WBA Broadcasters Clinic

2023 October 10-12

Marriott West-Madison

#WBABC23

AGENDA

Tuesday, October 10, 2023

All Sessions are in the Superior Room



8:30 a.m. - Real Radio Hosts Working Virtually: How Real Humans Work with **Containerized Broadcast Systems**

Kirk Harnack, Telos Alliance

Radio broadcasters have been anticipating their eventual deployment of virtualized broadcast software as part or most of their studio and backend infrastructure. A few radio stations and radio networks have already moved to a largely virtualized infrastructure while others are in the process now. The virtues of virtualization have been the topic of several dozen professional

presentations ranging from manufacturers' revelations to scholarly presentations.

With some systems on-air now, it's time to ask, "What is working differently or the same - for broadcast engineers and for on-air talent?" This presentation asks that question and presents answers from actual broadcast engineers, broadcast IT professionals, and on-air talent. Let's see and hear what they have to say in their own words.

9:15 a.m. – Virtualization – Are YOU there yet? A Practical Implementation



Approach

Alex Hartman, Optimized Media Group Shane Toven, Educational Media Foundation

The IT infrastructure has gone towards "cloud" and "containers" which are all forms of virtualization. Radio manufacturers have also started moving products into this space and telling everyone how great it is... but forgot to tell you how

to prepare for this new virtualized world in your local facilities. We hope to highlight how and where to start and show you where you can end up in this virtual landscape. The gotchas and pitfalls but also the advantages and flexibility it offers.

10 a.m. - Captioned Radio, Generative AI, Synthetic Voices, and Oh My! Bill Bennett, ENCO



In the past, ENCO has presented the disruptive concept of captioning radio and the audience growth that it can enable. Now, we will establish how stations and their audiences can benefit from all that automated captioning and transcription brings, and where ChatGPT fits in all this.

In this presentation, ENCO will briefly review what captioning for radio is and remind the audience how radio is not inherently accessible to those who are deaf or hard of hearing. The

presenter will then show examples of what a captioned radio experience might look like, using real-world examples and concepts ready to deploy. These examples will include a live look into a station captioning today. and transcript examples.

We will then look at what happens when you link transcripts to audio recordings or interview transcripts to speed up production workflow. Then we'll look at what AI generative text platforms can do with these transcripts with ENCO GPT, exploring greater content creation options, while making a station's content more available to individuals with and without hearing.

We will also dive into the technical aspects of captioning radio content for those unfamiliar with Al-based automatic speech recognition technology.

Radio can grow a wider audience in-part thanks to being more accessible to those who otherwise can't "hear" what's on, by captioning and transcribing their spoken-word content, and potentially leveraging Al-based GPT large language models. After this session, the audience will be better equipped to consider many options ahead.

10:45 a.m. – Break

11 a.m. – A Look at Several Last Mile Solutions Mike Pappas, Orban Labs



This session builds on the first session with a deeper dive into advanced system configuration using everything from 5G LTE to Starlink to fiber to fully redundant systems to feed transmitter sites. Using a block diagram and real-world test results, it will examine what needs to be done and ensure that no critical aspects of the transmission system (EAS, RDS, PPM, and local insertion) are missed.

11:45 a.m. – More About Metadata, What a Radio Facility Needs To Do David Layer, NAB



Getting the word out to radio broadcasters on the importance of using good metadata is an important ongoing effort at NAB. One reason for this is that in many markets, the majority of radio stations have metadata offerings that are lacking. In this presentation, Mr. Layer will provide up-to-date information on the hybrid radio rollout by automakers and how broadcasters can best take advantage of this new technology. He will also highlight new radio technologies

that have been the subject of recent work within the National Radio Systems Committee and the NAB Radio Technology Committee, including advanced digital FM modes of operation and the virtualization of the broadcast infrastructure.

12:30 p.m. – Lunch

1:30 p.m. – AM Radio – Still Sexy After 100 Years



Jeff Welton, Nautel

In spite of recent doom and gloom, with various automakers planning to pull AM radio from vehicles, there have been several advances in the technology. MA3 and MDCL are two of the biggest, but unprecedented transmitter efficiency is a close runner-up. In this session, we'll discuss the changes that have happened to the venerable AM transmitter over the past century, talk about the breakthroughs in technology and have a conversation about how best to optimize

coverage and sound quality regardless of what system you're broadcasting from, because we all know that, although the pundits are proclaiming AM's death, it still makes up a significant portion of listening time, so let's make it as amazing as we possibly can!

2:15 p.m. – MPX Over IP Compression

Tony Peterle, WorldCast Systems



Use of IP networks to transport composite (MPX) signals for FM broadcast is growing in popularity. Broadcasters like the ability to deliver consistent MPX content across multiple sites via terrestrial, satellite, even cellular IP bandwidth. In some cases, though, that bandwidth can be limited or expensive, and a digitized linear MPX signal can consume multiple megabytes per second.

