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Need to Know: AI and Machine Learning



BY MICHAEL GARWOOD,
AV TECHNOLOGY EUROPE

As emerging technologies go, artificial intelligence has certainly taken its time in making its presence felt on the world.

The term “AI” has been around for almost 70 years, coined in 1955 by computer scientist John McCarthy — a.k.a. the “father of AI.”

Since then, AI has experienced a stop-start existence, largely due to sporadic funding and below-par technology. In truth, the term AI has arguably gained more notoriety for storylines of killer robots (and the occasional Wall-e) hell-bent on destroying mankind than for its practical use and business benefits. But that’s all changing.

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Artificial intelligence’s potential is beginning to be fulfilled

This is the fourth article in a series called Need to Know, exploring complex topics like blockchain, 5G and cybersecurity, and how they apply to each industry served by the websites and magazines of Future U.S., the parent of Radio World.

Radio Show Takes a Turn in the Sun



RADIO SHOW
Produced by RAB and NAB

Orlando show coverage starts on page 18

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NAB Sets Out Reasoning for Its Opposition to Class C4

Says the idea will only cause more congestion and escalate the risk of interference

The following is excerpted from comments by the National Association of Broadcasters to the Federal Communications Commission. NAB opposes the introduction of a new FM "Class C4" radio service as well as a related procedure in which FM stations could be involuntarily reclassified.

The FCC took comments about these proposals in a notice of inquiry that was prompted by a petition from SSR Communications. NAB argues that the proposals "are a step backwards for the radio industry at a time when radio stations are working through any number of interference issues hampering their service to their listeners."

The NAB wrote:

As detailed below, a new Class C4 radio service between Class A and Class C3 service will only serve to increase congestion on the already crowded FM band and escalate the risk of interference to other FM services, especially FM translators.

In addition, the FCC should not employ a "triggering" mechanism through which an FM station could file a show cause application that requires another FM station to upgrade to maximum class facilities or be involuntarily designated a Section 73.215 facility. Such an approach would hinder FM broadcasters from improving their facilities in the future or responding to technical and other changes in circumstances beyond their control.

NAB respectfully requests that the commission elect to close this proceeding after the comment period has concluded.

Introducing a New FM Class C4 Radio Service Would Reduce the Technical Integrity of the FM Band and Potentially Cause Substantial Harm to FM Translators

The commission seeks comment on SSR's proposal to create a new FM station Class C4 in Zone II with a maximum ERP of 12 kilowatts, in between the Class C3 and Class A services. SSR claims that many Class A stations could benefit by upgrading to Class C4. Unfortunately, supporters of this proposal make little allowance for the substantial harm it could impose on the FM band, existing FM stations and their listeners.

It is safe to say that the FM band is already congested. With the recent introduction of thousands of new translators, this is not the time for the commission to introduce a new universe of Class C4 stations that will only increase the risk of interference to other services.

Adopting this proposal would undermine the commission's commitment to safeguard the technical integrity of the FM band to ensure that listeners can receive interference-free, undistorted radio service.

Protecting FM signal quality has never been more important, given the increasingly competitive audio marketplace. Consumers today access music and other programming from a multitude of alternative platforms and devices, including satellite radio, podcasts, online streaming, smart phone applications and other mobile devices. Thus, if a listener cannot tune in to her favorite station, she has many other options to fill that void and may never return.

The commission should be wary of SSR's proposal because shoehorning more stations into the FM band, or allowing potentially hundreds of Class A stations to essentially double their power output, will inevitably increase the band's noise floor and cause interference.

SSR's proposal could be especially problematic for FM translators, which are a critical component of radio service.

Translators allow broadcasters to deliver a good quality fill-in signal to listeners who are unable to access the primary station because of terrain, distance, or building impediments. In addition, FM broadcasters now use translators to provide highly-valued programming on HD Radio multicast channels, such as weather and foreign language content.

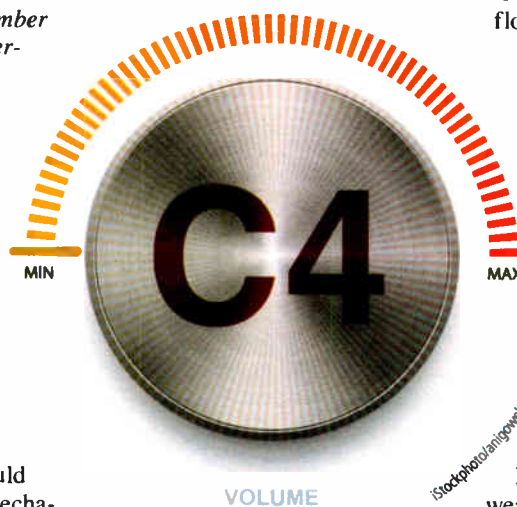
Pursuant to the commission's AM Radio Revitalization proceeding, thousands of AM broadcasters now use cross-service translators to provide new and improved service, especially during nighttime hours.

Translators have been a boon for many AM stations, if not the difference between staying on the air and going out of business. The number of FM translators has increased from approximately 1,850 in 1990 to approximately 7,575 in 2017, with more than 700 new translator construction permits authorized and 1,100 applications for new translator construction permits pending.

As a secondary service, translators are not entitled to interference protection to or from a primary full-power FM station, such as a new Class C4 station. Any move by a Class A station to upgrade to Class C4 status could jeopardize nearby translators, either by degrading a translator's service or causing a translator to interfere with the Class C4's newly expanded service.

The translator can attempt to resolve such interference by reducing power, modifying its antenna or moving to another channel; however, these options lead to reduced service or may be impossible if the FM band is too congested. Introducing a new Class C4 service therefore could undermine the commission's efforts to help revitalize AM broadcasting, or hinder FM service on HD Radio multicast channels.

(continued on page 5)



Coda: John Casey Embarks on Next Chapter

FROM THE EDITOR



Paul McLane

If you'll allow me a moment for a personal note: Today I salute my friend John Casey and thank him for his decades of service to Radio World.

John recently moved on to his next professional chapter after many years of guiding RW's advertising sales efforts. For much of that time he held the title of publisher, but the word fails to capture everything John brought to our pages — his understanding of our marketplace, his technology foresight and creative eye for visual design, his ethics and fundamental sense of business decency.

Whatever our respective job titles have been over time, he and I treated one another like co-pilots, even though it's my name and face that readers usually know. We worked together to conceive eBooks, webinars, show coverage, supplements; we co-created Radio World Engineering Extra and the Radio World Excellence in Engineering Awards and worked on special projects too numerous to count. The relationship has been one of the most gratifying parts of my own 22 years here.

Now he's back in the supply side of our industry as the new director of sales for ENCO Systems. He leaves a great team in place and departs on the best of terms, but he'll be missed and will always be part of this publication's proud history. Thanks, JC!



1

1 — John Casey on the spring show floor in 2013.



2

2 — That's John on the video screen, smooching a mascot in the Rushworks booth at an NAB Show.



3

3 — John and I enjoyed a visit to the top of New York's One World Trade Center as construction neared comple-

tion. Our host John Lyons of the Durst Organization is at center.

4 — At the fall Radio Show in 2007, JC is third from left next to our longtime boss Carmel King, now vice president of our parent company Future U.S. That's former NewBay CEO Steve Palm at left. And I

Photos 1, 2, 4, 5 by Jim Peck



4



5

5 — John and I visited with Michelle Vetterkind, president and CEO of the Wisconsin Broadcasters Association, in 2012. WBA puts on one of the industry's best regional conferences.

6 — John Casey certainly knows his



6



7

broadcast technology but he will always be a musician at heart. That's him in the background at far left playing guitar behind Gregg Allman in 1982 ...

7 — ... and hanging with Hall & Oates and John Grayson at the Rock & Roll Hall of Fame and Museum.

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C4

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Given the recent influx of translators, the commission is already taking steps to address translator interference problems. The commission is collecting feedback on policy and procedural changes that could help prevent interference conflicts and streamline the resolution of such conflicts. NAB submits that approving a new category of FM Class C4 service will only complicate these efforts by substantially increasing the risk of interference between translators and Class C4 stations. At the very least, now is not the time for the commission to add layers of complexity to an already challenging interference landscape.

The proposal at issue would also likely on balance harm minority-owned stations. The notion that minority owners will benefit from the commission adopting the new C4 service is speculative at best.

What is far more likely is that this new class of service will wreak havoc on minority and other owners. Given the economics of broadcasting, an AM station is often the entry point for new broadcasters, including minority owners who rely on translators to enhance their service. According to MMTC, minorities disproportionately tend to own AM stations, especially AMs with weak technical facilities. The interests of minority AM station owners are no less important than minority owners of Class A stations seeking to upgrade to Class C4, and should not be imperiled because a nearby Class A station wants to reach a few more listeners and knock their translator off-air in the process.

The Proposed Section 73.215 Process Would Hinder the Improvement of FM Stations

SSR asserts that the commission's rules providing interference protection based on a station's maximum facilities for its class of service, instead of their actual facilities, amount to an overprotection of stations with so-called "sub-maximum" facilities.

SSR claims that some stations, including Class A stations, are unnecessarily prohibited from increasing power because

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FM Class C4 Would Bring Welcome Relief
 Why small commercial broadcasters should embrace Commissioner Pai's speech

COMMENTARY
 BY MATTHEW K. WESOLOWSKI AND DAVID HORNG

Pai: Don't Neglect the FM Band
 Commissioner spotlights Class C4 idea

What Can You Learn From 100 Radio Station Tours?
 page 14

Chairman Ajit Pai moved the Class C4 debate to the front burner with remarks at the fall Radio Show two years ago. The cover of Radio World that October reported on it and featured a commentary co-authored by the CEO of SSR Communications in support of the idea.

they must protect other stations to the full distance separations for their class of service.

Under SSR's proposal, an FM station could file a request to modify its facilities (e.g., Class A upgrade to Class C4) that invokes a show cause procedure whereby neighboring stations operating at sub-maximum facilities could be involuntarily reclassified under Section 73.215 of the rules. If the latter station does not elect within 30 days to maximize its facilities, it would be deemed to accept reclassification under Section 73.215, and going forward receive interference protection only to its actual operating contour, instead of the full distance separations for its class.

Essentially, SSR believes that any station operating at sub-maximum facilities for some period of time must be either unwilling or uninterested in ever upgrading its operations,

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C4

(continued from page 5)

thereby justifying a triggering mechanism that would forever block any such upgrade.

NAB strongly opposes this proposal. Such an approach would contradict the commission's long-standing policy of protecting stations based on the maximum height and power parameters for their class, even if they are actually operating at lower levels. The commission specifically adopted this approach to ensure that stations are provided the

flexibility to improve their facilities on their own timetable.

The commission established the distance separations required between FM stations in 1962, allocating each class of service a fixed spacing limit based on the height and power limits for each class. The commission recognized that many stations may not be able to operate maximum facilities right away, but found that allowing stations an opportunity for subsequent expansion was preferable to confining a station's interference protection to lesser parameters. The commission thus refused to set a

deadline for stations to implement maximum facilities, allowing broadcasters to upgrade based on their own reasonable business discretion.

In subsequent proceedings, the commission has clarified that stations are not compelled to accept lesser operational parameters, but may voluntarily choose to request Section 73.215 reclassification if it suits their needs. Nothing in the commission's rules or policies support SSR's proposal that stations should be reclassified against their will.

SSR's proposal discounts the myriad reasons that broadcasters may operate at sub-maximum facilities, including circumstances beyond their control. The height or power of a station's transmitter may be constrained by Federal Aviation Administration limits, or local zoning ordinances may bar a station from locat-

listeners and advertisers. It is also common for population centers to shift over time as cities and suburbs ebb and flow. Stations involuntarily locked into their current operations under SSR's approach would forfeit the opportunity to respond and serve their audiences as population centers fluctuate. SSR's proposal would essentially turn broadcasters' plans on their head by making them contingent on the needs and timetable of their direct competitors.

Such an approach is even more problematic given SSR's proposal that a so-called sub-maximum station would be given only 30 days to determine whether to maximize facilities. It would be unreasonable for the commission to require a broadcaster who has operated under certain parameters for several years to reshape their entire business plan under such a short deadline.

“SSR's proposal discounts the myriad reasons that broadcasters may operate at sub-maximum facilities, including circumstances beyond their control.”

ing its antenna on a superior site. Of course, conditions could change at some point, such as an update to the FAA limits or a local government's rezoning of property, although a station subject to reclassification under SSR's proposal would be prohibited from taking advantage of any such changes.

Even more troubling, SSR's proposal would impede a station from improving its service in response to business or marketplace changes. For example, the owner of a station's transmitter site may decide to repurpose the property, forcing the station to find another site. However, given the congestion of the FM band in many markets and availability of other transmitter locations, it may be impossible for a station to find another site that complies with the limits of its involuntary reclassification under Section 73.215. The same would hold true if a new construction presented an opportunity for a station to move its antenna to a superior site that provides better signal quality to more listeners. SSR's proposal would impede these kinds of site relocations.

The proposed triggering mechanism could also upend the business plans of a station that has purposely operated at sub-maximum levels for some time while it generates the revenue needed to afford maximum facilities.

