For more information about the IEEE Broadcast Technology Society please visit us on the web at: bts.ieee.org
Welcome Message from the Symposium Co-Chairs

Roz Clark and I as this year’s symposium co-chairs, along with the IEEE Broadcast Technology Society and the symposium technical program committee wish you a warm welcome to the 2015 IEEE Broadcast Symposium at the beautiful Caribe Royal Resort in Orlando, FL. We meet at a time when the future of broadcasting is full of both promise and challenges. It is up to technology professionals like yourself to advise and guide this future utilizing the best available information. To that end, our team has attempted to put together an action packed, cutting edge, sometimes controversial, and always informative three day symposium program.

Day one Wednesday has three tutorial based sessions covering RF for radio, Cybersecurity and advanced audio. Our lunch keynote speaker, Frank Artes, is a leading expert in the field of cyber security and he is sure to provide us all with some useful tips on protecting your valuable information and media. Thursday’s sessions provide updates and details on the future of TV and ATSC 3.0, information on alternative delivery methods and a panel discussion of AES67 audio technology. Our Thursday lunch keynote speaker really is a rocket scientist! Jon Cowart from NASA will be with us to discuss the future of space exploration. Last but most assuredly not least, Friday promises to hold your interest with a session on the TV spectrum auction/repack in the morning, as well as a lively radio audience measurement panel discussion and an ATSC 3.0 implementation session in the afternoon. Ron Rackley provides us with an entertaining look back at the history of AM transmission in conjunction with the BTS awards luncheon on Friday.

This is now the third year of holding the symposium outside Washington DC in an effort to attract local engineers by changing the regional location each year and it has been a resounding success. Next year we travel to the northeast at the Marriott Hartford, Connecticut on October 12-14, 2016. We look forward to seeing you at the historic 65th year of this fantastic event! Roz and I would like to thank ALL the volunteers and IEEE staff who work so hard all year to make this event a success. It could not be done without them.

Best Regards, Jim Stenberg and Roswell Clark
MEMBERSHIP BENEFITS:

- Access to Society Publications
- Worldwide Chapters
- Support of IEEE Standards
- Annual Broadcast Symposium
- Annual Broadband Multimedia Symposium
- Awards and Recognition
- Cutting Edge Training for Broadcast Engineers and Technicians

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2015 IEEE Broadcast Symposium

Wednesday, 14 October 2015
Morning Session
Tutorial Session 1 - Advanced RF Technology for Radio
9:15AM-12:00AM

Session Chair - Roswell Clark - Cox Media Group, USA

8:00AM - CONTINENTAL BREAKFAST
9:00AM - Registration and opening remarks

♦ Interleaving IBOC Signals for a Digital HD Radio - Philipp Schmid, Nautel, USA
♦ 10db IBOC at Combined Transmission Sites - John Schadler, Dielectric, USA

10:15-10:30-BREAK

Tutorial Session 1 - Advanced RF Technology for Radio (continued)

Session Chair - Glynn Walden - CBS, USA

♦ NAB Labs Radio Technology Update - David Layer, NAB, USA
♦ New Technologies in Single Frequency Networks, A Case Study - WSUN Holiday, Florida - Hal Kneller, CPBE, USA

WHY “STREAMING INTO THE FUTURE” TRAINING?

This course will provide a detailed look at the key technologies used to transmit video signals over IP networks to viewers, for contribution and distribution, and within production facilities. The emphasis will be on explaining the underlying technologies and showing practical applications for them. Students will become familiar with a range of terminology and industry standards, and gain an understanding of how IP video technologies will impact their current and future plans for video networking and delivery.

BECOME A ‘STREAMING INTO THE FUTURE’ HOST AND EXPERIENCE THE BENEFITS

Streamline implementation of IP-based video technology
After taking this course, your staff will have the tools and skills necessary to smoothly integrate IP technologies into workflows.

Improve the efficiency of your in-house networks
Engineers and technicians learn how to design, use and maintain IP-based video systems that lie at the core of the modern production facility.

Receive your training ONSITE
We come to you. You and your engineers will receive training within the convenience of your own facility.

Personalized instruction from renowned broadcast expert
The course is taught by industry veteran and well-respected broadcast consultant Wes Simpson.

Cover all your bases with extensive course material
All of the major uses of IP video are discussed in depth, including contribution networks, in-studio production systems, and delivery to consumers using IP and OTT networks.