In order to reduce this demand, multiple approaches have been designed and deployed. A small reduction can be achieved by eliminating the higher-frequency components of the MPX feed, like RDS. Other solutions use data compression algorithms to reduce bandwidth. Some of these compress the MPX signal as a single entity, others employ a deconstruction of the composite audio/stereo/RDS information into smaller components, each of which can be compressed, transported, and reassembled at each of the destination sites.

The objective of this paper is to present data on the effectiveness of several different forms of MPX over IP data compression at various bit rates, both in terms of bandwidth reduction and quality analysis of the resulting MPX at the transmitter end.

3 p.m. – Break

3:15 p.m. – Utilizing RDS In Small Markets Mark Wittkoski, Ameko Group



RDS in Small Markets can be a very useful tool to enhance branding, promote station events, and increase revenue. Often these smaller market stations don't have the budget of the bigger market to purchase a RDS encoder that is feature enriched, but with the correct management software it's possible to utilize an inexpensive RDS encoder to accomplish this. As part of my master's degree in 2009, I wrote a basic RDS management program to accomplish these goals

and over the years it has evolved into what it is today with feedback from friends.

4 p.m. – Exclusive Exhibit Time

7 p.m. – Nuts and Bolts – IP Security: How to Protect Yourself and What to do





When Attacked Moderator ~ Pat Berger David Oxenford, Wilkinson, Barker, Knauer

Jay Mielke, WI Department of Justice Dave Schroeder, UW-Madison

Cyber security refers to every aspect of protecting an organization and its employees and assets against cyber threats. As cyberattacks become more common and sophisticated and media networks grow more complex, a variety of cyber security solutions are required to mitigate media network cyber risk.

Many media organizations approach or should approach cybersecurity like it's an arms race: a new threat means a new specialized tool. But you're not fighting against armies; you're fighting with threat actors using guerilla warfare. The more training and tools you have, the more complexity you have, and complexity creates opportunities for threat actors to exploit.

We have assembled a round table of experienced fellow media engineers and IP specialists to discuss what has happened to their organization when a situation has arisen, how they combatted it, and how it can be prevented with training and knowledge.

Wednesday, October 11, 2023

All Sessions are in the Superior Room

8 a.m. – Washington Issues for the Broadcast Engineer David Oxenford, Wilkinson, Barker, Knauer

Washington sets the rules by which all broadcast stations operate, so engineers need to stay on top of all the latest requirements. Rules are constantly changing, providing both threats and opportunities. ATSC 3.0 is bringing changes to TV. Radio also has new technologies that have been approved or are under consideration, and challenges to its existing operations – particularly for AM. What opportunities, threats, and compliance issues at the FCC should the broadcast

engineer be watching? Experienced Washington DC attorney David Oxenford will give you an update on the Washington DC policy and regulatory issues to which you should be paying attention.

8:45 a.m. – The Future of AM Radio – Panel Discussion



Moderator ~ Paul McLane, Radio World David Oxenford, Wilkinson, Barker, Knauer David Layer, NAB Chris Tarr, Magnum Media, WI EAS

This panel discussion will focus on the recent developments regarding the future of AM radio in automobile dashboards.



9:30 a.m. – EAS and You – A Love Story? Chris Tarr, Maanum Media, Wisconsin EAS

Chris Tarr, Broadcast Chair of the Wisconsin State Emergency Communications Committee talks about the latest updates in EAS rules and regulations and offers a refresher on some of the best practices when it comes to deploying and maintaining EAS systems. He'll also answer questions from the audience about EAS usage.

10:15 a.m. – Exclusive Exhibit Time, Lunch

1:30 p.m. – Reflected Power Control in Contemporary Broadcast Transmission Systems



Karl Lahm, Broadcast Transmission Services

Broadcast transmitters have included output-reflected power (VSWR) control in their feature sets for 70 years. Over that time, both the transmitters and these protection systems have grown in complexity and capability, while the fault and failure modes for antenna, transmission line, and filter systems remain as hazardous as ever. The massively paralleled nature of modern trans-

mitters has significantly lessened the susceptibility of RF power amplifiers to damage from high reflected energy. Yet the possibility of significant damage to downstream components (e.g., filters, transmission lines, and antennas) from uncontrolled reflected power remains the same. Proactive testing and calibration of transmitting system reflected power control features is necessary to maximize reliability and uptime. This non-commercial, product-independent presentation will explore contemporary transmission system architectures, points of reflected power sensing, limitation schemes, and procedures for ensuring effective ongoing systemic protection, from the perspective of the broadcast end-user.

2:15 p.m. – Broadcast Tower Maintenance and Condition Assessment, Standards, and Best Practices for Tower Contractor Selection Bill Harland, Electronics Research, Inc.

Changes to broadcast regulation and standards in the past 20 years have affected many aspects of terrestrial radio and television broadcasting today. The migration from analog to digital audio and video recording and playout, the adoption of satellite-delivered programming, and the new opportunities presented by cloud storage have significantly impacted local broadcast

stations' economics and day-to-day operations. This presentation will focus on the significant changes to the standards and requirements for the broadcast towers' design, maintenance, analysis, and modification. It will also discuss changes to the required training and qualifications of those who work on those structures.