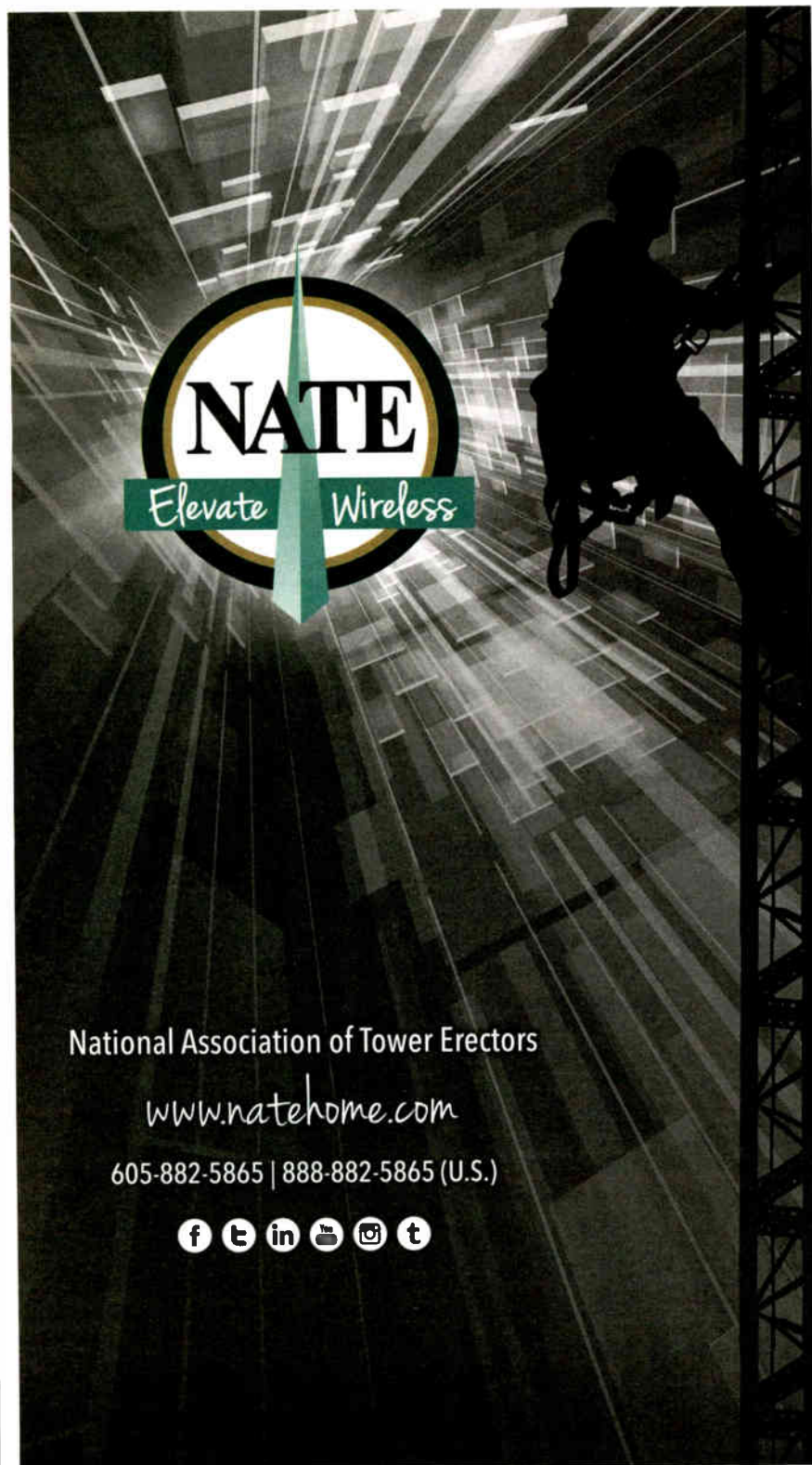
It is common for broadcasters to take measured steps toward station improvements while it builds a following among

The commission also seeks comment on the technical impact of such a procedure. Adopting SSR's proposal would cause more congestion on the FM band and increase the risk of interference.

Permitting Class A stations to upgrade and forever lock neighboring stations into their current facilities would increase the noise floor on the FM band while providing minimal benefit to one individual station and harming other broadcasters. Indeed, it is quite possible that any additional listeners a new Class C4 station may reach would be offset by the listeners who lose interference-free service to a reclassified station.

SSR also makes no mention of whether the additional listeners potentially covered by a new Class C4 station may already be well-served by existing stations. The primary motivation for SSR's proposal is to enable Class A stations to upgrade power to reach more areas and listeners. However, the commission has long held — at least in the waiver context — that expansion of service is an insufficient basis for granting a request to impose Section 73.215 reclassification on another station. NAB finds no justification in SSR's petition or the notice for the commission to reverse course on this well-established policy.

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World Radio History

AI

*(continued from page 1)***THE FOURTH INDUSTRIAL REVOLUTION**

Thanks to breakthroughs in computing power, the advent and availability of big data, cloud hosting/storage, highly sophisticated software and complex algorithms, AI's potential is starting to be fulfilled — with the business world as the biggest benefactors.

The market has reacted at pace. In recent years, billions of dollars have been invested by many of the world's leading organizations in AI technologies (and companies), each looking to utilize some form of AI to future-proof and improve their businesses, and/or create a competitive advantage.

Intel, Microsoft, Facebook, Samsung, IBM, Google (Deepmind), Amazon, Uber, LG, Apple, Yahoo are just some of the 2,000-plus AI specialists in the field using and providing intelligent machine-powered services.

Various estimates suggest more than \$46 billion will be spent on AI services by 2020 by businesses, a figure rising to above \$51 billion 12 months later.

BUT WHAT IS AI?

Before we go on, it's perhaps worth clarifying what AI is and is not. Yes, AI can mean robotics, but the best examples of AI are purely software-based rather than having a physical form.

There are hundreds, maybe thousands of often extremely technical and confusing definitions bandied around online and in various publications detailing what AI actually provides. Indeed, entire books have been written detailing the subject.

For a more technical and detailed description we recommend you visit your local library, or download a copy of one from the many AI authors out

there — Nick Bostrom's "Superintelligence: Paths, Dangers, Strategies" is a personal favorite.

In its most simple form, AI is the study of methods for making computers behave intelligently and being able to replicate various characteristics of humans.

These can include identifying objects, sounds, understanding languages spoken, reading and understanding content such as text and numbers.

Machine learning is another extremely important branch of AI that you'll often hear and read about. ML uses a more cognitive approach, using algorithms that enable it (whatever form factor "it" may be) to combine what it's been programmed to do, but also the capability of learning for itself through experience.

WHERE WE ARE?

Depending on what you have seen, heard or read (fictional or not), you may have different ideas as to what AI is and is not capable of at this stage. To offer some clarity, there are three levels:

- **Weak AI** — AI capable of demonstrating human intelligence to carry out specific tasks.
- **Strong AI** — AI capable of showing self-awareness, the ability to think and make decisions for itself to the same level as a human being.
- **AI Super Intelligence** — AI showing superior levels of intelligence to human beings and fully in control of its existence.

For now and for the foreseeable future, only Weak AI is relevant, so remove images of a leathered up, sunglasses-wearing Arnold Schwarzenegger.

IT'S ALREADY HERE

Examples of weak AI have widely

been adopted by many business and are in use today; you just might not realize it.

In fact, it's a fairly safe bet that you've unknowingly encountered some form of AI and machine learning technology before you started reading this article. Maybe even before you got out of bed.

Have you ever used Apple's personal assistant, Siri? Or Amazon's, Alexa? Perhaps you've noticed how emails can now detect questions being asked and automatically provide you with a ready-made short reply? How about your smartphone that seems to be able to predict sentences as you're typing?

If you like a bit of online shopping (Amazon) or video streaming (Netflix), have you wondered how those personalized recommendations are determined? What about Facebook and its ability to not only recognize there are people in the photo you've posted, but can sometimes even identify them too?

They're all using some form of AI, with the intention of bettering customers' experience, enhancing their financial opportunities and improving their workplace efficiency.

AI FOR ALL

"We are at the cusp of a new revolution, one that will ultimately transform every organization, every industry and every public service across the world," said Microsoft Asia President Ralph Haupter. "I believe 2018 is the year that this will start to become mainstream, to begin to impact many aspects of our lives in a truly ubiquitous and meaningful way."

You may be forgiven for thinking the implementation of AI is something exclusively for the Fortune 500s of this world ... but you'd be wrong.

Today, such are the advancements and an ever-growing number of companies exist purely to support businesses using AI technology.



AI can be packaged up and purchased on a monthly basis, like your broadband or phone. This model reduces significant costs associated with custom in-house solutions.

It also means the complexity is significantly removed (the "it doesn't matter how it works as long as it works" approach), meaning you won't necessarily need to go and employ a qualified and expensive computer scientist.

"You don't need to be a mathematician genius or have a Ph.D. in software engineering to make sense of AI for your business," said Gartner analyst Whit Andrews. "You don't have to make massive investments in infrastructure and personnel in order to start applying AI's potentially transformative technologies."

He adds: "These technologies will transform the nature of work and the workplace itself. Machines will be able to carry out more of the tasks done by humans, complement the work that humans do, and even perform some

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TERMINOLOGY YOU NEED TO KNOW

- **Algorithm** — is an unambiguous specification of how to solve a class of problems. Algorithms can perform calculation, data processing and automated reasoning tasks.
- **Chatbot** (also known as a talkbot, chatterbot, bot, IM bot, interactive agent or Artificial Conversational Entity) is a computer program or an artificial intelligence which conducts a conversation via auditory or textual methods. Such programs are often designed to convincingly simulate how a human would behave as a conversational partner.
- **Deep learning** (also known as deep structured learning or hierarchical learning) is part of a broader family of machine learning methods based on learning data representations, as

opposed to task-specific algorithms. Learning can be supervised, semi-supervised or unsupervised.

- A **virtual assistant** is a software agent that can perform tasks or services for an individual. Sometimes the term "chatbot" is used to refer to virtual assistants generally or specifically those accessed by online chat (or in some cases online chat programs that are for entertainment and not useful purposes).
- **Machine learning** is a subset of artificial intelligence in the field of computer science that often uses statistical techniques to give computers the ability to "learn" (i.e., progressively improve performance on a specific task) with data, without being explicitly programmed.

- **Robotics** is an interdisciplinary branch of engineering and science that includes mechanical engineering, electronics engineering, computer science and others. Robotics deals with the design, construction, operation and use of robots, as well as computer systems for their control, sensory feedback and information processing.
- **Speech recognition** is the interdisciplinary sub-field of computational linguistics that develops methodologies and technologies that enables the recognition and translation of spoken language into text by computers. It is also known as automatic speech recognition, computer speech recognition or speech to text. It incorporates knowledge and research in the linguistics, computer science and electrical engineering fields.

More than Just an IP Codec

Introducing Record and Playback on the ViA



The screenshot shows the ViA mobile application interface. At the top, it displays the time 'Jul 3 3:12 am' and the status bar with '4G' and battery icons. The main screen is titled 'Media' and has three tabs: 'Record', 'Manage Recordings', and 'Record Mix'. A track titled 'Track: Record0042.mp3' is shown with a progress bar at '00:01:29' and 'Space Remaining: 14.6 GiB'. A 'Switch to Playback' button is visible. Below the screen is a circular control panel with three segments: 'Stream' (green), 'Record' (red), and 'Play' (blue). A central music note icon is also present.

Record

- Select & record any input, return audio or file playback
- Stream, Record & Play simultaneously
- Record to SD card
- View & manage recordings

Stream

Playback

- Create playlists of local & imported recordings
- Route file playback to any output or record media
- Offline Cue monitoring

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AI

(continued from page 8)

tasks that go beyond what humans can do. As a result, some occupations will decline, others will grow, and many more will change.”

COMPETITIVE CHANGE

So, why should you and your business consider implementing AI? Is it just a fad? Will it really benefit you?

The answers are wide and extremely varied and will be largely unique to your business. There may be some obvious areas you'd like to improve upon, financially or operationally motivated.

The magnitude and inevitability of AI cannot be ignored, nor underestimated. Many AI experts have described the potential impact of AI on businesses as equivalent to the invention and adoption of the personal computer and email.

Some suggest AI could help boost revenues by around 20 percent, while others warn that any business not currently thinking about adopting some form of AI could already be two years behind a rival. Further delays could even result in their demise down the road due to losing a competitive advantage.

DO OR DIE?

“More than one-third of businesses will not survive the next 10 years,” said John Chambers, now former CEO of Cisco during a discussion on AI. “Companies should not miss the market transition or business model nor underestimate your competitor of the future — not your competitor of the past.”

Ovum Principle Analyst Michael Azoff adds: “Every business should at

a minimum make itself aware of AI progress in its industry.”

GETTING STARTED

The first thing to remember is what the purpose of AI actually is and identifying how it can benefit your business. From speaking to various professionals in the field, the two core reasons can be narrowed down to the following:

- Solving existing problems
- Discovering and identifying new opportunities

The uses of AI are therefore extremely vast and varied.

At its core, AI is fueled by data, which can come in many forms for many uses. Emails, newsletters, subscriptions, views to your website, downloads, sales are just some examples of where data can be collected.

On its own, that data may not seem useful. However, contained within it could be the difference between success and failure (profit and loss). This is where AI comes into play, and be able to — in many instances — do the job of a human.

A famous quote within AI circles comes from Michael Palmer of the Association of National Advertisers sums it up well.

“Data is just like crude [oil]. It's valuable, but if unrefined it cannot really be used. It has to be changed into gas, plastic, chemicals, etc. to create a valuable entity that drives profitable activity; so data must be broken down and analyzed for it to have value.”

Today, the bulk of that potentially valuable data held in companies is still

not being utilized.

“If we look at the amount of data which is actually being analyzed today, only 20 percent of the data we have is searchable and being used productively,” said IBM Chairman, President and CEO Ginni Rometty during a discussion on the subject. “The other 80 percent is held inside companies, generally not being used.”

IMPACT ON JOBS

Automation is one of the more universal drivers for AI, a concept that spreads fear when discussing the risks to people's professions. Administrative work (such as data processing, data collection) is widely seen as an area where AI will support and/or replace humans.

Some figures suggest almost half of all work could eventually be automated, while PwC estimates AI-powered machines could take up to 30 percent of UK jobs by 2030. The Bank of England has estimated that 15 million jobs may be at risk.

“If your work is repetitive and not creative, you will be gone very soon,” was a stark warning Dr. Roman V. Yampolskiy, a professor in the department of Computer Engineering and Computer Science at the Speed School of Engineering, University of Louisville.

Bart Selman, a professor of computer science at Cornell University, was quoted as saying: “A lot of large companies have ‘middle management’ jobs where people manage other people at a very low-level in terms of keeping track of things like vacations and sick days. Those jobs I believe are at risk. Jobs that involve a large routine component. If you've made the proper investment, you can develop an AI system that can take over a good fraction of those jobs. A lot of big companies have a lot of those positions and will be looking at it.”

Examples of automation and loss of jobs can be seen all over the world today. Some of the headline-grabbing stories include that of a Japanese law firm called Fukoku Mutual Life investing more than \$1.7 million building an AI platform with IBM Watson, which has seen more than 34 staff replaced. The savings for the firm are predicted to be around \$1 million a year.

“The next wave of economic dislocation won't come from overseas,” President Barack Obama stated in 2017 during his farewell address. “It will come from the relentless pace of automation that makes many good middle-class jobs obsolete.”

SPOTTING AN OPPORTUNITY

Another major area for AI adoption is within sales. There are now examples of where AI, using natural language processing software and specific algorithms, is able to spot patterns (in data,

to identify new opportunities and provide a level of analysis in just a few seconds.

This can vary greatly. Examples include gaining greater knowledge on customer's viewing and buying behavior — i.e, what they're looking at and when they most likely buy (such as payday).

