AES TCAA Web meeting 10/27/20

Areas of Concentration/Trends

The existing Automotive Audio Trends are these (discussed changes in red):
1. Increasing signal processing requirements for diverse audio features is driving increased computational demand
2. Higher on-board bandwidth requirements require new data transfer technologies (Ethernet, AVB, A2B)
3. Changes in amplifier/DSP hardware architecture due to increased software demand (e.g. multi-CPU)
    a. Audio Algorithms are being integrated in the Cockpit Domain Controllers (formerly "head-units" or a combination of remote amp and HMI)
4. Microphone arrays
5. Immersive/3D audio
6. Motorcycle/off-road premium/branded audio
7. ~~Class-D amplifiers and head-units~~
8. ~~High-efficiency systems~~
9. Power/performance classification for engineering and marketing (see also AES2 2012 release)
    a. Real Efficiency (dB/current) & Perceived Loudness
10. Personal Sound Zones
11. In-Car Communications (ICC)
12. ANC/Sound design/Acoustic Vehicle Alerting Systems (AVAS)

Reviewed the areas of concentration on the TCAA website to see if they needed to be updated or added to. Roger Shively brought up the increased use of audio systems for warning systems. Then reviewed Trends list. Dilip Warrier saw the mention of head units in trend #7 and mentioned the naming convention currently being used is Cockpit Domain Controllers. Audio functions are becoming a subset of the system instead of being the primary system, which could fall into trend #3. Greg Sikora mentioned that system complexity is becoming a trend with everything the system is asked to do and interface with, from zones, spatial processing, EQ, latency, distributed systems, smart phone integration, etc.

Then the focus was on what is meant by High Efficiency (HE) systems. Is it referring to amps, speakers, or system and how can it be quantified – increased range, amp draw?? This led to a discussion on what criterion should be used to measure efficiency. Similar to LED lightbulbs making wattage ratings less meaningful and lumens the correct unit of output. Should there be a dBSPL/amp rating created? But perceived loudness was brought up as being more meaningful than dBSPL. Raf mentioned should our committee even be concerned with this and Steve Hutt said he felt it should, knowing that this topic affects a number of committees. Roger asked Greg if this was interfering with his whitepaper project and Greg said no, it would be expanding on that work. The whitepaper is to be a foundation for basic measurements. Efficiency definition could be

expansion of this work.   Roger asked if there should be a group to investigate this topic. If anyone is interested or has done work on this and would like to share please contact Roger. https://www.aes.org/technical/aa/ This could be included in the upcoming Amsterdam convention or Automotive Audio Conference.   Someone mentioned efficiency could also be included in trend #9 on power/performance classification.

Greg Sikora brought up the topic to quantify the real impact of the sound system (speakers and amplifier) on the performance of EVs. One study would be to quantify the effect of system mass on the EV's total range, but more interestingly, to quantify the current draw (in various scenarios) of the amplifier on EV's range performance.
An outcome of such a study would steer our community to invest in system improvements that have a real impact on EVs. This could be realized in working-group task within TC-AA, or a presentation/publication and the conference.

Asked if any more trends were out there and in-car communication systems were brought up (front seat occupants talking to rear seat passengers).   STIPa was mentioned as a possible way to measure performance but then another mentioned Head Acoustics has a recommendation ITU P.1150 which deals specifically with these types of systems.

Automotive Audio Conference for 2021
Conference has moved to October 6-8, 2021 instead of June 23-25, 2021 in Dearborn. Still finalizing location.   The move was due to the North American International Auto Show moving its public dates to Oct 2-9.   This will be the 5th conference and hoping it will be live but preparing for streaming as well.
- Home page is available and working with AES to be listed on their upcoming event page: https://www.aes.org/conferences/2021/automotive/
- Call for contributions will start Dec 14.
- Currently have 3 Keynote presentations planned - https://www.aes.org/conferences/2021/automotive/keynotes.cfm
- Communications team will keep the information flowing
- Committee page is live and will be updated soon. https://www.aes.org/conferences/2021/automotive/committee.cfm

New for this year is a news feed site. It is meant to be a place for fresh news about the conference and the information from the planning committee and keynotes prior to the event, during the event, and afterward. Check it out here: https://www.aes.org/conferences/2021/automotive/newsroom.cfm

TCAA involvement in Audio Product Education Institute

The Audio Product Education Institute (APEI) was launched in January 2020, as an initiative of the Audio Engineering Society (AES), to focus on promoting methodologies, practices and technologies involved in developing and bringing audio products to market. The Institute roadmap intends to focus on six educational pillars: Interactive Voice and DSP; Supply Chain and Sourcing; Modeling and Measurement; Product Management;

Automotive Audio; and Artificial Intelligence and Machine Learning. For more information, visit: https://audioproducteducationinstitute.org.

Presentations are less detailed in technical details and more focus on hands-on, experiential, practical examples, in more of a conversational style.

We are looking for those who wish to participate in presenting in the November topic of "Automotive Audio". The most recent event as part of the online AES Show can be found here with streaming content: https://audioproducteducationinstitute.org/apei-product-development-symposium-aes-show-fall-2020/. Thank you to Samira Mohamady and Steve Temme for contributing to the online symposium. If there is any interest in participating in November or December for an Automotive Audio Focused online 2 hour workshop , please contact Roger https://www.aes.org/technical/aa/ .

Machine Learning Technical Council
Steve Hutt mentioned that the AES is looking at adding a Technical Council on Machine Learning.   It will overlap many TC's so if interested please contact Steve Hutt.
https://www.aes.org/aes/stevehutt

AES TC-AA LinkedIn Group has been started!
https://www.linkedin.com/groups/12424742/

This is a private group so if you are interested joining must have a LinkedIn account and contact any of the following members through LinkedIn to be added:
Rafael Kassier
Roger Shively
Greg Sikora
Patrick Dennis

TC-AA Next Meeting
The next meeting to be held early in 2021.   Details will be forthcoming.