3 p.m. – Break

3:15 p.m. - The Future, For You and Your Successor



Charles Kelly, Broadcast Marketing Consultant Amy Phillips, Wisconsin Department of Workforce Development Bill Hubbard, WBA Duke Wright Media Technology Institute

This series of short presentations will focus on the future of today's broadcast engineers and the many efforts to encourage the next generation of broadcast engineers.

4 p.m. – Snowflakes, Tear Gas and Kool-Aid: Lessons Learned from Public Media, Dark Edit Suites, and SaaS Cubicles Chris Fournelle, Sianiant



From the edit suites of the PBS documentary series, Frontline, to the post-coup d'état streets of Egypt, to moving out of TV to a media and entertainment technology supplier, Chris Fournelle reflects on his experiences, lessons learned, how those experiences influenced his view of M&E.

A UHF repeater available for use during the Broadcasters Clinic. The N9BDR repeater frequency is 444.375 MHz, with a PL of 123.0. All amateur operators are welcome.

Please keep in mind that if there is severe weather, you should clear the repeater and let that traffic have priority.

A special thanks to Ralph Pellegrini, N9BDR, for the use of his system.

4:45 p.m. – Radio Al Technology and You





Moderator ~ Paul McLane, Radio World Fred Jacobs, Jacobs Media David Oxenford, Wilkinson, Barker, Knauer Craig Bowman, Futuri Tommy BoDean, WRUF-FM



Generative artificial intelligence swept into general awareness like a mighty wind just months ago. Now it is on the cusp of changing radio programming and technology management profoundly. Learn which broadcasters are putting it to use, what questions it raises for managers, and how the technology will affect radio workflows. Also hear about a real-world on-air exploration of RadioGPT at the University of Florida.

6 p.m. – SBE Meeting – Quality and Consistency of LED Fixtures for Cameras Jim Uphoff, ETC



With so many options, how do you decide which LED fixtures to use on set? After all, quality lighting makes a world of difference when working in a broadcast setting. You want your lighting fixtures to create natural warmth in skin tones, have options to change the mood of the setting, and provide ultimate brightness without sacrificing color. In addition to all that, you need consistent, reliable output. In this session, ETC Entertainment Fixture Product Manager, Jim Uphoff

will discuss the science behind additive LED color mixing, and the importance of factory-calibrated fixtures. By the end you'll know how to critically compare and select fixtures for each project and understand the core concepts of light and color manipulation for cameras.

> Presentation includes a tour of the nearby ETC facility. Bus transportation will be available to and from ETC.

Thursday, October 12, 2023

All Sessions are in the Superior Room

8:30 a.m. – An Open Approach to Media in the Cloud Chris Lennon, Ross Video



Interoperability is at the heart of everything we do. When it works well, we don't even notice it. But watch out when it doesn't! With today's hybrid environments, stitching together cloud and on-prem, monoliths and microservices, and everything in between, interoperability is not a given. Also, setting up and maintaining operations in such an environment is no longer practical to be done manually. Automation in the area of onboarding and orchestrating new products and oncer a luxury. It's absolutely necessary

services is no longer a luxury. It's absolutely necessary.

Catena is an open-standards approach to making all of these disparate pieces work seamlessly together, despite their existence on different platforms. It's designed for today's multi-vendor reality. It provides a simple way to orchestrate all of this, and keep it running, even when things change constantly. We'll look at what Catena is, how it's being developed within the Open Services Alliance (OSA) and SMPTE, its embrace of open source for its SDK, and the excitement in the industry for a standardized solution to the ubiquitous challenge of interoperability among media systems.

9:15 a.m. – LTN: Bringing Order to the Chaos of IP Video Delivery Rick Young, LTN Global Communications



The transition from the traditional transport methods of satellite and fiber to IP has accelerated on a global scale. Innovations like the LTN Network and open protocols like SRT make the ability to leverage the internet for real-time video delivery a reality. However, with any advancement comes challenges and opportunities. The race to tame a complex, multi-platform world while consistently delivering on broadcast-quality, multicast delivery is the next-gen frontier. During

this Tech Chat, LTN Global's Rick Young discusses how to bring reliability, flexibility, and structure when seamlessly connecting — and managing — public cloud and on-premise networks.

10 a.m. – BREAK

10:15 p.m. – Newest Developments in Test and Measurement Tools for the Broadcaster Including NextGenTV



Eddy Vanderkerken, Sourcerer

It covers the latest in test and measurement tools for RF, TV, video, and radio applications, with more focus on equipment that includes measurement capabilities for ATSC 3.0.

UHF Broadband Pylon Antenna Technology a.m. Nicole Starrett, Dielectric



Slotted coaxial antennas have many advantages over traditional broadband panel antennas including much smaller size and wind load, higher reliability, and a greater degree of azimuth and elevation pattern flexibility. The one disadvantage of slotted coaxial antennas has been their inherently narrow bandwidth. In most applications their usage is only considered for single channel operation, approximately one percent bandwidth for UHF. In the past decade, techniques have been applied to increase the bandwidth, but have been limited to side-mounted antenna

configurations. This paper will go into detail on how new technology has allowed broadband pylon antennas to be designed in a free standing, top mount configuration without sacrificing azimuth patterns circularly from the presence of external feedlines.