Another might be identifying the best time to send custom marketing/promotional material or e-newsletters to specific customers rather than en masse as part of a one-size-fits-all strategy. Another could be automatically identifying cold customers (those that haven't transacted with you for a while) or have looked at something for a long period but not bought, sending them updates, reminders or special offers.

Let's take a closer look at some of the various examples of AI technology in action today that can be widely implemented into many different businesses and organizations.

PERSONAL/VIRTUAL ASSISTANTS

The use of personal or virtual assistants has gained mass-market appeal in both business and consumer markets in recent years, with services becoming increasingly accessible and affordable.

Using speech recognition and natural language processing, the technology is able to understand and respond to both written and spoken voice commands in a human manner.

Popular examples include Apple's Siri (iPhone 5 and above), Microsoft's Cortana, Amazon's Alexa and Google Home — but there are hundreds more.

Their functionality and uses continue to evolve and can integrate with many existing applications (calendars, to do lists, reminders, maps and even managing your meetings). More recently, these technologies are being integrated to control electrical appliances — AV, lights, shades, thermostat and so on.

Amazon recently launched “Alexa For Hospitality” for its Dot and Echo microphone and speaker products. The platform is designed to transform rooms (such as hotel rooms) into Smart Rooms, carrying out all the functions mentioned above, while also providing spoken information specific to the hotel (room service, booking a restaurant, laundry, tickets to attractions and so on).

CUSTOMER SERVICE

One of the fastest areas of adoption for AI is in customer service. As above, using natural language processing and machine learning, so-called chatbots or Virtual Agents are increasingly being integrated into websites to be able to have online conversations with customers in multiple languages to solve their queries in a human-like manner and, depending

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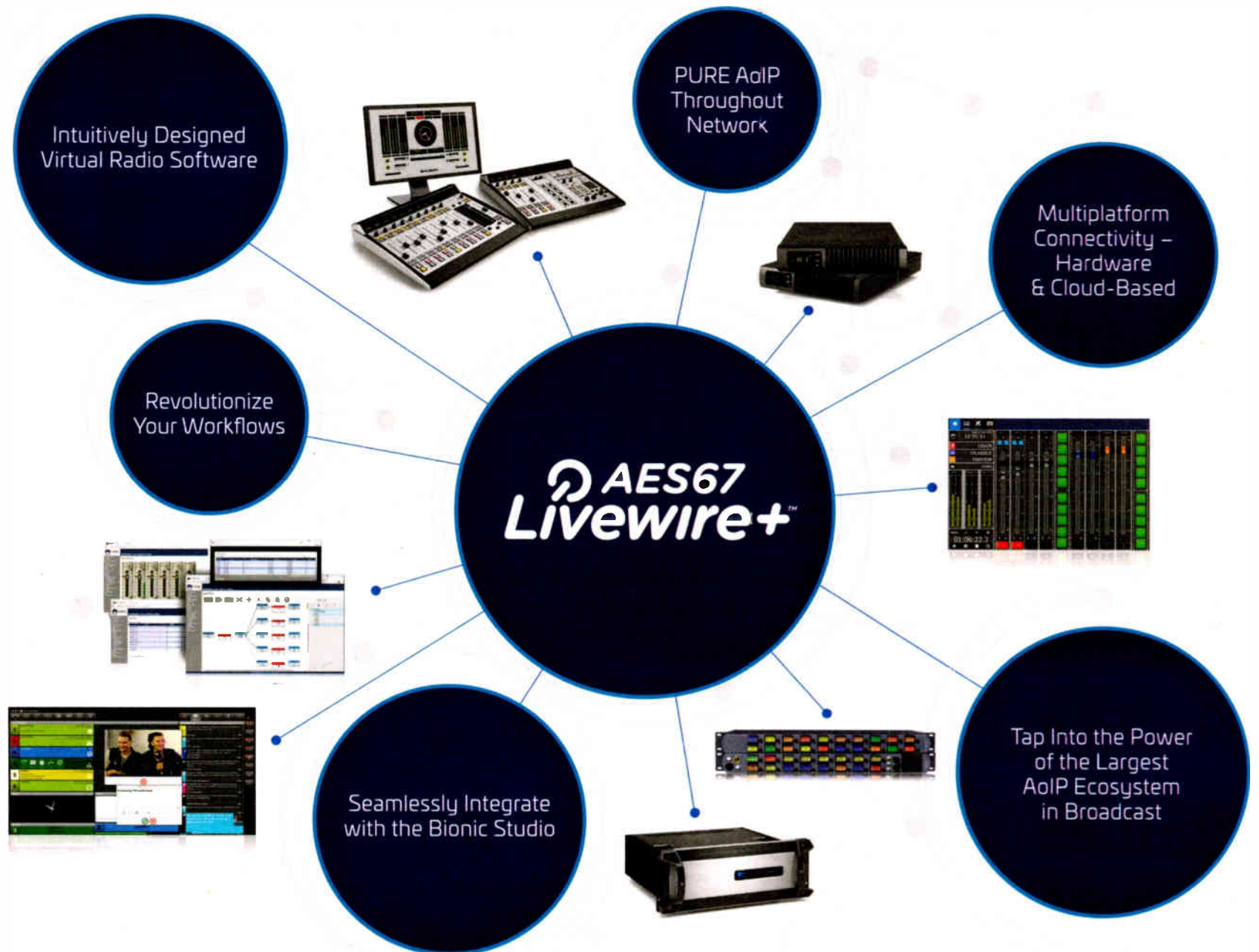
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AI

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on the business, maximize sales opportunities. According to an Oracle survey earlier this year, around 80 percent of businesses want chatbots by 2020.

Such services are able to help reduce the number of calls to a call center, reducing waiting times, enhance the customer experience and even reduce the number of required operators, saving money. Chatbots, in some instances, have become so realistic, it's sometimes now difficult to distinguish between human and AI.

Some examples of where chatbots have had a significant positive outcome for businesses:

- 1-800-Flowers: reported that more than 70 percent of its Messenger orders derived from new customers!
- Sephora: increased its makeover appointments by 11 percent via their Facebook Messenger Chatbot.
- Nitro Café: increased sales by 20 percent with its Messenger chatbot which was designed for easy ordering, direct payments and instant two-way communication.
- Sun's Soccer: Chatbots drove nearly 50 percent of its users back to their site throughout specific soccer coverage; 43 percent of chatbot subscribers clicked through during their best period.
- Asos: increased orders by 300 percent using Messenger Chatbots and got a 250 percent return on Spend while reaching 3.5x more people.

(Source: <https://chatbotlife.com/how-businesses-are-winning-with-chatbots-ai-5df2f6304f81>)

MEDIA MONITORING

AI is also being used to monitor company perception on social media in real time, or to assess, for example, consumers' opinions of a company, the service provided or perhaps an ad campaign or a new product. The analysis gleaned from

the feedback can be used to help a company to acknowledge and rectify misgivings or gain insight into consumers.

TRANSLATION

While language translation technology has existed for decades, the evolution of AI-powered voice-to-text, text-to-voice and voice-to-voice technology has reached speed and accuracy levels that enable language barriers to be all but completely removed. Microsoft and Google are two of the leaders in this space, providing the service for businesses and developers alike.

PERSONALIZED

Statistically, on average there are more than 2 million news stories published online every single day. Facebook, a social media site with more than 2.23 billion users (more than a quarter of the planet's population), uses AI to understand you as an individual, viewing your preferences, posts, shares and likes to provide a personalized news feed.

PURCHASE RECOMMENDATIONS

With shoppers spending more online than ever, it's becoming increasingly vital for companies to ensure every opportunity is maximized and that customers find what they want and even things they didn't want. To help support, online companies are able to create a digital profile of each customer, monitoring their account for buying history and items viewed. This enables the platform to make recommendations it believes are relevant to the customer, while also sending reminders (via email or via other websites where it has advertising space) that an item is still in stock and/or any offers to help seal the deal.

FORECASTING

AI technology is also being used to help retailers manage their current and future stock levels and predict increased demand by taking into account things like weather and local

events. For example, if the weather is expected to be hot, additional stock on water, meat and grills may be suggested (or automatically ordered), while cold weather might suggest more umbrellas and waterproofs.

SECURITY

Fraud

AI is transforming security, particularly in the financial space, with AI rather than humans, able to monitor suspicious spending activities 24/7, placing immediate blocks on transactions (online or physical). Financial institutions are even using past information (data) to help determine decisions, such as whether a credit check or mortgage or bank loan application is accepted or declined.

Cybersecurity

In 2016, it was estimated that attacks on individual companies in the UK surpassed 230,000. On average, 1,000 company firewalls were breached, despite having what might have been considered the appropriate security measures in place. With cyber attacks becoming ever more sophisticated and changing by the day, AI can be used to monitor a company's entire network 24/7, identify anything out of the ordinary and either kill it immediately, or halt it for further inspection.

AI is also able to detect unusual activity from members of staff, such as accessing information (a file or document) for the first time — again, either preventing it from being accessed or immediately alerting others.

CCTV/Surveillance

Poor, grainy, black-and-white tape-recorded CCTV is starting to be replaced, with HD, connected cloud based models, able to view and analyze what they're seeing. In the event of something suspicious, alerts can be sent to the appropriate personnel, while sophisticated recorded facial recognition technology could help alert teams, for instance in retail, when a known

shoplifter has entered the store or area.

ROBOTICS

AI in robotics is beginning to see increasing levels of adoption in customer service and teaching environments.

Robots, capable of identifying their surroundings (i.e. an obstacle, adult, child) have been used to provide additional support within hotels and hospitality, using speech recognition to answer questions from customers.

Hilton Worldwide has previously trialled robots (Connie) as its concierge, to provide directions to an attraction, restaurant opening times and help checking in/out.

Japanese firm SoftBank has also been deploying robots (Pepper) within its electronic retail stores.

Robots such as Pepper are also being used and programmed to provide teaching support within educational environments, answering questions from students on specific subjects and using a display or projector to provide visuals.

HEALTHCARE

The transformative impact AI is having on healthcare is worth mentioning. At its most basic, mobile phone apps are available in which a virtual assistant is able to have a conversation with the user to help diagnose a condition, plus provide advice on what to do next.

A more advanced version of this is being used by clinicians to help assist in the diagnosis and treatment of life-threatening illnesses and diseases, such as cancer.

Statistically, only 20 percent of the knowledge physicians use to make diagnosis and treatment decisions today is evidence-based. This means one in five diagnoses are incorrect or incomplete and nearly 1.5 million medication errors are made in the U.S. every year. More than 250,000 people die in the country annually as a result of such medical errors, something AI will help to reduce.

For example Qure.ai is using image recognition deep learning software that is able to take an examination of X-rays, MRIs and CT scans, and spot things an (overworked) professional may miss.

In addition, IBM's AI platform Watson uses natural language capabilities, hypothesis generation and evidence-based learning to support medical professionals as they diagnose and treat patients. First the physician might pose a query to the system, describing symptoms and other factors based on the patient's medical records. Watson mines patient data to find relevant facts about family history, current medications and other existing conditions. It combines this information with findings from tests and instruments and examines all

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AI

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available data sources to form and test hypotheses.

AUTONOMOUS VEHICLES

Yes, it's taken this long to mention driverless vehicles. Widely expected to have the biggest impact on jobs — particularly in the U.S. transport industry (over 4 million jobs) — autonomous vehicles are already being tested and slowly introduced — albeit human-assisted.

Various self-driving technologies have been developed by Google, Uber, Tesla, Nissan, Mercedes and more.

Key objectives for driverless vehicles include improving safety during a commute, with all cars communicating with each other and their surroundings to create a real-time digital map that is continually assessing risks. As a result, reaction times are no longer required from a human driver in the event of, say, a sudden obstacle, or even the car performing an emergency stop, with the vehicle — which is in tune with the other car(s) reacting for you. Driverless vehicles will also be able to provide a new dynamic in the way people are able to work or socialize during a journey, while also helping to reduce congestion in towns and cities, by connecting intelligently with traffic lights and emergency vehicles.

There have been several commercial examples, including self-aware trucks — including a Budweiser delivery — and taxis (Uber) completing journeys, demonstrating the technology is racing forward. However, progress has stalled somewhat and public opinion has been damaged due a number of high-profile deaths, including a self-driving Tesla colliding with a truck and a semi-autonomous Uber SUV running over a woman.

It's predicted by Statista there will be as many as 2.1 million autonomous vehicles on the road by 2025 and 20.8 million by 2030.

IN CONCLUSION

These are just a handful of examples of how AI is already proving significant benefits and opportunities for businesses all over the world.

It's important to realize these are current technologies. The AI revolution is here and is likely play a key role in the future of the way your business runs and performs, if it is not already doing so. When you decide to get on board is up to you.

We'll leave you with this quote from Gartner: "As vendors exploit AI software capabilities within business suites, enterprise applications, infrastructure support services and the customer experience, your organization will need new or updated strategies. Ready or not, AI is coming to you."

Is Artificial Intelligence Friend or Foe to Radio?

Radio's human touch is the secret to its continued success — but could AI help stations compete?

BY EMILY M. REIGART

Automation, audio streaming, smartspeakers, podcasting, audio search and other technological advancements are of increasing importance to radio, offering as many benefits as they do challenges for modern broadcasters.

As belts tighten and consolidation forces radio stations to seek out new efficiencies and revenue streams, artificial intelligence can be used as a tool for sales and digital teams and programmers.

SMARTSPEAKERS, ASSISTANTS, STREAMING, APPS & MORE

Thanks to advances in machine learning and artificial intelligence, many consumers are more likely to ask their smartphone a question than go to customer service. Fast food restaurants, airports and department stores have all adopted kiosks that can help consumers independently perform tasks that previously required employee assistance.

These AI applications have made human interaction less common, but Jacobs Media President Fred Jacobs points out that people still crave contact that feels human rather than robotic. (Hence the humanoid names and natural-ish voices adopted by Amazon, Apple, Google and other company's virtual assistants.)

On his blog (<https://jacobsmedia.com/artificial-intelligence-vs-radio/>), Jacobs writes, "It's almost ironic then that at a time when technologists are trying to make their robots and gadgets more human, radio often tries to make its humans more robotic. Voicetracking, syndicated shows, liner cards and other tactics designed to be ratings-friendly may be precisely what listeners aren't looking for when they turn on the radio."

