize audience engagement in the category.

That said, our tactics to achieve that goal have shifted slightly. While our early efforts were focused on securing new partnerships, that has become less of a focus given we have established relationships with 26 OEM brands and eight aftermarket manufacturers. This broad range of partners allows Pandora a unique opportunity to collect and synthesize data regarding the factors that lead to high engagement levels. Much of our focus today is on sharing these best practices and lessons learned with industry partners, with the goal of helping refine and improve the in-car experiences as next generation platforms are developed.

RW: What did you see at CES that we should know about, regarding HD Radio or connected cars in general?

Snyder: Upon entering the North Hall of the convention center this year, I stopped to marvel at how significantly the auto OEM presence at CES has grown over the past few years. Our conversations with manufacturers are obviously more focused on the in-car entertainment experience enabled by connectivity, but technology and connectivity are enabling all kinds of really exciting developments for the driving experience.

Autonomous driving is the most obvious example that comes to mind, as it was a big topic of focus from OEMs and the press.

RW: Pandora and traditional radio companies must both share worries about how consumers will even find their media in the future fast-evolving dashboard. How can Pandora or HD Radio or any service stay visible to the driver?

Snyder: As mentioned, we're focused on refining the in-car experience to make it as easy as possible to find and access Pandora in the car. Some specific examples of this include emphasis on wireless connections for integrations that rely on the brought-in phone for connectivity and, in cases where Pandora was the last playing source when the car was turned off, automatic resumption of Pandora after the car starts. Listener behavior data has shown that removing what might be seen as very minor hurdles to usability — e.g., plugging in your phone — can have a significant impact on usability, so we're working closely with our partners to understand and mitigate those challenges.

Along with working to streamline the user experience, we have also implemented a dealership marketing program designed to educate the dealer sales staff on the benefits of Pandora in the car. Our research shows that the salesperson is still the main influencer for people when they are purchasing a car, so we want to make sure they are equipped with training and marketing materials

Removing what might be seen as very minor hurdles to usability — e.g., plugging in your phone — can have a significant impact on usability.

—GEOFF SNYDER

that will help them confidently talk to consumers about how and why to use Pandora in the car.

RW: How can technology help monetize content in the car, and how can radio stations be part of that?

Snyder: Pandora prides itself on our ability to deliver an unparalleled personalized listening experience to over 78 million users a month, and a majority of those listeners elect to listen to advertisements in exchange for free access to our service. We work closely with advertisers to develop experiences that are delivered to their specific target audience — and this targeting also means that listeners will receive the ads that are most relevant to them. This value exchange is a core part of the Pandora value proposition, and there is a huge amount of effort put in to make sure we're providing the best possible experience for the listener and the advertiser.

The in-car experience allows us to extend this model to the fastest-growing and most engaged portion of the Pandora audience.

RW: You are no doubt working with platforms and features that we won't see for several years. What new stuff is coming

that might not be on our radar but that will affect this conversation even more?

Snyder: Pandora recently launched as the exclusive streaming partner for the popular podcast "Serial." As part of the partnership, we will also be streaming new episodes of "This American Life" as well. I am very excited about this step to offer a broader range of non-music content — and the early listener metrics show a similar level of enthusiasm from our audience.

RW: Is it a fantasy that audio streaming over wireless could ever be built large enough to manage a simultaneous tune-in of 3 to 4 million listeners in cars in the top media markets during drive-time hours, accompanied by station graphics such as album artwork?

Snyder: Pandora reaches millions of listeners in top media markets on a daily basis today. And while the



Pandora as seen on a Ford SYNC 3 platform.

natural vehicle replacement cycle means it will take time for infotainment systems that enable streaming to be available on a majority of vehicles on the road, the technology is already available. As the technology continues to proliferate, use of streaming services in the car will continue to grow dramatically. ■

Think Like a Consumer, Not a Broadcaster

Mark Ramsey says effective presence is about consumer demand



Mark Ramsey is a media strategist and researcher who has consulted with companies such as Apple, iHeartMedia, Pandora, CBS, Sirius XM and EA Sports. He created the audio future festival "hivio" and the audio podcast "Media Unplugged."

RW: If cars are becoming "smartphones on wheels," what does that mean for HD Radio?

Ramsey: We have to stop thinking of audio from the perspective of distribution channels and start thinking of it from the perspective of consumers. Increasingly automakers are differentiating their wares not on performance or features of the car itself, but based on the power of the dashboard and the ability of consumers to bring their mobile experience into those dashboards. HD Radio is not only a tangent from this thinking but it's not relevant to it.

Whether or not a car features HD Radio is really a function of whatever deals the HD Radio people negotiate with automakers. It's like the apps on your mobile phone that you didn't ask for and can't delete. That doesn't make them good or bad, but it does make them unrelated to the decisions of consumers.