11:45 a.m. – LUNCH

12:45 p.m. – How to Deliver NEXTGEN TV with Minimal Costs, Equipment, and



Ralph Bachofen, Triveni Digital

Power Usage

NEXTGEN TV is a game changer for broadcasters, enabling them to offer more interactive TV experiences. As ATSC 3.0 deployments accelerate across the United States, it is also critical for broadcasters to be able to rapidly and cost-effectively launch NEXTGEN TV services.

This presentation from Triveni Digital will discuss innovative technologies that can significantly reduce the cost of ATSC 3.0 service delivery. Triveni Digital experts will highlight how broadcasters can efficiently repeat or translate their existing ATSC 3.0 signal to other areas without the need for an entire broadcast chain, thereby minimizing costs, equipment, and power usage. The innovation discussed is ideal for attendees who work in both public state-wide networks and private cloud-based environments.

As a leader in ATSC 3.0 and a frontrunner in NEXTGEN TV deployments across the United States, experts from Triveni Digital will bring a wealth of knowledge and real-world experience to this session.

1:30 p.m. – Convergence of 5G and ATSC 3.0 Sali Dernaika, Hewlett Packard Enterprise



Use cases, benefits, and the work ahead for a future "When ATSC3 is one of access technology in 3GPP architecture."

2:15 p.m. – New ATSC Encoding Features Provide New Opportunities, and New Workflows



Dennis Klas, Heartland Video Systems

An encoder is not just an encoder anymore! Our ATSC 1 and ATSC 3 broadcasts have become more complex, as have our encoding systems. New features allow many functions to be performed by the encoder that used to require external gear. This function collapse provides cost savings as well as the benefits of a simplified air chain. New system designs also provide redundancy, where previous designs had single points of failure in some areas.

SPEAKERS



Ralph Bachofen, Triveni

Ralph Bachofen brings 30 years of experience in ATSC and IP technologies to his role as vice president of sales and marketing at Triveni Digital. He is a proven leader in the broadcast industry, skilled at business planning and case development, sales, distribution channel marketing, and selling to executives of Fortune 500 companies.

Prior to Triveni Digital, Bachofen was the manager of product marketing at Conexant Systems, a semiconductor company driving broadband communications for the digital home. His professional career also includes senior technical and marketing roles at Siemens and Accelerated Networks.

An expert on the role of metadata — in the effective provision and monitoring of DTV services in ATSC 1.0 and ATSC 3.0 infrastructures —Bachofen is a frequent speaker on the topic of ATSC 3.0 deployment strategies, test and measurement approaches, advanced broadcast platforms, and mobile DTV delivery, at well-renowned industry conferences. These include the Broadcasting Engineering Conference at the NAB Show, BroadcastAsia Conference, and the Caribbean Cable and Telecommunications Association. Bachofen has an Executive MBA and a Bachelor of Science degree in telecommunication technologies.



Bill Bennett, ENCO

A media and entertainment veteran, Bill serves ENCO's customers in a myriad of ways, from application engineering to innovative new product development and management, to R&D and test platforms, and managing key partner development and accounts. His thought leadership spans prolific published articles, live audience presentations, and product evangelism, and he launched ENCO's virtual production studio initiative and produces their webinars. He joined ENCO after a sales engineering role with broadcast manufacturer LAWO AG.

Previously, he oversaw Olympic venue technical planning, build-out, and operations across five Olympic Games, served as an executive producer and new media business development executive at QVC (inventing groundbreaking ITV and OTT streaming ecommerce products), was a long-time freelance video producer and broadcast engineer, consultant, and project manager for customers spanning the NBA, NHL, NFL, NCAA, countless US broadcasts, and science centers, and owned a laser display production company producing and performing largescale laser displays at major events and venues.

He's currently a board member of the Association of Public Radio Engineers (APRE), is immediate past chair (and co-founding Section Manager) of the Society of Motion Picture and Television Engineers (SMPTE) Pittsburgh Section, former Secretary of the Society of Broadcast Engineers Pittsburgh (SBE), and served on the Technical and Ethics Committee of the International Laser Display Association (ILDA).



Tommy BoDean, WRUF-FM

With 30 years of broadcast radio experience spanning single ownership through consolidation and cluster programming, Tommy has seen the technology change from records and turntables to studio automation, voice tracking, and most recently AI in the form of RadioGPT. Tommy's career started in high school at WOAS in Ontonagon, Michigan and includes stops as talent as well as PD, OM, and SVP in Madison, Cincinnati, Nashville, and Jacksonville. Tommy is currently at the University of Florida in Gainesville where he oversees the university's commercial brands WRUF AM/FM and teaches radio immersion for the student run FM Top 40 station 95.3 GHQ which is beta

testing Futuri's RadioGPT.