But improving the user experience is exactly what sound companies say they're likely trying to do.

iHeartMedia, for example, says it's using AI to improve its iHeartRadio app and "to create an unmatched digital listening experience for our users," Chief Product Officer Chris Williams told Radio World in August. Using Super Hi-Fi, he says the company is able to offer customized song transitions and adjust volume discrepancies just like a live DJ would — but at the scalable rate necessary for streaming.

According to Williams, "There are two parts of programming that effect the user experience and have to be considered: curation and presentation. The curation, or song selection, is still based on our custom algorithm, which is influenced by the curation expertise of our world-class radio programmers. The presentation, or how the songs are stitched together, is what's being enhanced using the Super Hi-Fi AI."

IT'S NOT ALL BAD NEWS

Even as many DJs fret about automation, syndication and voicetracking putting them out of work, AI saved the

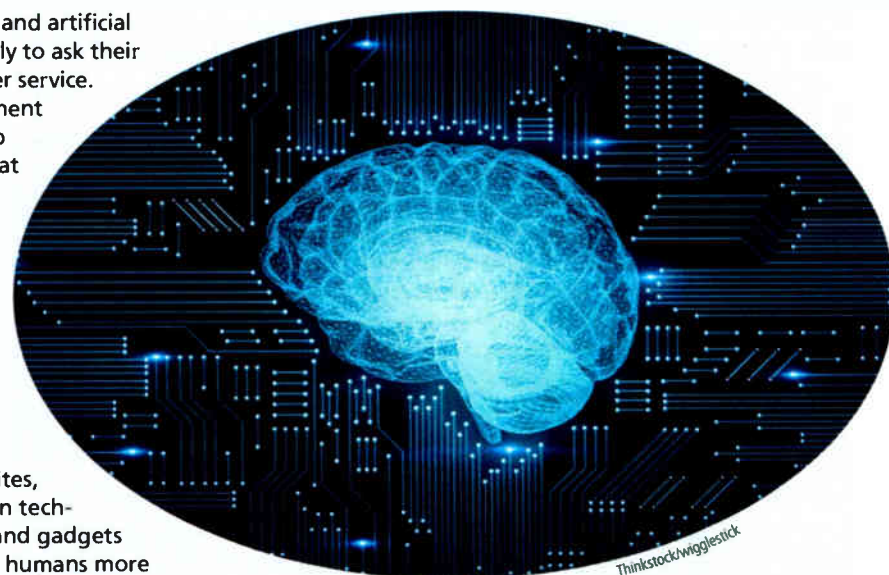
job of at least one veteran broadcaster.

In 2016, Cox Media Group national politics reporter James Dupree lost his voice due to tongue protrusion dysphonia, but Scottish tech company CereProc has helped get him back on the air, according to a BBC News story written by Mary-Ann Russon (<https://tinyurl.com/lyceu43cw>).

According to Russon's article, CereProc started developing neural networks in 2006, and this year has trained one to recreate Dupree's voice using artificial intelligence that learned from 30 years' worth of recorded broadcast audio.

CereProc Chief Technical Officer and co-founder Chris Pidcock told the BBC, "AI techniques work quite well on small constrained problems, and learning to model speech is something deep neural nets can do really well."

Beginning in late June, Dupree uses free text-to-speech software Balabolka to turn his radio scripts into an audio recording that replicates his voice and can be used on air.

**CAN AI MAKE MONEY FOR RADIO STATIONS?**

On the advertising side, artificial intelligence certainly offers opportunity for broadcasters.

Veritone Media Senior Vice President Drew Hilles says AI is ideal for tasks like monitoring media, transcription and ad verification, as well as jobs like generating reference clips.

"New realities for traditional media may initially cause concern, but revenue generated from radio advertising is not dying. Broadcasters can preserve and enhance their value proposition for advertisers by employing cognitive engine technology. With the use of AI, the once-linear data of audio and video commercials can be efficiently tracked and analyzed, including native content. As a result, broadcasters can not only prove the brand mentions, but also track the value they deliver to their advertisers," Hilles explained.

Additional opportunities for monetization may be found in the world of smartspeakers (think ads that direct listeners to take action — and then consumers can immediately and seamlessly do so via voice command).

This list of artificial intelligence applications for radio is far from exhaustive; most of AI's potential has yet to be discovered, let alone exploited.

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Contribution Audio Gets More Sophisticated

The author samples several products that help bring your audio back to the ranch

AOIP

BY DOUG IRWIN

The following story is an excerpt of the Radio World eBook "AoIP for Radio 2018." Read it for free at www.radioworld.com/resource-center.

The ability to generate unique content for your radio station has probably never been as important.

A simple way to do it is by taking live shots from a news or sporting event or by hosting guests who reach the station by calling in in some fashion. Fortunately, stations no longer have to rely on POTS or 3G cellular phones as a way to connect to remote callers, because there is a (relatively) new use for IP codecs that I refer to as contribution audio.

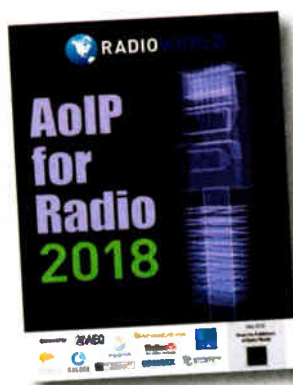
Let's consider three offerings available today.

Broadcast Bionics developed Skype TX for Radio in partnership with Microsoft, as a way for stations to receive high-quality audio "from anyone, anywhere," whether it's a remote host, guest, reporter, commentator or listener. It's aimed at the workflows of radio broadcasters wishing to use Skype calls on air by connecting to Skype users by way of their mobile phones, web browser or desktop.

Skype TX for Radio gives you the scale and flexibility to deliver multi-line talk-show and contest formats via Skype with a PC. The company's PhoneBOX4 integrates Skype calls alongside traditional phone lines, SMS and social media.

Skype TX for Radio is a Windows service that can run on your existing machine or hosted as a virtual machine. Up to 14 lines of Skype connectivity can be accommodated from one server.

Well known in the area of contribution audio is Comrex, whose lineup includes AoIP codecs and other tele-



phone-related products. Opal is a new Comrex device that enables remote guests to connect to the studio by clicking on a link delivered in an email message originating from the station.

Opal works by activating the Opus encoder built into popular browsers including Chrome,

Firefox and Opera. (Support for Safari, on iPhones with iOS11, along with newer versions of the Mac OS, was added in early February.) As a result, the remote user can connect to Opal from any computer or mobile device with one of those browsers installed. Opus



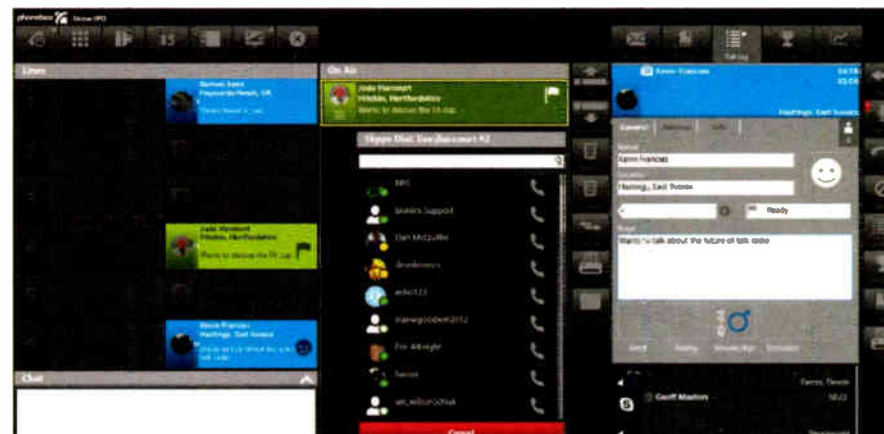
Opal works by activating the Opus encoder built into popular browsers.

transmits high-fidelity, low-delay audio in both directions; all the remote guest needs to transmit audio is a browser and a microphone.

At the station, the half-rack-width Opal device makes the actual send and receive connections to the studio facility via balanced XLR connectors (analog or AES). Aside from its Ethernet connector, it has a nine-pin DIN for remote contact closures.

In order to use Opal you will need a static, public-facing IP address and a domain name associated with that IP. "In order to keep the web browsers from complaining, we need to provide SSL/TLS security. In order to have Opal provide this security, it needs a URL with a real Domain Name instead of an IP address," the company states.

Another solution is QGoLive, a soft-



Broadcast Bionics developed Skype TX for Radio in partnership with Microsoft.

ware-to-software offering that does not require purchase of hardware at the studio (receive) end. The transmit app runs on iOS or Android devices; the receiver application runs on PC or Mac. An Android-based hardware receiver, with balanced XLR inputs and outputs, can

"play" button in the center of the screen, which will send audio to the station receiver and send cue audio to the app. The app will run in the background so you can use other non-audio apps while broadcasting with QGoLive.

The "Playlist" function allows the user to play out cuts recorded and edited in external apps (such as Twisted Wave) or any audio program that can open its output (mp3) in another program (or a browser that can open downloaded files in another app).

QGoLive allows you to write or dictate scripts which the talent can read while live. The user can also insert edited audio directly into the script for playback during a live report. And imported cuts can be added to and played from the scripts tab.

What contribution systems have you used? What other offerings should readers know about? Email us at radioworld@futurenet.com.

be used on the receive end so that there is no need to tie up a computer.

The primary purpose of QGoLive is to replace the live shots that are typically broadcast in phone quality when a reporter has just arrived on the scene and has not had an opportunity to set up equipment for of a broadcast-quality live shot.

QGoLive has three major functional aspects: Live, Playlist and Scripts. The "live" mode allows the user to connect to the receiver at the radio station after logging in. To connect, the user hits the



A remote control app lets the producer see who's connected to QGoLive and manage who's on the air. Connected users hear the reporter on-air.





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Radio Show Takes a Turn in the Sun

Fall conference explores impact of voice AI, data trends, podcasting and dashboard apps

BY PAUL McLANE

It's time for the fall Radio Show in Orlando. Here are highlights and a session sampler. Several sessions feature musical performances as part of the BMI Songwriters Spotlight Series. Next year's show will be in Dallas.

For the full program see www.radioshowweb.com.

TUESDAY SEPT. 25

Student Scholars Kickoff Featuring Kevin Harlan (1:30 p.m.) — The Student Scholars Program offers college undergraduate and grad students registration scholarships to attend the Career Fair and a Student Scholars Orientation. They'll get to meet with Westwood One's Kevin Harlan, voice of "Monday Night Football."

Suddenly Silent — Now What? (1:30 p.m.) — If your facility were to experience a catastrophic disruption, would you know what to do? Is there a plan for "a sudden loss of key personnel, the immediate loss or impairment of your facilities and production capability, a devastating reputational threat, the loss of a key partner or supplier?" Howard Price probably knows as much about emergency planning for broadcasters than anyone in the industry; he is principal of MediaDisasterPrep.com.

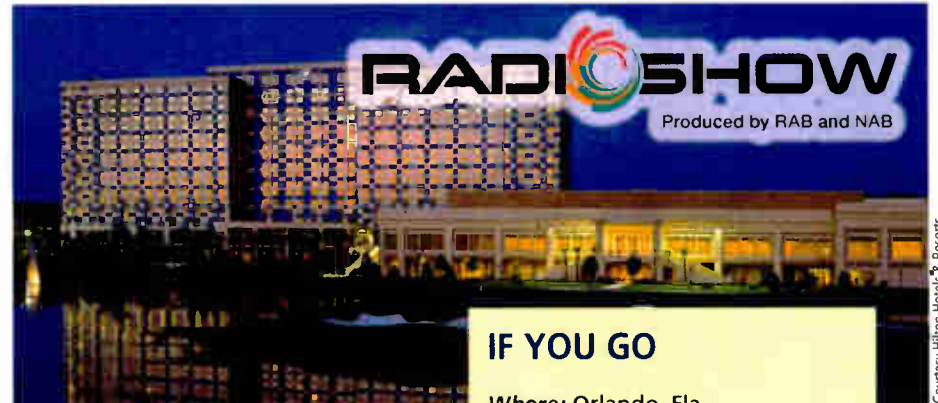
Welcome and Orientation for First-Time Attendees (3 p.m.)

"Data U — A 101 on Data and What's Ahead for Radio" (4 p.m.) — We noted earlier this year that the topic of data and analytics seems to have leapt suddenly into the consciousness of many radio executives. This is a two-part session during which show organizers promise to "take some of the mystery out of the term 'data,' demonstrate what tools are available for you and your stations and reveal the vast opportunities for radio and its clients." RAB's Erica Farber and NAB's Steve Newberry will explore opportunities in analytics. The second part of the session will feature a discussion with CEOs Bob Pittman of iHeartMedia and David Field of Entercom, moderated by Stephanie Ruhle, NBC News correspondent. Entertainment by recording artist Cassadee Pope.

Opening Reception (5:15 p.m.) — Entertainment by the country group Soul Circus Cowboys.

WEDNESDAY SEPT. 26

Pillsbury's Broadcast Finance 2018 (8:30 a.m.) — This session has the subtitle "Radio's Debt Cloud Finally Lifts." Scott Flick, a partner at Pillsbury, leads about radio's economic outlook including prospects for media ownership deregulation and the extent to which debt reductions by major groups may affect investor interest. Speakers include Caroline Beasley of Beasley Media Group, Ginny Morris of Hubbard



Courtesy: Hilton Hotels & Resorts

IF YOU GO

Where: Orlando, Fla.

When: Sept. 25–28

Who: Produced by the National Association of Broadcasters and Radio Advertising Bureau. "This year's show brings radio broadcasters and industry colleagues together to share knowledge, discover the latest innovations, network with industry leaders and explore creative business strategies for the digital age."

How: www.radioshowweb.com

How Much: Members \$499, others \$824 for advance registration; see website for on-site rates and for discounts for groups, spouses, students and young professionals

Exhibit Hours: Wednesday 10 to 7, Thursday 9 to 5

Enable Office Translator: Improving Your Intergenerational Communications (1:30 p.m.) — John Dimick, VP of Cumulus Media programming operations, moderates a panel that features a pair of multi-generational manager/employee tandems talking about interaction styles.

Reduce Radio Distribution Costs: Leverage Your IP Network (2:30 p.m.) — Speakers from NPR and GatesAir talk about how IP codec technology helped NPR's Distribution Services create a reliable "first-mile" solution for radio distribution. "This session will cover the overall network topology with special focus on the technology that allowed this solution to leverage public IP networks to transport main and HD Radio signals along with associated meta-data and triggers."

