Minutes of the AES Technical Committee on Coding of Audio Signals

1) The meeting was called to order at the AES Show in New York as an in-person meeting at 12:00pm EDT, October 9, 2024 by Jan Skoglund, Vice Chair.
The agenda, as shown in Annex 1, was approved. The chair welcomed attendees, shown in Annex 2.

2) Status of JAES article on "What To Listen For" tutorial.
Gerald has prepared an Overleaf project for collaboration of the JAES article. Invitations will be sent to TC members interested in co-authoring. A plan for the paper writing can be found in Annex 3 below.

3) Review of activities at AES Fall Convention 2023

- The Richard C. Heyser Memorial Lecture was held by two pioneers in pro-audio digital signal processing, Anthony Agnello and Richard Factor from Eventide.
- Pablo hosted the well-attended Workshop on Audio Quality Models Pt II, a follow-up to the workshop held in AES Madrid earlier this year. The workshop consisted of presentations from Pablo, Sascha, Jan, Hannes Gamper, and Phill Williams, followed by a discussion session with questions from the audience.
- There were two presentations of the new 3GPP immersive IVAS codec

4) Review of / proposals for activities at upcoming conventions, conferences, workshops etc.

- 2025 AES International Conference on Artificial Intelligence and Machine Learning for Audio
There was a discussion about how the TC can contribute to the conference. It was suggested that we should look into the possibility of organizing a special session on neural audio coding. Jan and Pablo will contact the organizers.
- Other?
Gerald suggested the possibility of a similar special session at the Asilomar conference

5) Any other business
There was a discussion about a recent trend in recent papers, especially papers using neural networks, that performance is mostly evaluated using objective metrics predicting subjective scores (e.g., PESQ, POLQA, ViSQOL, ..), and not actually having real subjective assessments at all. Listening tests have been a fundamental part of audio coding and should continue to be, as at the end of the day it is how we perceive audio through our hearing that really matters. A suggestion came up to submit a paper to the above mentioned AI and ML conference by seasoned perceptual audio coding experts on the importance of listening, a possible title could be
“Audio is for listening – how to properly evaluate audio coding & processing"

6) The next meeting will happen in conjunction with the next AES Europe Convention

7) The TC meeting was adjourned at 1pm EDT.

Annex 1 - Agenda

1) Approval of agenda & opening remarks
2) Status of JAES article on "What To Listen For" tutorial
3) Review of activities at AES Fall Convention 2025
    - Richard C. Heyser Memorial Lecture Series
    - Workshop on audio quality models Pt II
    - Anything else?
4) Review of / proposals for activities at upcoming conventions, conferences, workshops etc.
    - 2025 AES International Conference on Artificial Intelligence and Machine Learning for Audio
    - Other?
5) Any other business
6) Next meeting
7) Closing of the meeting

Annex 2 - Attendees

In person:
Jürgen Herre
Jan Skoglund
Pablo Delgado
Sascha Dick
Karlheinz Brandenburg
Phill Williams

Remote:
Gerald Schuller
Bernd Edler
Arijit Biswas
Schuyler Quackenbush

ANNEX 3 – Journal Paper on the Free Web Edition of the “Perceptual Audio Coders – What To Listen For” Educational Material

<u>Motivation</u>

- Original 2001 CD-ROM Edition was accompanied by convention giving a detailed overview of the educational material. (*Erne, Members TC-CAS, 2001*)
- Express Paper on Web Edition was presented at AES 154th Convention with primary focus on new features/content (*Herre, Dick, Members TC-CAS, 2023*)

=> Updated, comprehensive paper is desirable for AES Journal

Further thoughts

- New readers are likely not that interested in the "historical" development of the different parts of the tutorial. The tutorial should better be advertised as one, coherent educational resource (with a little bit of history background).
- Proposal: overall structure following the original paper with
    - Improved description text
    - Text for new additions within the appropriate sections

Details & ToDos

- We will use LaTeX + Overleaf (Pablo Delgado asks for availability)
- We can build on the original paper text, making Markus Erne co-author (Christof Faller checked with Markus Erne)
- First step: Original Erne Paper converted to overleaf project by Gerald Schuller => needs individual invitations from Gerald
- **Time Plan:**
    - **Draft ready for spring 2025 convention, i.e. May 24-26 @ Warsaw**
    - **Target for paper submission: June 2024**

Outline

- Introduction (HRR)
    - Motivation for perceptual audio coding, notion of artifacts
    - some background on history of CD-ROM => Web Edition
- Background (DICK, BDG for review)
    - Principles of Perceptual Audio Coding (close to Erne Paper, but revised)
        - New: Fixed vs. variable BR,
    - General introduction to parametric audio coding (new)
- Audio Coding Artifacts (Jan, DGD, Arijit, SHL, HRR for review)
    - Overview of traditional artifacts (close to Erne Paper)
    - Parametric Coding Artifacts (BWE, PNS, …), new
    - Stereo Coding Artifacts as separate chapter?
      (could be combined from old sections about intensity and new about PS etc.)
- Web Edition Features (DICK)
    - Free, where to find, …
    - Introduction to functionality, interactive graphics, players etc.
    - => partially from AES 154 paper (but maybe focus more on presenting/advertising "functionality" rather than "extensions" over the old CD-ROM?)
- Subjective Evaluation and Listener Training (DGD)
    - Could be a new chapter giving some basic knowledge about listening test methodology, training etc. (section was also extended in tutorial)
    - Selecting test items (+Arijit+HRR)
- Summary and Conclusions (HRR)

- Acknowledgements (HRR)