Craig Bowman, Futuri

An award-winning engineer, Craig Bowman's career spans more than 35 years, providing his expertise that has led to tremendous advancement in the technology, broadcasting, and engineering sectors. He's named in 20 published or pending patents. His broadcast industry accolades include being the recipient of the Carl E. Lee Broadcast Engineering Excellence Award in 2017. He has engineered complex media operations for multiple public and private broadcast companies, including Liggett Media, Krol Communications, and Synergy Broadcasting, in addition to owning his own engineering consultancy. Since 2009, Craig's many technical capabilities have been utilized in

the build-out of many of Futuri's SaaS technologies that have shaped the future of the media industry.



Ali Dernaika, Hewlett Packard Enterprise

Ali is a senior solution architect, specializing in digital video services within the HPE Americas region, a role he has held since 2016. He boasts a distinguished academic background, having earned a master's degree in telecommunications from Lebanese University.

With an impressive career spanning more than 18 years in the media and entertainment industry, Ali has left his mark on several telecom companies and service providers. His expertise has been instrumental in shaping TV service architectures and deployments, encompassing the entire spectrum from linear TV to interactive services across DTH. IPTV. and OTT systems. Presently, his

focus centers on driving digital transformation through the adoption of cutting-edge IT and virtualization technologies, harnessing the power of IT cloud solutions.

Currently based out of Toronto, Canada, Ali takes on a pivotal leadership role as the Co-Chair of Specialized Group S43 within the ATSC Standard Organization. His work revolves around the critical domain of broadcast core technologies and the formulation of broadcast core standard for the ATSC, ushering in a new era in broadcasting.

Ali is a firm believer in the ongoing evolution of orchestration and automation. He envisions a future where a myriad of telecommunication technologies seamlessly converge and harmonize to deliver services at unprecedented scales with unparalleled efficiency. In this transformative landscape, broadcasters hold a pivotal role, and Ali is committed to driving their active participation in this evolutionary journey.



Chris Fournelle, Signiant

Chris Fournelle has been in media and entertainment for more than 30 years, starting on the ground floor in creative production before advancing to a director of photography, producer, and director. In 2003, he brought his knowledge of production complexities to postproduction and public media. For more than 16 years, he was with PBS's Boston-based station WGBH managing post-production for some of PBS's most prestigious programs. During his tenure, Chris played key roles in hundreds of long-form documentary productions, including Frontline, Nova, American Experience, and Ken Burns productions. Joining Signiant in 2019, Chris leads content and marketing production, pro-

ducing content for Signiant's global audience across various media channels. His industry insight helps Signiant's marketing team understand production, distribution, and collaboration changes across the M&E landscape.



Bill Harland, ERI

Bill Harland is ERI's Vice President of Marketing and has responsibility for all corporate communications, product management, and applications engineering. Before joining ERI, Bill worked for several broadcast equipment manufacturers, including Harris Corporation, Broadcast Electronics, and Andrew Corporation. He is a 1977 graduate of the University of Idaho and holds a degree in radio and television.



Kirk Harnack, Telos Alliance

Kirk Anders Harnack, CBNE, CBRE, brings 40 years of hands-on experience in broadcast engineering and education to his position as Senior Solutions Consultant at Telos Alliance. His expertise in putting technology to work in broadcast facilities has driven notable expansion in Audio over IP, VoIP for broadcast, audio processing, and virtualized technology adoption by content creators. Kirk maintains an active, hands-on role in broadcast engineering through his positions as a partner

and VP-Engineering of South Seas Broadcasting, Inc., Delta Radio, LLC, and Kaua'i Broadcast Partners, totaling 14 AM and FM radio stations. He is a Broadcast Meteorologist, fixed-wing private

pilot, FAA Part 107 SUAS pilot, and licensed General Class Amateur Radio operator (KD5FYD). He is Program Chair of SBE Chapter 103 in Nashville.

Kirk founded and hosts the Internet video netcast, "This Week in Radio Tech" or "TWiRT." This 1-hour weekly video netcast features regular contributors and guests from the world of radio engineering.



Alex Hartman, Wisconsin Public Radio

With more than 20 years of experience in broadcast engineering and 25 years in IT, Alex has participated and led in every facet of the technical side of broadcasting. From basic wiring to complete tower replacements, studio construction, product design, consultation, and even the occasional plumbing job. Alex specializes in the transmission side of the industry, working closely with vendors on troubleshooting design issues, measurement, and working closely with highly talented colleagues in AM and FM RF plant design. He has also been known to employ non-traditional items and methods in the broadcast industry to bridge the gap between the IT world and the broadcast

facility. Most recently, Alex is employed by Wisconsin Public Radio overseeing the Audio over IP networks statewide as well as vendor relations as a "Broadcast Integration Specialist."



Bill Hubbard

Bill Hubbard has been involved in media technology for more than 40 years serving in technical leadership positions in commercial and public broadcast facilities and information technology management in higher education. He currently serves on the Broadcasters Clinic Program Committee and leads the Media Technology Institute for the Wisconsin Broadcasters Association. Bill is an SBE Certified Professional Broadcast Engineer and was the recipient of the 2018 SBE Educator of the Year Award. He also serves as a Game Day Event Frequency Coordinator for the National Football League.

Fred Jacobs, Jacobs Media

Jacobs Media celebrates its 40th anniversary this year, providing research and consulting guidance to media brands and organizations throughout North America, including commercial and public radio, as well as digital strategic planning.