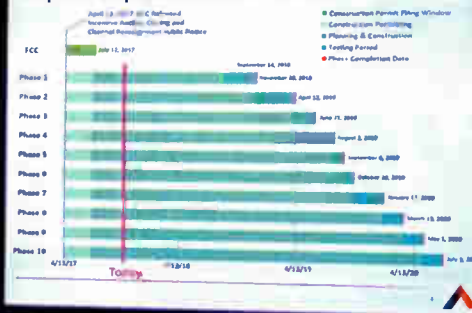
The Podcast Boom (4 p.m.) — Man, doesn't it seem like every company

(continued on page 20)



NAB's Alison Neplokh led a discussion about the impact of the TV repack last year with Dave Siegler of Cox Media Group and Jim Stenberg of American Tower Corp.

Repack Implementation Timeline



Jim Peck

EXHIBITOR LIST As of late August

ABC Radio	39	WAVSTAR	46
Alvanix	83	Wedel Software	6
Aptivada	51	Wheatstone Corp.	44
Axwave	71	WideOrbit	55
Benttown/Vipology	12	Win-OMT Software	24
Blackloud	73	WorldCast Systems	23
Bonneville Distribution	45	Worldwide Communications	
Broadcast Depot	50	Consultants	64
Broadcast Electronics	29	Xperi/HD Radio/DTS	67
Broadcast Software International	31	Zipwhip	20
Broadcasters General Store	32		
Calrec Audio	72		
Commotion	60		
Comrex	21		
Dial Report	14		
Dielectric	1		
DJB Software/Digital Jukebox	26		
ENCO Systems	11		
ERI-Electronics Research Inc.	25		
Exousia	15		
GatesAir	2		
Logitek Electronic Systems	52		
Marketron Broadcast Solutions	27		
Matrix Solutions	9		
Media Monitors	35		
Miller Kaplan Arase	80		
Moseley Associations	10		
NAB Member Services	76		
NAB Public Service	76		
Nautel	19		
Non Traditional Revenue	62		
OMT Technologies/ Win-OMT Software	24		
Podcast Studio	TBD		
PromoSuite	34		
Radio Advertising Bureau	78		
Radio World/Future US	75		
RadioMax	74		
RCS	35		
RF Specialties Group	5		
Rohde & Schwarz USA	17		
SCMS	22		
Second Street	13		
SES Americom	63		
Shively Labs	16		
Sierra Automated Systems	53		
SoCast	42		
SoundExchange	30		
Specialty Data Systems (SDS)	54		
SuiteLife Systems/NFB Consulting	59		
Sun & Fun Media	8		
TalkRating	41		
Test All Media	18		
TrafficCarma	7		
vCreative	3		
Veritone	86		
Veritonic	69		



Jim Peck

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RADIO SHOW

(continued from page 18)

suddenly has 15 podcasts? Of course the popular audio format is well into the second chapter of a story that dates back at least 15 years; but its proponents believe podcasting's best days are still ahead of it. Norm Pattiz, chairman/CEO of PodcastOne, will moderate a panel with speakers from his company as well as iHeartMedia, Westwood One and Premiere Networks. Entertainment by recording artist Terry Sylvester.

THURSDAY SEPT. 27

Advertiser Breakfast (7:30 a.m.) — Featuring Futurist and Chief Growth Officer of Publicis Groupe Rishad Tobaccowala.

Bringing Radio to Apps in the Car (9:45 a.m.) — Pilot has been exploring the possibilities of auto apps by participating in auto app hackathons and investigating a more in-depth development approach, "in part to make sure that these auto app spaces are as radio-friendly as possible." This session talks about how apps work in the car and what broadcasters need to know. John Clark of Pilot and David Layer of NAB.

Will the Connected Car Revolutionize Radio? (10:30 a.m.) — By 2025, all new cars will be connected to the internet. Show organizers say the radio industry has a huge opportunity to transform itself and reinforce radio's position as the most listened to format in the car. Speakers are from iHeartMedia, Ford and Gracenote in a conversation led by Radio World Managing Director of Content Paul McLane.



Career Fair (Noon to 3 p.m.) — Job seekers can register at www.nabef.org/careerCenter/registration.asp using code "CF18" to obtain free entry to the Career Fair and Radio Show Exhibit Hall. Recruiters can obtain a booth for \$200 by completing an online recruiter registration form. Recruiters receive EEO credit for participation.

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Paul Brenner of NextRadio makes a point during the 2017 Radio Show.

Everything You Need to Know When Switching to a Station Automation System (1:30 p.m.) — WideOrbit's William "Dub" Irvin says that with the end of the main studio rule, many stations and groups are thinking about upgrading or replacing their station automation software. What do you need to know?

FCC Commissioner Michael O'Rielly Discusses Radio Policy (1:30 p.m.) — As NAB describes it, "O'Rielly has worked tirelessly during his five years at the FCC to ensure that radio and other industries are not saddled with needless regulation and that the FCC decision-making processes are transparent." Media ownership and pirate radio are likely to come up.

Alexa Let's Listen to the Radio: Best Practices for Smart Speakers (3:15 p.m.) — In this session, several smart speakers — from NAB, Jacobs Media, Westwood One and Hubbard Interactive — explore what the power of voice is doing to the tech world.

Marketplace Happy Hour (4 to 5 p.m.)

NAB Marconi Radio Awards, Dinner & Show (7 p.m.) — Established in 1989, the awards are named after Nobel Prize winner and "Father of Wireless Telegraphy" Guglielmo Marconi. See list of finalists on page 22.

FRIDAY SEPT. 28

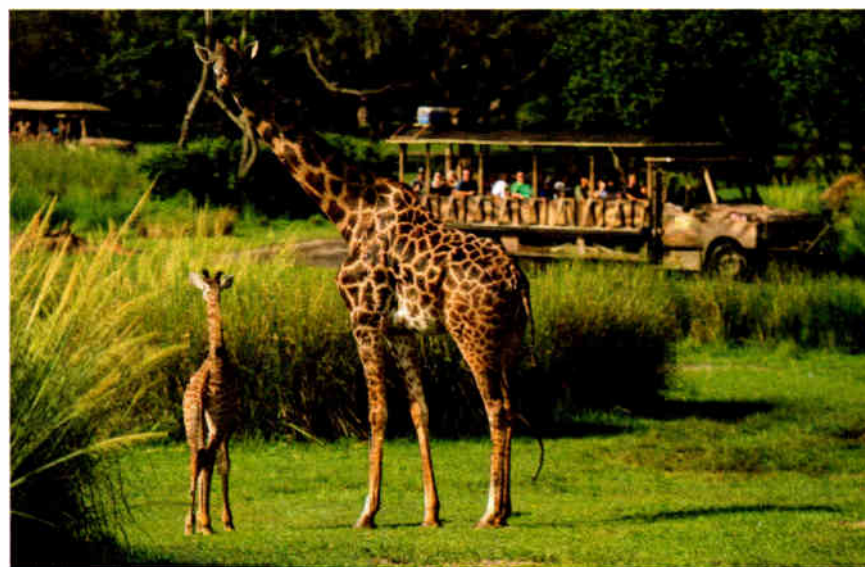
Making Magic for Consumers — How Disney's Animal Kingdom Does It and You Can, Too (8:30 a.m.) — Produced by ABC Radio, this panel features several representatives of Disney who will talk about its Animal Kingdom theme park "to illustrate how ideas are conceived, designed, developed and delivered" and share lessons learned in their work that can apply to radio.



Wednesday night will feature an informal "Snacks, Suds and Stories" session at 9 p.m. on the Hilton Bonnet Creek and Waldorf Astoria lawn. Shown, a similar gathering at the 2016 Radio Show.



Past Marconi Award recipients



Disney's Animal Kingdom theme park nearby is the topic of a conference session on Friday. Aella, a Masai giraffe calf, made her debut with mother Lily last summer.



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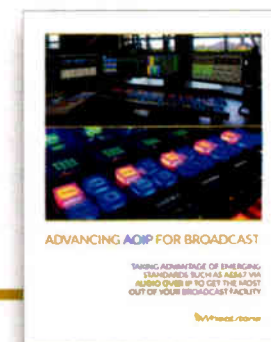
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World Radio History

John David: "The Consummate Radio Broadcaster"

Association honors its own with the NAB National Radio Award

BY EMILY M. REIGART

John David will receive the National Radio Award from the National Association of Broadcasters at the fall Radio Show.

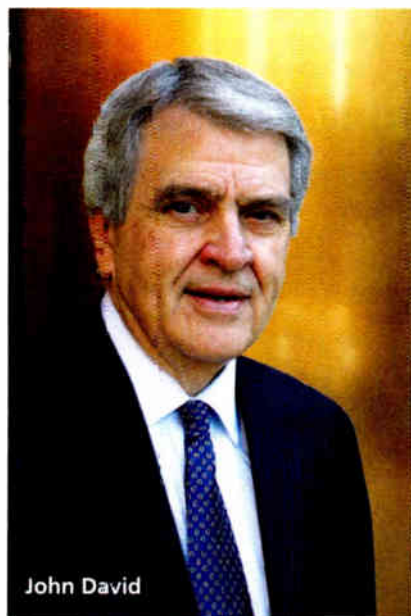
The award recognizes outstanding leaders in the industry. NAB President/CEO Gordon Smith called David "the consummate radio broadcaster."

In February David became senior advisor to the association after almost three decades in its service including 20 years as executive vice president of radio. We reached out to learn more about the man behind the public persona.

Radio World: What does the National Radio Award mean to you, especially as someone who oversaw this award program until recently?

John David: I did have the pleasure of notifying most of the recipients of this award and was always looking for candidates to suggest to the Radio Executive Committee.

When you start with Howard Cosell, Gary Owens and Larry King many years ago, you have an interesting turn of events when you morph the award to



John David

honor people who have shown leadership and have set higher standards for the business. Innovators, risk takers and people who have volunteered their expertise to forward radio are among those who have preceded my selection. Many of the previous recipients are good friends because of our work together at the NAB.

I'm humbled by my selection. I never had any idea of this surprise.

RW: Tell us about your early days in radio — what are the big things that stand out as different from then and now in the radio industry?

David: My early days started when my voice changed and I got the opportunity to start in the proverbial 1,000 Watt daytimer in my hometown [KLCO in Poteau, Okla.]. Looking back at the equipment I worked with, and the thousands of live commercials I did, and seeing how automated systems are now used even for live and local programming, I'm very impressed with how technology has impacted radio positively.

The direct interaction I experienced with listeners has changed and involves more than simply picking up the phone and taking requests. Now it incorporates social media between the songs. There's not so much news and information. There's more music and less talk. I miss the personalities that dominated most of the dayparts.

RW: Before your Washington days, your broadcasting career took off in the Midwest. Do you ever miss being on

the air? Do you still have "dead air" dreams?

David: I don't really miss being on the air, but I still listen between the music more intently than the average listener. Sometimes I wish I could call the on-air people to give them a quick critique. I personally don't care for personalities laughing all the time on the radio. It sometimes leaves the listener out, and it's often not that funny in the first place.

I don't think I ever had "dead air" dreams. At KOMA in Oklahoma City, we had a loud bell that went off when dead air hit. It was embarrassing if you were the jock on air when that happened.

RW: If a radio station asked, would you sign up as an air personality or a news person today, or is being on the air no longer fun?

David: I left the on-air part of my career doing mornings on KOMA in Oklahoma City. I don't like getting up that early.

I did promotional announcements for a station in Kentucky, and they called to ask if I did them after lunch. Radio announcers will know what that means!

RW: Do you have some favorite memories from your time as executive vice

(continued on page 24)

HERE ARE THE MARCONI FINALISTS

The National Association of Broadcasters recently announced the finalists for the 2018 NAB Marconi Radio Awards, honoring radio stations and on-air personalities for excellence in broadcasting. Winners will be announced during the Radio Show.

LEGENDARY STATION OF THE YEAR

KKBQ(FM), Houston
KOA(AM), Denver
WBAP(AM), Dallas, Texas
WHIO(AM), Dayton, Ohio
WOKV FM, Jacksonville, Fla.

NETWORK/SYNDICATED PERSONALITY OF THE YEAR

Dan Patrick, Premiere Networks
Delilah, Premiere Networks
Raul Molina, Carla Medrano & Andres Maldonado, Univision Radio
Ryan Seacrest, Premiere Networks
Sean Hannity, Premiere Networks

MAJOR MARKET PERSONALITY OF THE YEAR

Angie Martinez, WWPR(FM), New York
Bob Stroud, WDRV(FM), Chicago
Ebro Darden, WQHT(FM), New York
Felger & Massarotti, WBZ(FM), Boston
Kimmie Tee, Tony Sculfield and Antoine Davis, KBLX(FM), San Francisco

LARGE MARKET PERSONALITY OF THE YEAR

Brooke & Jubal, KQMV(FM), Seattle
Dori Monson, KIRO(FM), Seattle
Jack Harris, WFLA(AM), Tampa, Fla.
Joe Kelley, WDBO(FM), Orlando, Fla.
Rich Jones, WOKV FM, Jacksonville, Fla.

MEDIUM MARKET PERSONALITY OF THE YEAR

Brent Johnson, WTCB(FM), Columbia, S.C.

Bill Barrett, Tim Fox & Tracy Berry, KKNU(FM), Eugene, Ore.
Harten The Sports Guy and Pigskin Bob, KYKX(FM), Tyler, Texas
Pat Kerrigan, KSRO(AM), Santa Rosa, Calif.
Scoot, WWL(FM), New Orleans

SMALL MARKET PERSONALITY OF THE YEAR

Brian Byers, WSOY(AM), Decatur, Ill.
Chris and Ro:ie, WUSQ(FM), Winchester, Va.
Frito and Katy, KNDE(FM), College Station, Texas
Scotty and Catryna, KCLR(FM), Columbia, Mo.
Todd Hauger, KBHP(FM), Bemidji, Minn.

MAJOR MARKET STATION OF THE YEAR

KNX(AM), Los Angeles
KTCK(FM), Dallas, Texas
WBEB(FM), Philadelphia
WQHT(FM), New York
WSB(AM), Atlanta

LARGE MARKET STATION OF THE YEAR

KXL(FM), Portland, Ore.
WDBO(FM), Orlando, Fla.
WDUV(FM), St. Petersburg, Fla.
WKTI(FM), Milwaukee
WSOC(FM), Charlotte, N.C.