DISCOUNTED PRICING FOR THE HOST ORGANIZATION IS AVAILABLE.
Francisco Artes is a recognized information security executive who has helped form many of the best practices for securing intellectual property within the computer gaming, motion picture, and television industries. Mr. Artes is also known for his work on cybercrime, hacking, and forensic security with various federal, state and local government organizations as well as law enforcement agencies such as the US Dept. of Homeland Security, FBI, Texas Rangers, US Marshals, and Europol. Mr. Artes serves as the head of Information Technology and Security for MaxPlay Inc., where they are working on a SaaS-based game and 3D development engine. Prior to joining MaxPlay, Mr. Artes served as Chief Technology Architect / Principal Engineer for NSS Labs, Vice President, Chief Architect / Content Protection for Trace3, Vice President, Security Worldwide for Deluxe Entertainment Services Group, and as the Information Security Officer for Electronic Arts. Mr Artes has presented on six of the seven continents and serves on several boards.
Cybersecurity Risk Management and Best Practices - George Waters, Gwanda, USA
Grounding Concepts and Techniques for Broadcast - Tom Sillimann, ERI, USA

3:30PM-3:45PM - BREAK

Tutorial Session 3 - Advanced Technology for Audio
3:45PM-6:00PM

Speakers:
- Fadi Malak - DTS, USA
- Jeff Riedmiller - Dolby, USA
- Deep Sen - Qualcomm, USA

6:00PM - WELCOME RECEPTION - Pooldeck
SAVE THE DATE – 65TH YEAR!!!

All broadcast engineering professionals should plan to attend the IEEE Broadcast Symposium being held Oct. 12-14, 2016 in Hartford, CT. This annual event is produced by the organization’s Broadcast Technology Society and is the pre-eminent conference in this field.

The three-day event will feature radio and television tutorials along with technical presentations covering such topics as RF infrastructure, network distribution, Mobile DTV, HD radio, connected TV, antennas, RF measurement techniques and more. Broadcast experts from around the world will be making these presentations and continuing Education Units (CEUs) needed to maintain professional engineering certification will be available in connection with symposium sessions.

In addition to technical presentations, attendees will have the opportunity to network and socialize at evening receptions and industry luncheons.

Plan now to attend this important broadcast engineering event, which is now in its 65th year. The Broadcast Symposium will be held in the Hartford Marriott Downtown

For details about the conference, visit the Broadcast Symposium web site:
http://bts.ieee.org/broadcastsymposium/

For more information about the IEEE Broadcast Technology Society, visit our web site:
bts.ieee.org

2015 IEEE Broadcast Symposium
Thursday, 15 October 2015
Morning Session
ATSC Standard
8:30AM-12:15PM

Session Chair - Rich Chernock - Triveni Digital, USA

7:00AM - CONTINENTAL BREAKFAST
8:20AM - Open Remarks
◆ Overview of ATSC 3.0 - Skip Pizzi, NAB, USA
◆ ATSC 3.0 Physical Layer Overview - Luke Fay, Sony, USA
◆ ATSC 3.0 Management & Protocols Layer, towards broadcast IP pipe to home - Yongkwon Lim, Samsung, USA
◆ ATSC 3.0 Applications & Presentation Layer - Madeline Noland, Consultant representing LG Electronics, USA

10:00AM-10:15AM - BREAK

ATSC Standard (continued)
◆ ATSC 3.0 Security Layer - Seton Droppers, PBS, USA
◆ Advanced Emergency Altering - Peter Sockett, Capital Broadcasting Company, USA

12:15PM - LUNCH BREAK - Boca II and III
Jon N. Cowart is the NASA partner manager working with Space-X for the Commercial Crew Integrated Capability initiative. He will be the mission manager for the first flight with crew during Space-X’s Commercial Crew Transportation Capability contract with NASA to safely transport astronauts to and from the International Space Station. He received a Silver Snoopy in 2014 for his work with Space-X.

Mr. Cowart joined the Kennedy Space Center team in 1987 as a project engineer for Shuttle Atlantis and has led many teams, including the International Space Station flight 2A and 3A processing teams, the orbiter docking system team, U.S. Destiny Laboratory and airlock processing teams, and shuttle Discovery engineering team. In 1993, he was one of 50 people chosen from throughout NASA to participate in the Space Station Redesign. He received the NASA Exceptional Achievement Medal for that effort. He also held the manager position of the Orbiter Sustaining Engineering Office at Kennedy, representing the Orbiter Project Office located at NASA’s Johnson Space Center in Houston. Mr. Cowart earned a bachelor’s degree in Aerospace Engineering from Georgia Tech in 1983, took an Air Force Commission and received the Air Force Distinguished Service Medal for his work with the shuttle program.
Thank you to our
2015 Wifi Sponsor:
duTreil, Lundin & Rackley, Inc.