Fred is credited with the creation of the Classic Rock format in the early 80's. The format is still going strong today.

Since 2005, Jacobs Media's annual Techsurvey has served as a guide to individual stations and networks across 14 formats.

The company launched its DASH Conference in 2013-14-15 in partnership with Radio Ink, a mashup of automotive and radio professionals. And always with an eye toward the future, Fred and his brother Paul have led tours of broadcast executives at the Consumer Electronics Show in Las Vegas for the past five years.

Fred was inducted into the Radio Hall of Fame in 2018, the first researcher/consultant to receive that honor. In 2006, he was also inducted into the Michigan Association of Broadcasters' Hall of Fame.

And this past October, Fred and Paul Jacobs were the co-recipients of the NAB's prestigious National Radio Award.



Charles Kelly

Chuck Kelly is a 50-year veteran of radio and television, working as program director, news director, and chief engineer at stations in Illinois and Colorado, then moving into technical sales with ITC/3M, Nautel, and Elenos/BE. He was president of SBE from 2003-2004, elected a Fellow of SBE in 2011, and currently serves as chairman of the Indianapolis chapter. Now retired, he consults for several international broadcast companies and is a ham radio operator as well: W9MDO, VE1MDO, and 4E1MDO.



Dennis Klas, Heartland Video Systems

Dennis started his career in broadcasting as a student and student engineer at MATC/WMVS/ WMVT in the mid-80's. From 1985 through 1991, he was an engineer at WTMJ-TV and radio. He said he will always appreciate the great mentorship of Will Koeller, and many others at WTMJ. In the early 1990's he started freelance engineering and was also providing equipment by the mid -1990s. HVS has grown to more than 40 employees since its first employee in 1995.



Karl Lahm, Broadcast Transmission Services

Karl has had a more than 50-year career in broadcast engineering, which began as a summertime station technician at WWTV, Cadillac, Michigan, after completing his senior year of high school. He retired from full-time work as Director, RF Systems Engineering for Televisa Univision's more than 40 TV and 60 radio stations in 2018. He now supports broadcast RF systems education and antenna/transmitter systems tuning and testing as a consulting engineer. Prior to his 19 years with Televisa Univision, Karl specialized in high-power AM and HF antenna and transmitter systems as a senior engineer with the Voice of America during the 1990s. During the '80s, he was a broadcast

regulatory consulting engineer in Washington, DC. In the 1970s, after receiving his electrical engineering degree from Michigan Tech, he was a field service and audio design engineer with Harris, followed by four years of radio station engineering management in the Los Angeles market. Karl is a registered professional engineer, SBE senior member, IEEE life member, and avid Great Lakes cruising sailor.



David Layer, NAB

David Layer is vice president, advanced engineering in NAB's Technology department and in his 28th year at NAB. Educated as an electrical engineer at the University of Maryland and Purdue University in Indiana, David worked as a hardware designer for COMSAT Laboratories in the earlier part of his career, focusing on digital communications technologies for geosynchronous satellite systems.

When radio broadcasting started going digital in the latter part of the 1990s, David was hired by NAB to apply his digital communications expertise to the testing and standardization of broadcast

radio technologies including digital audio broadcasting and data transmission over digital FM subcarriers. As an administrator of the National Radio Systems Committee (NRSC, co-sponsored by NAB and the Consumer Technology Association), David participated in the evaluation of the HD Radio system which would be adopted by the FCC in 2002 as the digital radio standard for the US.

These days, David's principal responsibilities include serving as a project manager for technology projects being conducted by PILOT (NAB's innovation initiative) and as principal administrator of the NAB Radio Technology Committee, a group of technical executives from NAB member companies that advises NAB on technology development and technical regulatory matters. David also provides technical support to NAB's efforts at the FCC and on Capitol Hill.

Currently, David is the immediate past chairman of the RadioDNS Steering Board and is the NAB representative to the RDS Forum. He is also vice-chair of the North American Broadcasters Association (NABA) Radio Committee. David is a senior member of the IEEE and is active in the IEEE Broadcast Technology Society (BTS), where he's served multiple terms as a board member on the administrative committee, is a distinguished lecturer, and has been the chair or co-chair of numerous annual IEEE Broadcast Symposia (most recently in 2017). David is a member of the Association of Federal Communications Consulting Engineers (AFCCE) where he is a past board member and past chair of the AFCCE Scholarship Committee.

David was the recipient of the Association of Public Radio Engineers' Engineering Achievement Award in 2023. He received Radio World's 2015 Excellence in Engineering Award and was recognized by Radio Ink Magazine in November 2010 as among the top ten best engineers in radio. In 2014 David received the Consumer Electronics Association Technology Leadership Award. The IEEE BTS awarded David the Matti Siukola Memorial Award for the Best Paper of both the 2014 and 2018 IEEE Broadcast Symposia.

David lives in Mount Airy, Maryland with his wife Nora, and between them, they have eleven children and eight grandchildren. He spends his free time mostly doing yard work at his Mount Airy home but does find some time to enjoy scuba diving and playing with his 2006 Chevy Corvette.