MEDIUM MARKET STATION OF THE YEAR

KSRC(AM), Santa Rosa, Calif.
WEZN(FM), Mifflord, Conn.
WHKO(FM), Dayton, Ohio
WMGQ(FM), Somerset, N.J.
WRVA(AM), Richmond

SMALL MARKET STATION OF THE YEAR

KFGO(AM), Fargo, N.D.
KVOX(FM), Fargo, N.D.
KWYO(AM), Sheridan, Wyo.
WFRE(FM), Fredrick, Md.
WWUS(FM), Sugarloaf Key, Fla.

AC STATION OF THE YEAR

KRWM(FM), Seattle
KSTP(FM), St. Paul
WMEE(FM), Fort Wayne, Ind.
WRCH(FM), Farmington, Conn.
WSHE(FM), Chicago

CHR STATION OF THE YEAR

KNDE(FM), College Station, Texas
KTXY(FM), Columbia, Mo.
WKZL(FM), Greensboro, N.C.
WPST(FM), Princeton, N.J.
WRTS(FM), Erie, Pa.

CLASSIC HITS STATION OF THE YEAR

KRTH(FM), Los Angeles
WMMO(FM), Orlando, Fla.
WOGL(FM), Philadelphia
WPBG(FM), Peoria, Ill.
WXGL(FM), St. Petersburg, Fla.

COUNTRY STATION OF THE YEAR

KCLR(FM), Columbia, Mo.
WBBS(FM), Syracuse, N.Y.
WUBE(FM), Cincinnati, Ohio
WWKA(FM), Orlando, Fla.
WYCT(FM), Pensacola, Fla.

NEWS/TALK STATION OF THE YEAR

KRMG(FM), Tulsa, Okla.
KYW(AM), Philadelphia
WGN(AM), Chicago, Ill.
WKXW(FM), Trenton, N.J.
WTOP(FM), Washington, D.C.

NON-COMMERCIAL STATION OF THE YEAR

KHJK(FM), Rocklin, Calif.
WEEM(FM), Pendleton, Ind.
WPSC(FM), Wayne, N.J.
WUFT(FM), Gainesville, Fla.
WWOZ(FM), New Orleans

RELIGIOUS STATION OF THE YEAR

KKLA(FM), Los Angeles
KLTJ(FM), Dallas, Texas
KNWI(FM), West Des Moines, Iowa
KPWJ(FM), College Station, Texas
WFMV(FM), Columbia, S.C.

ROCK STATION OF THE YEAR

WBAB(FM), Long Island, N.Y.
WMMR(FM), Philadelphia
WPLR(FM), New Haven, Conn.
WRIF(FM), Detroit
WRLT(FM), Nashville, Tenn.

SPANISH STATION OF THE YEAR

KLOL(FM), Houston, Texas
KLVE(FM), Los Angeles
KLZT(FM), Austin, Texas
WKAQ(AM), San Juan, P.R.
WYUU(FM), Tampa, Fla.

SPORTS STATION OF THE YEAR

WBZ(FM), Boston
WEEI(FM), Boston
WIP(FM), Philadelphia
WMFS(FM), Memphis
WXOS(FM), St. Louis, Mo.

URBAN STATION OF THE YEAR

WFXC(FM), Raleigh, N.C.
WKYS(FM), Washington, D.C.
WVKL(FM), Virginia Beach, Va.
WWPR(FM), New York
WZFX(FM), Fayetteville, N.C.

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World Radio History

JOHN DAVID

(continued from page 22)

president of J. R. Broadcasting Company or from owning stations in Missouri and Kansas?

David: It was a great experience. Some memories are good, and some not so good.

When we took over, I didn't realize that many advertising agencies didn't pay for 90 days.

Some not-so-good memories include a call from the police department saying your morning DJ is spending the night with us and won't be there tomorrow morning; a crop duster flying between the three-tower directional array; and putting an outhouse in a parade and putting a sign on it that said, "Wherever You Go, Listen to KFSB."

Good memories include being the best source of local news for radio on a consistent basis that people depended on. And, personally, helping many businesses succeed by promoting their business on the most-listened-to stations.

RW: How did your terms on the NAB Radio Board and as president of the Missouri Broadcasters Association inform your work at NAB?

David: One of the first things I did when my business partner and I bought

the stations was join the state association and the NAB. It's much easier to not do that and avoid the expense and time commitment and let other people take the lead. Way too many broadcasters find too many excuses to sit it out. I invested my time for the Missouri Broadcasters board and learned how to network and work with other broadcasters.

When an NAB board election was coming up, I made the decision to run. I got defeated the first time I ran, but the guy that defeated me by a few votes called me later to encourage me to run to represent Missouri and Kansas. I won this time, and that's how I got acquainted with the NAB people, including Eddie Fritts, Jim May, Jeff Baumann and John Abel.

When I sold the radio stations in Missouri, they called to see if I would be interested in talking about joining the staff. I'm one of the few people that worked for NAB for many years with NAB Radio Board experience.

RW: You transitioned to senior advisor at NAB in February. In this relatively new role, what are some projects you're working on now?



John David is shown with radio legend Paul Harvey in 2006.

David: I get a few calls on "What's the history of how you did this and why." I've seen some changes that I didn't want to make previously, and that's very good. Change is positive, and there are other ways to do things that might be more efficient.

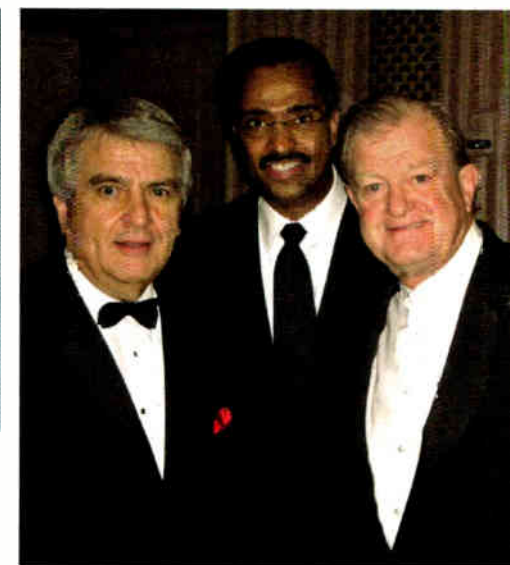
I'm also appearing at radio stations to bring a personal touch from the NAB and reinforcing their investment in the NAB. And surprisingly, there are some people who have not participated in the NAB for several years or never. If I can initiate that discussion, there is no one as familiar with what the mission of the NAB has been and continues to be. When broadcasters see my card that says Washington, D.C., sometimes they think it's the FCC in to make an inspection!

RW: Here's a softball. How important is radio's continuing support of NAB-PAC and NAB's lobbying efforts on Capitol Hill?

David: Important! I've learned that representatives and senators spend more time than they want to on fundraising. Why not help the people who are receptive to supporting broadcasting issues?

I have had broadcasters tell me that they give to all of their congressional delegation. So, for example, a broadcaster might give to a member of Congress on the Merchant Marine and Fisheries Committee. That's not necessarily as effective as broadcasters collectively giving to or specifying a Commerce Committee Member or Judiciary Committee member who deals with many of our issues. That's just one example. The NABPAC knows which members are important to our issues. Designate your contribution, as I do — if you want. That way, you get personal credit and so do all of broadcasting's interests.

RW: As NAB EVP of radio, you were heavily involved in the sessions at the

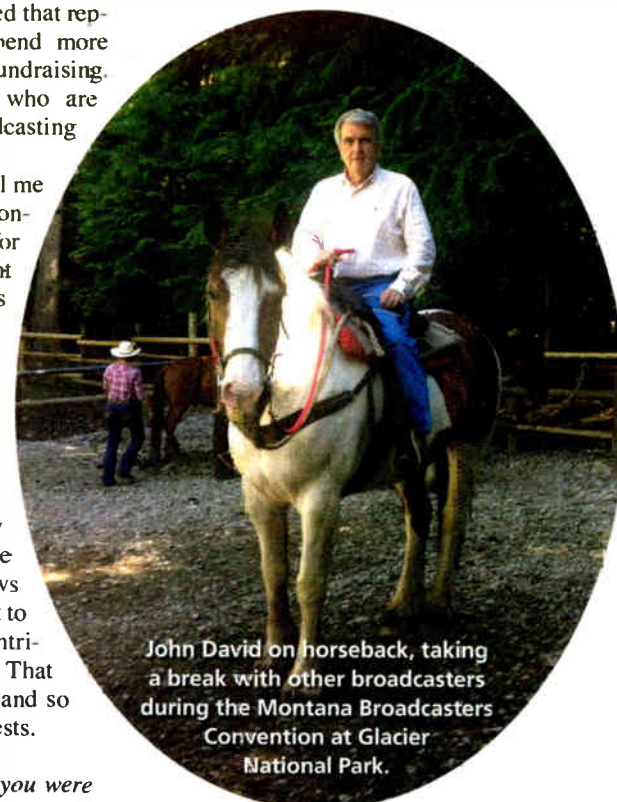


John David, left, is with NAB Education Foundation President and former NAB EVP of Television Marcellus Alexander and Broadcasters Foundation of America President Jim Thompson.

Radio Show and spring NAB Show for two decades. You also were NAB's liaison with member radio stations, which kept you in touch with issues local broadcasters are facing. What are some industry trends that you've seen play out? Where do you think industry is going next, in terms of regulation and technology?

David: I was around for the 1996 Telecom Act, and that changed the radio ownership landscape. Many companies sold and made some bucks. The national ownership caps were lifted, and local ownership caps increased.

(continued on page 26)



John David on horseback, taking a break with other broadcasters during the Montana Broadcasters Convention at Glacier National Park.

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JOHN DAVID

(continued from page 24)

We've started evaluating listenership differently in many of the larger markets with PPM.

We're still explaining to the music business that we provide valuable promotion for the artists they beg us to put on the radio. I've been around for that argument for about the fourth time.

We're streaming our stations in a lot of markets.

We've got HD Radio and additional channels after a long process of deciding the standard.

There's a focus on keeping the radio prominent in the car dashboard. NAB is making a lot of progress by connecting with the auto industry and building on relationships already established by Xperi and HD Radio. I see the auto industry and radio finding a positive relationship in the future that will benefit both.

NAB has established Pilot to encourage new tech that will benefit broadcasting.

And most importantly, NAB is always monitoring both the congressional landscape in D.C. and the FCC regulations with input to both of the processes. No one else represents your interests.

RW: A lot of what you've done for the association was visible, such as your planning the radio sessions and your voicing of the Radio Show luncheon and banquet presentations. What were some of the responsibilities and successes at NAB that readers may not know about?

David: I took over the Radio division after working at the NAB for three years in the Government Relations division working with the PAC, state associations and grass roots lobbying.

The first NAB Marconi Awards Show I witnessed, but didn't produce, after that transition had no food and just beverages, starting at 5 p.m. There were many guest presenters, and they started getting "blue" to try to top the others. That night was the last night for multiple air people. We added food and started at 8 p.m., and the rest is history.

We changed the voting for the Marconis instead of a vote per station to a voting academy. The larger companies were dominating the voting before that change.

Lining up speakers and talent and entertainment for the Vegas NAB Show and the Radio Show was challenging at times. Radio stations have some of the same experiences with concerts and personal appearances. I can tell a few stories.

The NAB Hall of Fame presentations were mostly all positive. Some of the recipients asked me to remind them what the award was about before they went on stage to accept.

And the relationship with the RAB when we partnered for the Radio Show some years ago became a positive experience.


RW: If you had five words of advice for future broadcasters, what would they be?


David: Network. Honesty. Innovate. Adapt. Invest.





John David poses with his award after his 2011 induction into the Missouri Broadcasters Hall of Fame.

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Email Workbench tips to johnpbisset@gmail.com

Our Radio World colleague Cris Alexander is, by day, Crawford Broadcasting director of engineering. He encourages his group's engineers to share tips that have made their work lives easier and more efficient; over the years we've included several in this column.

At KCBC(AM) in Modesto, Calif., Chief Engineer Steve Minshall writes about the familiar task of monitoring transmitter parameters, antenna parameters and tower lighting via remote control systems. One item easy to overlook is the measurement of temperatures in the building.

Fig. 1 provides a simple, inexpensive way to monitor temperatures. Simply take 5 volts, usually available from the remote control system, and connect it to a thermistor. The other end of the thermistor connects to a metering channel on the remote control system.

The correct thermistor must be chosen, and it needs to have a negative temperature coefficient. This means that the resistance of the thermistor decreases with increases in temperature. As can be seen from Fig. 1, the thermistor and the internal load resistor of the remote control system create a voltage divider. When the temperature increases, the voltage applied to the remote control metering circuit also increases.

Steve chose a thermistor from Mouser (www.mouser.com). It's their part number 527-NK123C5R2. Using this device along with the assumed 10K ohm internal load resistance of the remote control metering circuit (use an ohmmeter to check the input resistance of your remote control channel), one can expect acceptable performance for the purposes needed.

If the remote control system is calibrated at 88 degrees Fahrenheit with this thermistor, you can expect the temperature reading to indicate 36 degrees for an actual temperature of 32, and an indicated 116 degrees for an actual temperature of 120. This is plenty accurate for what we normally need when monitoring building temperature. If your remote control system permits an upper limit alarm, so much the better — you've got a warning of fan or air conditioner cooling failure.

For the purist, a 47K resistor can be placed across the input of the metering channel (assuming an internal load resistance of 10K ohms), which will bring the temperature error at the above extremes to within one degree. The target load resistance for this thermistor is

about 8,000 ohms.

The thermistor is so small that it can be placed directly onto a 37-pin sub-miniature D connector, or placed on a terminal strip. The thermistor costs about a dollar. At this price, several could be placed at different locations in the

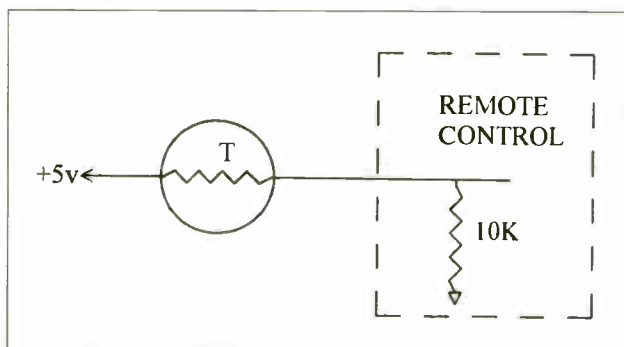


Fig. 1: A simple thermistor circuit can provide temperature monitoring for your remote control.

building such as the transmitter exhaust air outlet, air conditioner ductwork, and even the outside of the structure, though Steve has found that one for the building is sufficient. Steve has installed these at every site that he takes care of, and they have been 100-percent reliable. On a number of occasions, these little devices have given Steve early warning of temperature excursions, which could have caused major problems.