Thank you to all of the
2015 Breakfast Sponsors:

Thursday 15 October 2015
Afternoon Session
Alternative Delivery
2:00PM-3:30PM

Session Chair - S. Merrill Weiss - Merrill Weiss Group, USA

♦ IP Video Delivery Cost: An Analysis on Channel Availability for Live and Non-Live Stream Events - Vitor C. Oliveira, Mackenzie Presbyterian University, Brazil
♦ Second Screen Interactive Applications for ISDB-Tb Platform - Geiza Caruline Costa, Federal University of ABC, Brazil
♦ CBS All Access - Broadcast Service for Mobile TV and Over-The-Top Devices - Bob Siedel, CBS, USA

3:30PM-3:45PM-BREAK
AES 67 Panel
3:45PM

Session Chair - Paul Shulins - Greater Media, USA

♦ Using Livewire + AES67 to build complete facilities over IP - Greg Shay, Tellos Alliance, USA
♦ AVB and AES-67 Technology Update - Al Salci, SAS, USA
♦ Using AES67 Bridge Technology Islands - Keyur Parikh, GatesAir, USA
♦ Wheatstone Corporation's Current Implementation of the AES67 Standard - Practical Considerations for Interoperability, Phil Owens, Wheatstone, USA

6:00PM - MANUFACTURERS RECEPTION-Poolside
Friday 16 October 2015
Morning Session
TV Repack
8:30AM-12:00PM

Session Chair - Jim Stenberg -
American Tower, USA

7:00AM - CONTINENTAL BREAKFAST
8:20AM - Opening remarks

♦ Using an Improved Two-Ray Calculation to Determine
  the Source of Fresnel’s Constants - Sid Shumate,
  Givens & Bell, Inc, USA
♦ TV Repack: Post-Auction Transition Procedures -
  Joseph Davis, Chesapeake RF Consultants, USA
♦ Advanced Passive Components for UHF Broadcast
  Spectrum Reallocation, Benedikt Scheid, RFS World,
  USA

10:30AM-10:45AM-BREAK

TV Repack (continued)

♦ Update on Upcoming World Radiocommunication
  Conference 2015 (WRC-15) - Christine DiLapi, Harris
  Corporation, USA
♦ RF and Antenna Transition Strategies - Keith
  Pelletier, Dielectric, USA

12:00PM - LUNCH BREAK - Boca II and III

Thank you to all of the
2015 Bronze Sponsors:
Ron Rackley is an electrical engineering graduate of Clemson University, where his studies were specialized in the area of electromagnetic fields. He worked as a radio station chief engineer and as a consultant during college. Following his formal education, he worked for two different engineering firms – Palmer A. Greer and Associates of Greenville, South Carolina and Jules Cohen and Associates of Washington, DC – as well as a major manufacturer of antenna system equipment – Kintronic Laboratories of Bristol, Tennessee – before co-founding du-Treil-Rackley Consulting Engineers with Bob du Treil in 1983. His present firm, du Treil, Lundin & Rackley, Inc., was formed in 1988 when his firm was combined with A. D. Ring & Associates, a firm that had played a pioneering role in the development of radio and television technology since its founding in 1941. Ron has worked in AM radio engineering for over 45 years, and as a consultant specialized in the design, troubleshooting and testing of broadcast antennas for over 42 of those years. He has been among the pioneers in developing modern computer modeling techniques for both antenna and RF network analysis, as used in system design and proofing of antenna radiation patterns. Ron has been a member of the IEEE for over 40 years and has served as a board member and Vice President of the Broadcast Technology Society in the past. He has served as President of the Association of Federal communications Consulting Engineers. He is a registered Professional Engineer and holds General Class Radiotelephone and Amateur Extra licenses from the FCC.
2015 IEEE Broadcast Symposium

Friday, 16 October 2015
Afternoon Session
The Science of PPM
2:00PM-3:00PM

Session Chair - Paul Shulins - Greater Media, USA

♦ Audio Watermarking in Broadcasting is a System within a System, Barry Blesser, Telos Alliance, USA
♦ Overview of the PPM System, Arun Ramaswamy, Nielsen, USA

3:00PM-3:15PM - BREAK

ATSC 3 Implementation
3:15PM

Session Chair - Guy Bouchard

♦ Next Generation Broadcast Television - More than just a Transmission Standard, Mark Aitken, Sinclair Broadcasting Group, USA
♦ ATSC 3.0 toolbox empowering interactive television applications
♦ First Field Testing of Proposed ATSC 3.0 Physical Layer Technologies, Tim Laud, Zenith, USA

4:45 - CLOSING REMARKS

Thank you to the
2015 General Sponsors!