I am waiting for someone in the broadcasting space to announce that there is significant listening via HD Radio and especially significant listening to HD-only channels. I am waiting for somebody to demonstrate a revenue model for this technology that is older than Facebook, YouTube and Twitter. I am still waiting.

RW: What have you seen lately, at CES, or elsewhere, that we should know about regarding connected cars in general?

Ramsey: I wasn't at CES so I can't speak to that. But if you think like a consumer rather than a broadcaster, the connected cars become much easier to anticipate and understand. Ask yourself: What would you (or your spouse

or your kids) most like to do in a car that they can't today?

RW: Why are Apple CarPlay and Android Auto important?

Ramsey: Because they are the best representation of what the mobile devices provide in a form made for the new platform called the car. They will also be positioned and promoted as the most elegant and best way to bring the experience you love into the car by the folks who design those experiences. This will carry lots of sway.

RW: You've written about the importance of an effective mobile presence for radio. Assess the industry's progress in that.

Ramsey: Effective presence is about consumer demand. Because Detroit will fulfill whatever those demands are. If we don't place proper importance on the quality of the over-the-air content, then we will fall back on habit and convenience, which will not sustain over the long run. In that long run, habits and convenience will go hand in hand with whatever passions drive consumers. Folks will choose what they love over what's simply there.

RW: If a radio leader wants to respond to these developments, what steps should they take, how should operations change?

Ramsey: Build content that listeners love. Experiment with revenue models that go well beyond agency business and over-the-air spots. Imagine a world where all business is direct. ■

Mark Ramsey's website is www.markramseymedia.com.



istockphoto/danham825

The Circle of Life, Radio Style

Pondering reports on the demise of terrestrial radio and other interesting tidbits

by Michael LeClair

The annual Consumer Electronics Show has been in the news again recently, hawking the connected car as the “must have” consumer product of the future. Predictably, a recent piece in International Business Times responded by raising the question of whether this new development threatens the future of terrestrial radio as a business.

To be fair, the article was well-balanced, and who could keep themselves from smelling blood when all the flash and bang is coming from other consumer sectors? Or at least it appears to be in the context of a show sponsored by an organization that has a barely concealed distaste for the whole radio electronics industry.

That relationship soured all the way back at the beginning of the 10 Years War Over HD Radio. Digital radio was supposed to become the technology future, with plenty of new radio sales to drive the consumer electronics industry. Instead, as we know, the prospect

of technological change was fought over internally with the bloody-minded ruthlessness of the American Civil War. The Consumer Electronics Association (which recently changed its name to the Consumer Technology Association) walked out of the room in disgust and shut off the lights long ago. Since then they don’t talk much about radio except in carefully crafted “frenimous” commentary delivered in clipped tones.

If that last part seems a bit over the top, it’s not far from the essential truth. CTA isn’t going to carry any water for radio products, so don’t expect any annual love from them at their main marketing event, right?

TOYS IN THE BACK SEAT

Which brings us to the question: Does the “connected car” mean the end of terrestrial radio? And where does HD Radio fit into this future?

Of course the “connected car” has been around long enough now for us to understand the technology works

pretty well and over time will get even better. My own cars at home use a Bluetooth system to link to my data phone, which allows me to play my own music or listen to streaming sources over the built-in entertainment system. It works pretty well in my urban area. It has not been the “end of terrestrial radio,” in spite of the presence of well over 75 million iPhones out in the wild, not to mention Android and other alternate mobile data devices.

Based on this proof of concept, the automobile industry is now going to offer the next step down this well-trod consumer path: Build the wireless carrier connections into the car itself. This allows it to operate as a “hotspot” for

Somewhere out there a large majority of folks are just looking to be entertained while they do other tasks.

multiple devices, which would no longer require individual, separate data contracts. For those “dour” parents who have held out against another \$70 per month contract for each of their twin 5-year-olds to get an iPhone 6, anything with a WiFi adapter can share the bandwidth off the hotspot, and Junior can play games in the back seat without someone up front having to sacrifice their phone. What’s not to like about this concept?

However, there are some differences between what one does in a car and at home on the couch in front of the large screen. While we hear geeky predictions about cars that drive themselves, I think we are still a long way, and potentially some massive lawsuits, from when Mom hits a preset in the driveway and then relaxes while the car drives itself to work, always finding a free parking spot just by the front door.

Internet access can help keep the kids quiet by playing “Plants vs. Zombies” in the back seat while Dad does the shopping, but for now I think we all hope that it doesn’t worsen the driver distraction that is already at dangerous levels. People are still going to want the kinds of audio-only entertainment that have traditionally been a great way to lessen the boredom of the daily commute. Radio has a strong history of serving this market very well, as demonstrated by recent studies from Nielsen (2014) that confirmed a 93 percent weekly usage of radio by population in the United States, with this number rather evenly distributed across age demographics (in contrast to what some have inferred

about radio skewing to older populations).