For those who like to do their own research and experimentation, Steve suggests a couple of websites: www.electronics-tutorials.ws/io/thermistors.html as well as www.electro-tech-online.com/tools/thermistor-resistance-calculator.php.

electronics-tutorials.ws/io/thermistors.html as well as *www.electro-tech-online.com/tools/thermistor-resistance-calculator.php*.

So much good information can be gleaned from attending Society of Broadcast Engineers meetings. However, many engineers say they are just too busy to attend. If you're a ham, you might want to consider checking out the SBE VHF/UHF Chapter 73 of the Air HAMnet, coordinated by Jack Roland.

Usually scheduled every Monday at 9 p.m. Eastern, the SBE VHF/UHF HAMnet is based in Denver on 449.625, pl 141.3 and 449.450 pl 103.5. The chapter meeting is also found on the ALLSTAR node 46079 and connected to the world via ECHOLINK KD0WHB-L node 985839.

See the latest edition of "The KE0VH Hamshack" for more information at www.ke0vh.com.

Continuing our series exploring how engineers caught the radio bug: Allen Branch was 12 years old when he wanted to go see a radio station. When he called WKLS(FM) in Atlanta, the operator on duty encouraged Allen to come out. Allen's aunt drove him out to a hill in Marietta, where there was a building housing the control room.

The control room featured tape machines and an automation system for the FM station, as well as a second automation set up for the background music SCA service.

What fascinated Allen the most was that everything was custom-built by the engineer. It was a sight to see, and led Allen to a career servicing radio stations, which he's been doing since 1993.

With more and more electronic parts stores like Radio Shack closing, you may wonder where you can find those little connector adaptors and utility items like colorful electrical tape, hook and loop fasteners, or heat shrink tubing.

Enter American Recorder Technologies, sold through Broadcasters General Store (www.bgs.cc).

BGS has a multi-page catalog chock full of the items you used to find at your local electronics store. Two pages of the catalog are shown in Fig. 2. Call BGS at (352) 622-7700 for your copy of this reference guide.

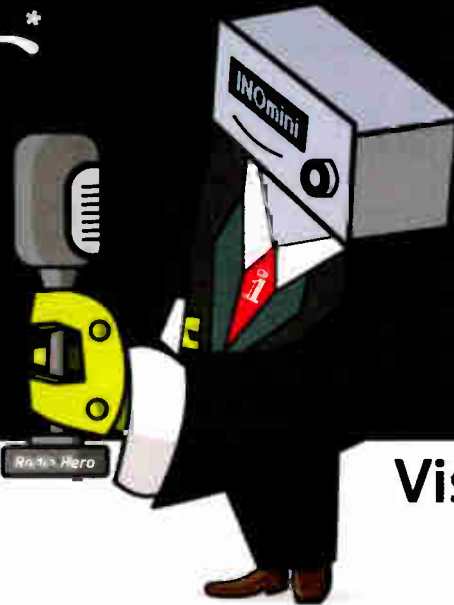
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Fig. 2: An assortment of American Recorders adaptors as seen in the BGS catalog.

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MODEL 634
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MODEL 633
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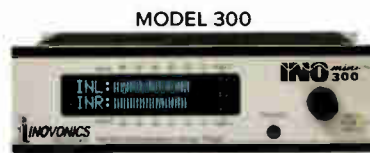
MODEL 639
FM/HD Monitor Receiver



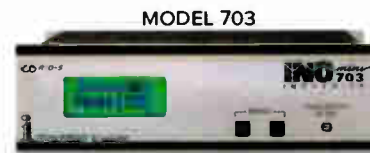
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The Coke vs. Pepsi of Music Scheduling

These music software companies want your business — but is there a real difference?

21ST CENTURY PD by Dave Beasing

Coke versus Pepsi, McDonalds versus Burger King, Federal Express versus United Parcel Service...

Marketing authors Ries & Trout say that, "In the long run, every market becomes a two-horse race." When it comes to music scheduling software for radio, the two most familiar brands are (in no particular order) RCS GSelector versus MusicMaster.

There are other options. You might think of brands like PowerGold or BSI's Natural Music as "RC Colas" of the category. Depending on your needs and budget, they should be contenders, too. Nor is this a comprehensive list of available



iHeartMedia's Jon Zellner is "a Selector guy."

systems.

But the two names above come up repeatedly when programmers get together.

After a few beers at the next radio industry convention, someone from either RCS GSelector or MusicMaster may demonstrate for you that they know who supports their software ... and who doesn't. "That's a Selector guy," they'll say. Or "She likes MusicMaster." And it can be really difficult to win over program directors and music directors from the other camp.

Then again, depending on where programmers work, they may not have a choice. "We've been using GSelector at iHeartMedia since it rolled out," says iHeartMedia EVP/Programming Operations Jon Zellner. "My favorite feature is 'spread,' which saves

so many steps to achieve the same result in previous versions."

Meanwhile, at Entercom, National Top 40 Format Captain Brian Kelly (who's also VP of operations at their Milwaukee stations) says, "We need complete flexibility, and only MusicMaster offers that in a way that's easy to learn. We love it."

In fact, "We also have fans at Cox, Univision, Viacom, Sirius Satellite, Midwest Communications, Saga, Radio One, Hubbard, Emmis, Summit Media, and many more," says MusicMaster President Joe Knapp. "Frankly, it would be easier to list the programmers and companies that don't use MusicMaster."

Instead, we'll let Drew Bennett, RCS national



Entercom's Brian Kelly is "a MusicMaster guy."



Drew Bennett is RCS national sales manager for scheduling products.

sales manager for scheduling products, do that. "RCS is the world's largest software company for broadcasters. From our parent company, iHeartMedia, to people like Bonneville, EMF, Hubbard and more."

Both companies offer 24/7/365 tech support, integrate with all the major studio automation systems, and clearly have some genuine fans. But is there really a difference in their software?

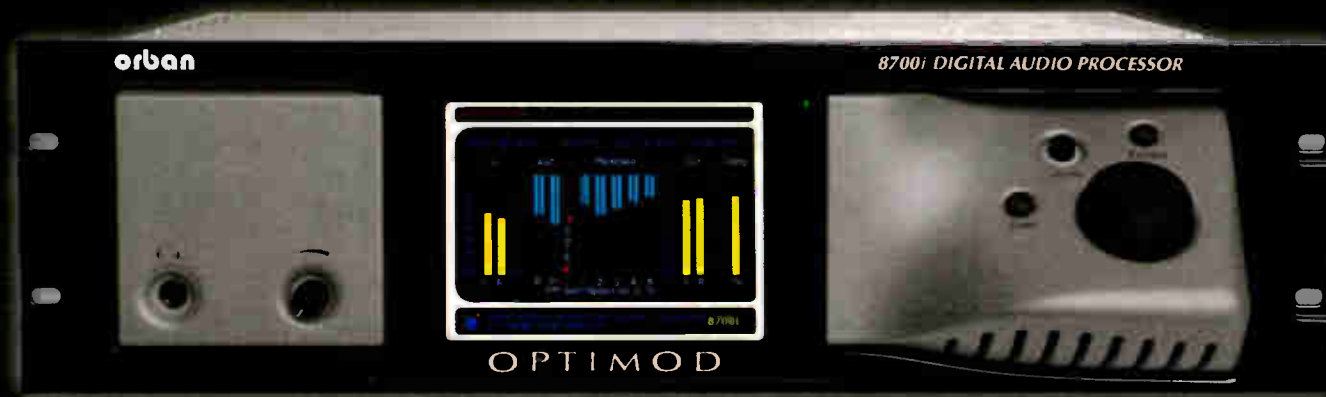
"We know what we like, and we like what we know," says veteran Hispanic market programming consultant David Gleason. "It takes a while to understand how to get the best out of the two major programs, and most of us hate the idea of changing. I think that this is mostly a matter of personal preferences."

There are some slight differences in philosophy between the two companies, though, especially about whether to put a bigger emphasis on "goals" or "rules."

Gleason explains, "Rules are sets of restrictions, such as 'no

(continued on page 32)

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SOFTWARE

(continued from page 30)

two slow songs in a row.' Using goals, rather than set limits, you might instead tell the system, for example, 'One of the goals is to pick songs with the highest test scores as possible.'"

"Goals are the 'G' in GSelector," says Bennett. "Our software allows you to really mix and weigh goals and traditional rules to achieve a great log with minimal effort. You'll spend less time editing and more time doing the 900 other items on your list."

Knapp maintains that both rules and goals serve a purpose, but "We're programmers ourselves, so we designed MusicMaster to think like programmers do. That's why the time-honored rules are respected first. Then Optimum Goal Scheduling is an important tie-breaker to make the best possible choice from the pool of songs that make it through your rules. We also made MusicMaster to be easily customized. It fits you, rather than forcing you to fit into a pre-existing set of fields and rules."

Gleason has witnessed a lot of innovations in music scheduling for radio since 1981, when he began using a program called Generation II. He now recommends that stations have "real-



MusicMaster President Joe Knapp speaks at the Worldwide Radio Summit in Los Angeles.

time control so you can make an instant change from your desk or mobile device. How many programmers added some Aretha Franklin as soon as that sad news broke? And how many didn't react soon enough because they didn't have a way to quickly change the music log?"

With nearly 40 years of music scheduling software evolution, maybe these systems have long since incorporated

every useful function and feature possible. Or maybe not. Gleason sees artificial intelligence as a potential opportunity.

"If the program can learn and make fuzzy rules based on our editing history, then it can understand how to offer the best suggestions for situations where there might be an unscheduled song or even remember which songs we don't want to play back to back. If my iPhone can gradually learn my speech patterns and word usage, why can't scheduling software learn my programming style?"

So, music scheduling gurus: Get to work!

As a 21st century programmer, Dave Beasing continues to keep one foot in radio and one in podcasting. His new "Sound That Brands" studio joined Steve Goldstein's Amplifi Media in producing "Inside Trader Joe's." Learn more about branded podcasts at SoundThatBrands.com.



Veteran programmer David Gleason with consultant Valerie Geller and former Recuerdo network Program Director Amalia Gonzalez.

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Paravel's WallTime Extends the Clock



The WallTime clock overlooks Tom Joyner's studio at Reach Media in Dallas.

Built around Raspberry Pi, this product can make your studio clock into more than a timepiece

PRODUCT EVALUATION

BY STEVE WALKER

Radio One is the largest radio group dedicated to serving primarily the African-American community. The Dallas cluster consists of two FM stations, KBFB and KZMJ. Reach Media, majority-owned by our parent company Urban One, produces syndicated radio programming including "The Tom Joyner Morning Show," "The D. L. Hughley Show" and the Erica Campbell Morning Show ("Get Up! Mornings With Erica Campbell").

In December 2016, the Radio One Dallas engineering staff inherited engi-

neering responsibilities for the Dallas Reach Media facility, which is in the same building as our radio stations. We decided to give the place a facelift.

Don Stevenson, our chief engineer, had come across a 2017 Radio World "Best of Show" award-winning product called WallTime, created by Paravel Systems, developer of the open source Rivendell radio automation system. WallTime is an ingenious device designed to do one thing: give your in-studio clock and notification system a facelift.

WallTime is built on the simple single-board Raspberry Pi platform and comes in a small box with power, Ethernet and HDMI connectors. The product's creator and developer, Fred Gleason, said the idea was born out of

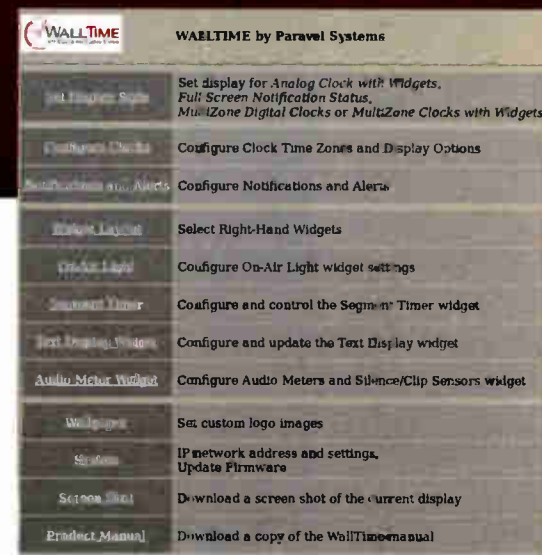
the desire to fill a real-world need.

"The origin was a discussion between myself and Rich McFadden of the Radio America network, who was looking for something to help keep his show hosts on time," Gleason told me. The original solution was a Linux desktop applet, which eventually became WallTime.

SETTING IT UP

WallTime connects to any TV or monitor with at least 1080p resolution and outputs a very nice display with a large NTP-controlled analog or digital clock and various user-programmable notifications. The WallTime module even comes with a length of heavy-duty Velcro that we used to attach the device

(continued on page 34)



WallTime's main menu



WALLTIME

(continued from page 33)

to the back of our displays.

Upon connecting network and power, the device came up with a default IP address of 192.168.21.100. The first task was to give it an appropriate static IP for our network, one that would reside on the same subnet as our Axia GPIO Node and could talk to our WheatNet blades.

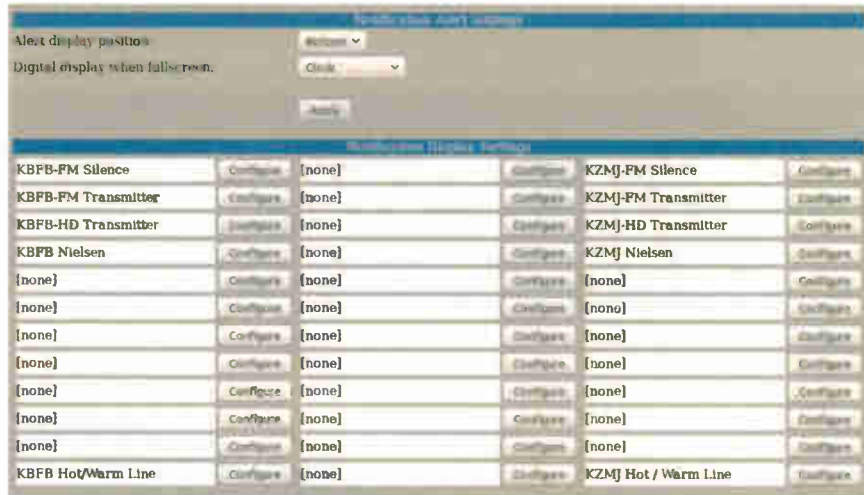
Once that was done, the remainder of the configuration was pretty straightforward. The home screen has numerous options that you can set up, and it was easy to get our desired features up and running.