Chris Lennon, Ross Video

Chris Lennon serves in Ross Video's Office of the CTO as Director, Standards Strategy. He is responsible for Ross' activities in standards and trade organizations, as well as its global thought leadership program.

Chris also serves as Executive Director of the Open Services Alliance (OSA), a global industry organization focused on interoperability among microservice oriented media systems. The OSA produced the media industry's first microservices standards, working closely with SMPTE, in 2020, and continues to lead the way in this rapidly evolving area.

Chris has held a variety of leadership positions in the Society of Motion Picture and Television Engineers (SMPTE), including Standards Director, Local Section Manager, Chair of multiple technology committees. He is a SMPTE Fellow and recipient of SMPTE's prestigious 2008 Citation. He also has served in a variety of roles, including currently as Western U.S. Governor, and Secretary of the SMPTE Rocky Mountain Section



Paul McLane, Radio World

Paul McLane is editor-in-chief of Radio World, which he joined in 1996. He directs the editorial content of 32 annual print issues, RW's daily SmartBrief newsletters, webcasts, and a growing library of more than 100 ebooks. He has interviewed directors of engineering, FCC chairs, Hall of Fame radio personalities and C-suite leaders about digital radio, connected cars, industry standards, and other topics. Prior to Radio World he was an award-winning broadcast journalist and technology sales/marketing executive.



Jay Mielke, Wisconsin Department of Justice

Jay Mielke worked in the broadcast industry full time in a technical capacity from 1994 through 2016. Following his time in the broadcast industry, Jay switched career paths to focus on IT with an emphasis on virtualization. Today, Jay manages a team of IT professionals at the Wisconsin Department of Justice. His team is responsible for supporting all DOJ employee technical needs including mobile devices, Virtual Desktop Infrastructure, physical PCs, specialized crime lab equipment, and other devices used in the law enforcement environment. Although much of his career focus is now on IT, Jay still likes to stay in touch with his broadcasting roots through contract work.



David Oxenford, Wilkinson, Barker, Knauer

David Oxenford is a partner in the Washington DC law firm, Wilkinson Barker Knauer, LLP. For more than 40 years, he has represented broadcasters and other media companies on regulatory, transactional, and copyright matters. He works with everyone from mom-and-pop broadcasters to public companies, trade associations, financial institutions, and other broadcasting and digital media organizations and individuals. At the center of many of the debates over broadcast and music licensing issues, he is a regular speaker at broadcast and digital media conventions and seminars. David is the editor and principal writer of the influential Broadcast Law Blog, read by

thousands every month and widely quoted in broadcast, media, and legal publications.



Mike Pappas, Orban Labs

Mike's technical experience spans several decades, including roles in broadcast engineering, government communications, and railway communications. Mike joined DaySequerra in 2015 as VP of Business Development and has assisted this forward-thinking and progressive company in the development of new products, new markets, and new business opportunities. In 2016, DaySequerra acquired Orban Labs, Inc., one of the broadcast industry's best-known names in audio processing. Mike has been heavily involved in Orban Labs since the acquisition, helping to steer the development and market opportunities for a dozen new products. He has installed all of

Orban's beta sites for the new XPN-AM audio processor, and has developed specialized field testing methodology for MDCL operations at different AMC levels. Mike is proud to be part of this revitalization of Orban as it again leads the way in audio processing for radio, TV, and internet streaming.



Tony Peterle, WorldCast Systems

Tony Peterle has been with WorldCast Systems since 2005, continuing a broadcast career that now spans nearly 50 years, both as on-air talent and in engineering. Tony holds a commercial pilot's license and spent many years as a traffic watch pilot and reporter in Kansas City and Honolulu. He received CSRE certification from the SBE in 2005 and was certified CPBE in 2015. Tony's current role at WorldCast Systems includes sales and support for all of the Americas, participating in the planning and installation of customer projects, and contributing to the design and refinement of WorldCast and Connect products. He also owns a full set of Whitworth wrenches.



Amy Phillips, Wisconsin Department of Workforce Development

For the past 10 years, Amy has been with the Wisconsin Youth Apprenticeship (YA) Program. Her primary duties include leading the modernization of YA occupational area pathways, serving on the annual YA grants review team, providing continuous program support services for the statewide YA consortiums, and delivering outreach and customer service for Wisconsin YA regional consortium coordinators, employers, school districts, students, parents, and other workforce community partners. Amy has been with the Department of Workforce Development since 1994. She has more than 30 years of experience in analyzing, interpreting, and monitoring workforce programs for

productive outcomes and compliance with state and federal legislation, as well as agency and program administrative rules and regulations. While at DWD, Amy has staffed several key state and department councils, including the Business, Marketing & Information Technology (BM&IT) State Superintendent Advisory Council, Wisconsin Council on Workforce Investment, Wisconsin Labor-Management Council, Wisconsin Occupational Information Coordinating Council, and DWD Diversity Council. She also co-chaired the Wisconsin Manufacturing Skill Standards Certification (MSSC) state team.