The public Internet has transformed the media industry in so many ways, largely due to its interactive possibilities. We just need to remember there are some tasks out there (driving, cooking, minding the family, and doing productive work) that are best done with limited interruptions. Somewhere out there a large majority of folks are just looking to be entertained while they do other tasks.

HD ADVANCES

How does HD Radio fit into this connected car future? It remains the one approved method of free digital transmission on FM; it isn’t going away soon unless radio goes away. Ironically, now that we’ve reached the end of the HD Wars, adoption of digital radio is proceeding rather smoothly, with numerous cars sold in the United States in 2015 featuring HD-capable radios. Record car sales appear to be the “driver” for HD Radio sales. It is due to the largesse and cooperation of the automobile manufacturing industry that we are now getting a mass population to sample HD Radio just at the same time they are sampling public Internet access in a mobile environment. But they serve quite different purposes.

HD Radio quality remains head and shoulders above its most direct mobile competitor, Sirius XM, and we are seeing now more radios that can display typical music metadata such as song title and artist. In major markets the group stations have this well supported. I am even seeing a smattering of radios (mostly in car model years 2014 and later) that have graphical images to go with their music programming. Again, in major markets the group stations have this largely in place; it is mostly a matter of waiting for the radios to work their way into the cars via new sales and the aftermarket. Graphics are an enhancement that has not yet been answered by satellite, which seems content to use every

ounce of bandwidth offering more regional-specific programming if possible.

In terms of look and sound, it would appear that HD Radio, whose creation was in many ways a response to the threat of satellite radio, has technologically surpassed satellite radio, at least with regards to techno bling. Visuals seem to be an essential in today’s media.

SNEAKERNET FOR CARS

HD Radio also offers a modest data download. While not all stations use it, iHeartMedia’s Total Traffic & Weather Network is distributed over HD Radio into more



Michael LeClair

than 200 metropolitan areas across the U.S. Some new opportunities for this data stream are becoming possible and could be deployed in the near future.

Modern entertainment systems that are prepared for Internet browsing almost certainly contain m.2 SATA drives (or the equivalent), which are essentially solid-state hard drives that are the size of a postage stamp. Size notwithstanding, these drives can store up to 500 GB of data and/or a full operating system like Windows 10 or OS X. The on-board storage opens up the opportunity to cache visual images that can be called by something like HD Radio to load on command. Five hundred GB is more than enough to cache high-resolution album art or other supporting graphics such as short videos (but careful of that distraction problem). Cache is always faster than download, even when it comes to 4G wireless. Cheaper too. Database upgrades can be handled by a USB stick supplied to the customer or a background download supplied wirelessly via HD or a wireless mobile carrier.

TROUBLE FOR SATELLITE?

I was surprised to note that Sirius XM reported an uptick in actual (paying) subscriptions in 2015, and we shouldn't ignore the implications of the continued existence of this medium.

First, it bears repeating that 2015 was a banner year for automobile sales, and satellite radio has always leveraged new car sales to drive adoption by offering free six-month

subscriptions.

Second, it appears there will just always be a percentage of people who want the style and limited interruptions that are characteristic of satellite radio music programs. Indeed the history of this format extends all the way back to beautiful music stations in the 1960s or their subscription counterpart, Muzak. It's not for everyone, which is why it is supported by subscriptions.

The connected car in fact establishes a new competitor for satellite radio, as services like Pandora and Spotify are offering for free the kind of music services with limited (i.e., machine-generated) curation that resemble the low-key style of subscription radio. And for a few bucks more you can get them with fewer commercials and, I suspect, higher fidelity than satellite.

While the Times might be wondering about the demise of terrestrial radio due to the coming of the connected car, it may well in fact be bearing witness to the beginnings of the demise of satellite radio.

What do you think? Weigh in by emailing radioworld@nbmedia.com with "Letter to the Editor" in the subject field.

Michael LeClair is chief engineer and manager of broadcast systems for WBUR in Boston, responsible for all the technical aspects of its radio transmission and audio production facilities. He is the former technical editor of *Radio World Engineering Extra*, where he continues as a contributor. ■

We are still a long way, and potentially some massive lawsuits, from when Mom hits a preset in the driveway and then relaxes while the car drives itself to work, always finding a free parking spot just by the front door.



Fred Jacobs

Read More Here

More industry leaders share their views with us.

Fred Jacobs created the classic rock format and is president of Jacobs Media. **Jackson Wang** is founder/CEO of e-Radio and co-chairman of the National Radio Systems Committee's Digital Radio Broadcasting subcommittee.

Read what they both told us at

radioworld.com/hdqa



Jackson Wang