For our radio stations, we wanted to

use the “Analog Clock with Widgets Display Style.” This would allow us to garnish the clock display with the station’s logo, and would also give us space for the segment timer widget (dreaded by jocks but loved by program directors) and an area for notifications and alarms.

On the Widget Layout menu, we chose “Digital Clock w/Segment Timer” for the top section of the screen. This allowed us to include a smaller digital clock along with the large analog clock and the segment timer. For the bottom section we chose “Notifications.”

We wanted to use the notifications function of WallTime to make it easier to let our jocks and board ops know



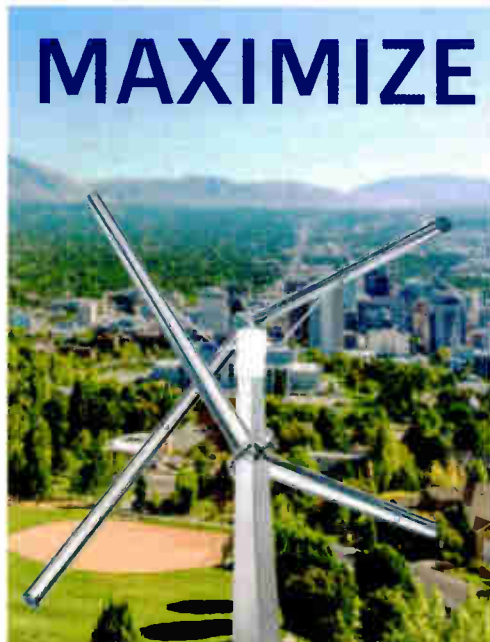
The alert notifications page allows for numerous customization options.

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when something is going on that needs their attention. This included:

- Silence sense on either station (obtained via WheatNet SLIO)
- Analog or HD transmitter alarms for either station (obtained via WheatNet SLIO)
- Nielsen encoding issues for both stations (obtained via WheatNet SLIO)
- Hotline/Warm Line ringing indicator (obtained from our VX system via Livewire GPO)

We could pipe any kind of alarm or notification into the system that we can deliver via Livewire, WheatNet or Modbus. That's a pretty wide range of options. A few more examples:

- EAS message pending
- Low signal on satellite receivers
- Power failure/generator online
- Security alarm
- Temperature too high at transmitter site
- Doorbell

There are options for setting the notifications to go full screen for a few seconds when first received. This helps get the attention of a preoccupied attendant.

We approached WallTime a bit differently in the Reach Media studio core. As these are syndicated shows, not radio stations, we had no need for alarms. We set the clocks and segment timer up the same way, but used the lower right segment of the screen for an on-air light. Displays were placed where both board-ops and talent could see them and it's a classy look.

All in all, our WallTime experience has been a good one. We have eight of these in use between the two facilities and it is among the most noticed and talked about features of our plant.

Here are a few other features of

WallTime that we didn't use but are worth mentioning:

- Can display multiple clocks with different time zones
- Segment timer can be controlled by a schedule rather than Mic Tally or other logic condition
- Can display audio meters in Livewire systems
- Can display text sent via HTTP PUT commands

The WallTime unit itself lists for \$295. We used 32-inch TVs in all locations. These were running about \$119 each when we purchased them. This size turned out to be perfect for our application.

Steve Walker is assistant chief engineer for Radio One Dallas.



WallTime at KZMJ(FM)

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WallTime Studio Clock

Thumbs Up

- + Scalable screen with flexible GUI
- + Handles notifications and some alerts
- + Can add station logos
- + Livewire, Modbus, Wheatnet-compatible

Thumbs Down

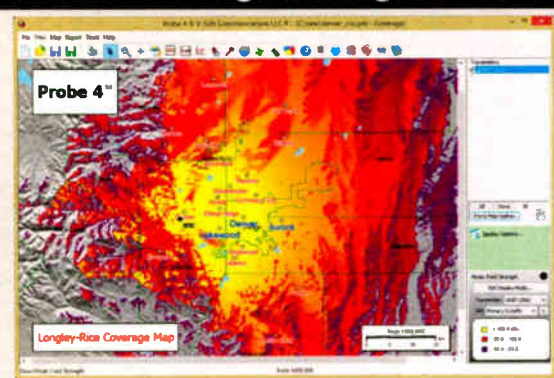
- Requires screen, which can limit placement

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

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

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

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Collector wants to buy: old vintage pro gears, compressor/limiter, microphone, mixing consoles, amplifiers, mic preamps, speakers, turntables, EQ working

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I'm looking for KFRC radio special of Elvis Presley which aired on January 8, 1978. I'd be willing to pay for a digital copy. Ron, 925-284-5428.

I'm looking for the Ed Brady radio show in which he did a tribute to Duke Ellington, the station was KNBR, I'd be willing to pay for a digital copy. Ron, 925-284-5428.

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

I'm looking for San Francisco radio recordings from the 1920's through the 1980's. For example newscast, talk shows, music shows, live band remotes, etc. Stations like

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

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

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

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

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5 KW	1999	Nautel FM5, Solid State
10 KW	1988	BE FM10A, Dual 5 KW
10KW	1996	Harris HT10, ss IPA, single phase
10 KW	1998	Nautel FM10, Solid State, single phase
20 KW	1990	Continental 816R2A, SS IPA
25 KW	2004	Harris HT25CD
35 KW	1991	BE FM35B

Used AM Transmitters		
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Regulators Open Airwaves to Increased Foreign Ownership

The rules began to relax in 2012, and policy seems unlikely to tighten soon

COMMENTARY

BY DARYL ATLEY ZAKOV

The Federal Communications Commission has slowly opened the door to indirect parent entity foreign ownership of broadcast station licenses. This gradual relaxation of longstanding U.S. federal policy has continued to the point where overseas communications and media companies may consider ownership of U.S. media facilities as a legitimate business opportunity.

The governing U.S. law, Section 310 of the Communications Act of 1934, as amended, prohibits foreign individuals, governments and corporations from directly owning more than 20 percent of the capital stock of a broadcast station licensee. This same law places a 25 percent benchmark for indirect non-U.S. stock ownership in a parent entity in U.S.-organized broadcast station entities. How is increased indirect foreign ownership of up to 100 percent now allowed?

FCC EASES UP

The change started in 2012, when the commission decided to “forbear” from applying the foreign ownership limits with respect to non-broadcast station common carrier licensees. This forbearance authority was codified a year later, but was not extended at that time to broadcast licensees. That same year, however, the FCC adopted its 2013 Broadcast Declaratory Ruling articulating and clarifying U.S. policies and procedures for evaluating potential broadcast station foreign investment.

In this 2013 ruling, the FCC stated it would conduct a fact-specific, case-by-case review of each application or petition for declaratory ruling involving non-U.S. broadcast station ownership exceeding the 25 percent benchmark.

Starting in 2013, the commission viewed non-U.S. ownership in a parent entity in excess of 25 percent as “a trigger” for the agency’s exercise of discretion. The FCC supported this

change by recognizing that the U.S. media landscape and marketplace has changed significantly and that increased foreign investment could strengthen the broadcast industry.

In a significant extension of this shift, the FCC in 2016 adopted the Foreign Ownership Order, permitting broadcast station owners to request from the FCC:

- 1) the approval of up to and including 100-percent aggregate foreign ownership (voting and/or equity) by unnamed and future foreign investors in the controlling U.S. parent of a broadcast licensee (subject to certain conditions);
- 2) the approval for any named foreign investor that proposes to acquire a less than 100 percent controlling interest to increase the interest to 100 percent at some future time; and
- 3) the approval for any non-controlling named foreign investor to increase its voting and/or equity interest up to and including a non-controlling interest of 49.99 percent at some future time.

PROSPECTIVE FOREIGN OWNERS SEIZE OPENING

Since the 2016 Foreign Ownership Order was adopted, the FCC has, first in 2017 and again in 2018, approved station acquisitions involving foreign companies/individuals who, post-transaction, will fully control the parent entity holding the TV or radio licenses in question.

The first to test the FCC’s new openness were Richard and Sharon Burns, a husband and wife who were Australian citizens and long-time U.S. residents. The couple, who prior to the filing of the applications each owned a 10 percent direct interest in the parent company (i.e., 20 percent combined), desired to acquire full control of a broadcast station group consisting of seven AM radio stations, eight FM radio stations, 13 FM translators and one UHF translator.

The FCC’s Burns Order, approving the transfer of control to the Australian

couple, noted that the Burns’ petition made mention of their long involvement in civic and commercial activities in Juneau, Alaska, where many of the broadcast stations were located, and also that Richard Burns had acted as CEO of several broadcast stations since 2006. Citing “the need to encourage new sources of investment in the broadband industry, including foreign investment,” the commission granted the Burns’ acquisition of 100 percent of the parent entity of the broadcast stations.

The commission revisited the issue in May 2018 when it adopted the Grupo Multimedia Order. In this case, two radio stations were controlled by a series of wholly-owned companies, with the ultimate parent company owned 75 percent by an American citizen and 25 percent by two Mexican citizens. The applications for transfer of control sought to have the two Mexican citizens assume 100 percent control of the shares of the ultimate parent company.

no objection to grant of the requests and have not requested that [the FCC] impose any conditions on grant.”

What do the various FCC regulatory actions mean for non-U.S. citizens desiring to own and operate TV and radio stations in the United States? If the Burns and Grupo Multimedia approvals are any indication, it appears that the government is open to overseas acquisitions of U.S. broadcast stations, provided the investors pass the necessary background investigations — and open their wallets.

NEW CASES ON THE HORIZON

The FCC is considering at two more foreign ownership applications.

The first case involves four Italian citizens who wish to own several FM stations and translators, and the second case involves a British/Polish couple who wish to acquire a radio station in upstate New York. In the latter case, the U.S. Department of Justice “Team Telecom” released a notice on July 24, announcing it found no “potential national security, law enforcement and

Changes in FCC policies now make it easier for non-U.S. citizens to buy substantial and possibly 100 percent ownership interests in U.S. commercial television and radio stations.

Just as in Burns, the commission in Grupo Multimedia found that granting the application would likely:

- 1) increase the likelihood of continued service to the broadcast stations’ communities by authorizing investment by individuals who are ready, willing and able to operate the facilities based on their current involvement and extensive broadcasting experience;
- 2) facilitate foreign investment in the U.S. broadcast radio market; and
- 3) encourage reciprocal investment opportunities for U.S. companies in Mexico.

As is customary, the FCC “consulted with the relevant executive branch agencies with expertise on issues related to national security, law enforcement, foreign policy and trade policy,” and the agencies responded “that they have

public safety issues” with 100 percent foreign ownership by the couple in question.

The two-step process required to obtain the FCC’s approval of foreign ownership of TV and radio stations in the United States involves both an FCC application filing and a petition for declaratory ruling. This is not a simple endeavor. However, for those individuals and companies outside of the U.S. with broadcasting experience and wish to invest in American broadcasting media, now is the time to consult with an attorney to take advantage of this recent change in policy on foreign broadcast station ownership.

The bottom line? Changes in FCC policies now make it easier for non-U.S. citizens to buy substantial ownership interests in U.S. commercial TV and radio stations.

Daryl Zakov is attorney at Womble Bond Dickinson LLP.



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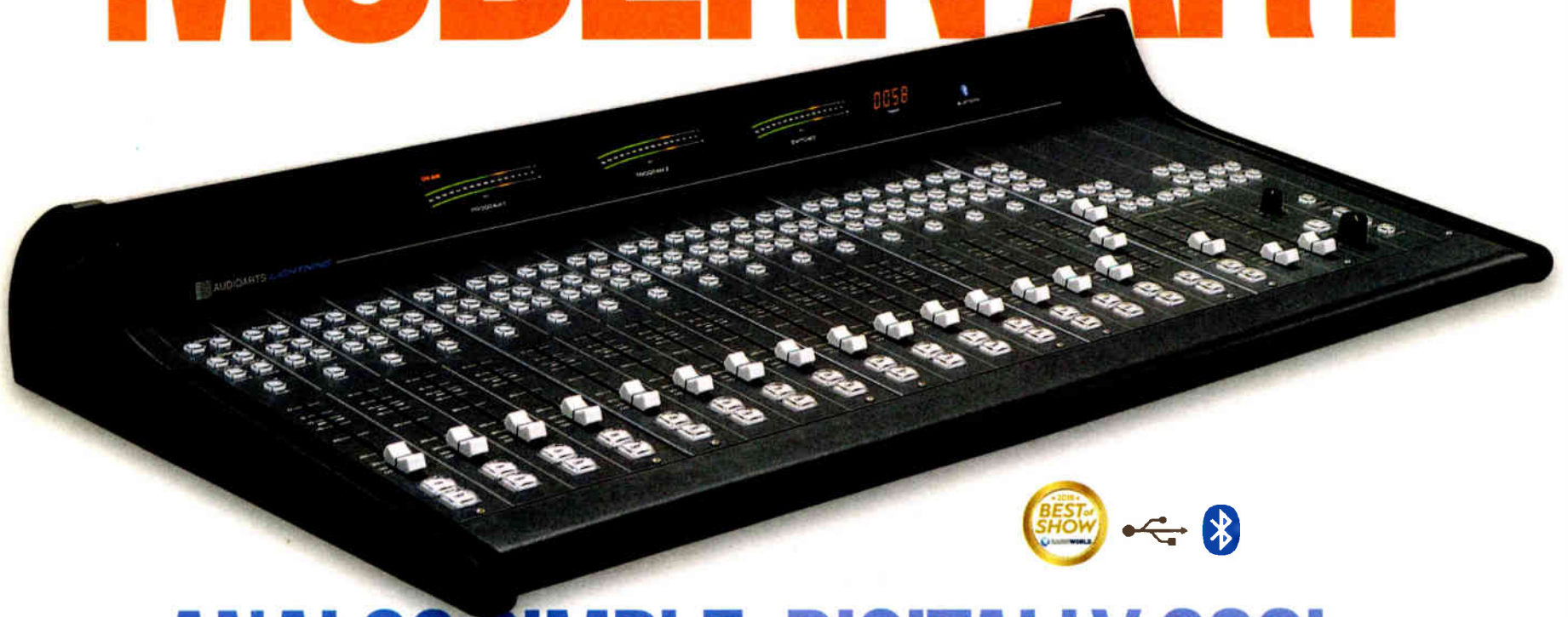
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