Dave Schroeder, UW-Madison

Dave Schroeder is a subject matter expert on information technology, cybersecurity, and cyber national security issues at UW-Madison. He currently serves as an Army Cyber Warfare Officer and intelligence professional, and previously served as a Navy Information Warfare Officer. His expertise includes cyber operations, information and influence operations, and signals intelligence. He holds degrees in Cybersecurity Policy, Information Warfare, and Information Operations, and is a graduate of the Naval Postgraduate School, Naval War College, and Joint Forces Staff College. He also serves as Research Director for the Wisconsin Security Research Consortium.



Nicole Starrett, Dielectric

Nicole has been with Dielectric since May 2014 and currently holds the position of Director of Electric Engineering. She received a dual bachelor's degrees in electrical engineering and mathematics from the University of Maine. Additionally, she has been a featured technical speaker at a significant number of broadcast events, including NAB and the Wisconsin Broadcasters Clinic.

Her work at Dielectric has been focused on research and development of new antenna technology, creating innovative tools for antenna design, supervising antenna testing for the broadcast repack, and most recently, RF system development.



Chris Tarr, Magnum Media, Wisconsin EAS Committee

Chris "Doc" Tarr CPBE, AMD, DRB, CBNE is the Group Director of Engineering for Magnum Media, a family-owned Wisconsin-based radio group with 20 stations across the state. He also serves as a mentor through the SBE Mentorship program.



Shane Toven, Educational Media Foundation

Shane Toven has been involved in the field of broadcast engineering for more than 30 years, starting as a volunteer for KAXE-FM (Grand Rapids, Minnesota) where he learned the trade and became their first full-time engineer. In 2006, Shane joined Wyoming Public Media at the University of Wyoming as their Director of Engineering. In 2017, he joined Educational Media Foundation. He is currently the Senior Broadcast Engineer for the group, tasked with engineering R&D for the network and looking toward "what's next" in broadcast technology.



Jim Uphoff, ETC

Jim Uphoff has been with ETC for 18 years, and as the Entertainment Fixtures Product Manager in marketing at ETC for the past 11 years.

Prior to ETC, he spent seven years in New York City working as a Local 1 I.A.T.S.E. stagehand, focusing on audio engineering.

Jim is a Madison native and has worked in the entertainment industry for 28 years in various roles including scenic carpentry, lighting, and audio.

Eddy Vanderkerken, Sourcerer

Eddy Vanderkerken has 35 years of experience in the consultative sales of video test and measurement equipment, TV transmitters, and RF equipment, next to managing and directing sales teams. He obtained his MSEE degree in Electronics from the Erasmus University College in Brussels, Belgium, and is fluent in five languages.

For 15 years, Eddy was responsible for the sales of Rohde & Schwarz T&M products in Belgium, focusing on video and TV applications.

In 2001 he moved to the USA with his family to help expand the Rohde & Schwarz USA sales organization, and was their Director of Sales for the broadcast T&M and transmission products for 10 years. He also headed the USA broadcast division of Radio Frequency Systems for two years, actively engaged in the DTV repack. Eddy founded his own business in 2014, SOURCERER LLC, reselling test and measurement equipment for the US broadcast market, based out of Dallas.





Jeff Welton, Nautel

Jeff Welton took his training in the Radio College of Canada (RCC) Electronics Engineering Technologist program, back in the 80s, when music was awesome. Jeff has performed component level repair, field installation and service, technical support, and quality assurance roles with various companies and has been with Nautel for about 33 years, the first 17 of which were spent in field service and technical support positions, as well as assisting with design review of new products and improvement of existing systems. Awarded the SBE Educator of the Year award in 2018, the Association of Public Radio Engineers' Achievement award in 2019 and the NAB Engineering

Achievement award for radio in 2020, Jeff performs several presentations every year on the topics of lightning protection, grounding, transmitter site safety, IT security and various other subjects of interest in the broadcast engineering field. He's also served two terms on the WBA board of directors.



Mark Wittkoski, Ameko Group

Mark earned his Bachelor of Science in Electrical and Electronics Engineering Technology from Ferris State University in 1995. In December 1995, he joined the WGVU Public Media Engineering Department and received a Master of Science degree from Grand Valley State University in 2009. In 2006 Mark founded AMEKO Group, LLC, which provides Technical Consulting and engineering contract services. Mark has been serving on the MAB Engineering committee since September 2012 and remains an active member of the SBE Chapter 102 of West Michigan, currently serving as its Chair.



Rick Young, LTN Global Communications

A media technology and services executive, Rick Young directs global product strategy for the LTN Ecosystem. Rick has held senior leadership roles at news organizations, content owners, and technology providers ranging from startups to global brands. Throughout his career, Rick has focused on the intersection of media and technology, from content creation and delivery to consumer experience perspectives.

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A Very Special Thank You to Our Out-going Broadcasters Clinic Committee Member Kevin Ruppert

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Hotel Retlaw, Fond du Lac

June 18-20, 2024 WBA Duke Wright Media Technology Institute In conjunction with the WBA Summer Conference



Madison Marriott West October 8-10, 2024 WBA Broadcasters Clinic



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