

## Summary: "Future Sound Tech Solutions" – Meeting #22

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Meeting # 22 in the working group "Future Sound Tech Solutions" took place on March 25, 2025.

### Agenda

1. Introduction to OTC, the basics – Morten Kroman
2. Webinars, Physical events and potential Projects during 2025:
  - a. Follow-up on proposals and ideas from meeting # 21 including additional comments and proposals.
  - b. Proposals for possible speakers
  - c. New themes?
3. Collaborative projects, update of proposals, indication of possible project consortia.
4. News from DSC secretariate
5. A.O.B.

### Ad 1: Introduction to OTC, the basics

Morten had fallen sick on the day of the meeting, so this topic point was postponed to the next meeting.

## Ad 2: Proposals for Webinars and Physical Events

#	Subject	Background
15.a	Speech Prediction	<p><b>Background:</b></p> <p>Speech Prediction is a topic in its own right - and interests seem high. The aim is to find an approach to overcome the middle frequency range challenge, where existing solutions (see below) appear to fail.</p> <p>Active noise cancellation, ANC, can remove low frequency noise and passive noise cancellation can remove high frequency elements.</p> <p>Some research on speech Prediction exists, but in general it is today still a tiny R&amp;D domain.</p> <p><b>Potential speakers:</b></p> <ul style="list-style-type: none"> <li>• Johannes Sars ? (check with Niels Pontoppidan)</li> <li>• Yurii Iotov, Ph.D. Student, AAU in collaboration with Jabra, (contact also Jesper Rindom Jensen, AAU)</li> </ul> <p>Yuri has completed his Ph.D and is now working at Oticon.</p> <p><i>We are unsure if we can activate an event within the theme. Facundo will reach out to Yori and learn, if he is still interested in assisting in giving a presentation on the theme.</i></p>
15.b	<b>AI business Models</b> (originally: “Using AI for speech generation”)	<p>An interesting angle on the topic is the company <b>kimselch</b>, see. <a href="http://ai.kimselch.dk">ai.kimselch.dk</a>. The company has developed a service, a software tool, where customers can generate a speech audio file of a professional actor’s voice from a script. The company’s solution is based on having collected large amounts of voice data from some actors hired for the task. When a customer then wants to generate an audio file with a professional voice, the customer writes a script with what needs to be said. The AI tool then generates the audio file. This can involve using speech files for websites, advertisements and other things. The payment model is that you only pay for the audio files you download. As long as you experiment with the tool, there is no charge until the file is downloaded.</p> <p>Kimselch has spent a lot of effort to protect itself against abuse of its solution. Their product is a positive solution for using AI for voice generation.</p> <p><i>The Kimselch solution is ‘generative AI’, where a user can generate professional voice-overs from a script for use in, for example, small commercials, product descriptions. You can choose between voices from up to 10 different actors who have contributed voices to an extensive voice library.</i></p> <p><i>The discussion showed that we currently have a limited number of examples. Therefore, there was an agreement that we should change the topic, make it broader to focus on "AI business models", where we can include other AI-based topics. The topic under item 31, VLP" (Virtual Listener Panel) will then be able to fit into the same webinar.</i></p> <p><i>The third item proposed was AI in use in headsets/hearing aids for noise suppression. Facundo and Jesper will try to find a possible contribution from the collaboration that is currently underway between AAU and GN/Jabra.</i></p>

#	Subject	Background
21b	Augmented sound in a Metaverse society	<p>The aim of this topic is also to look for general trends in augmented sound that could pivot the Danish sound Industry into a future leading technologically position in sound – rather than just wait for trends to come to us from the outside.</p> <p>Directions to investigate could be:</p> <ul style="list-style-type: none"> <li>• <b>System devices</b></li> <li>• <b>Metaverse, virtual/augmented audio</b> (<i>Metaverse: Improved digital environment where it is possible to move seamlessly between work, play, shopping, socializing and creativity in one digital landscape</i>).</li> </ul> <p>Professor Damian Murphy, University of York and results from his Lab seems to be quite interesting</p> <p>WG members envision that a real breakthrough will happen, if, and most likely, when large companies, e.g. Apple, bring applications to the market. Then other industries will follow.</p> <p><b>Awaits revitalization</b></p>
23	Better tools for ensuring good audio quality in e.g. field recordings, hence reducing the need for dubbing	<p>The theme is interesting, but we need to scope it better.</p> <p>If we continue this theme, we should focus on the middle segment, not the highly professional market and not the market for amateurs, but more on the middle segment.</p> <p>Focus is on producing good quality audio everywhere</p> <p>A Finnish company, Genelec, making monitors have e.g. stated that it is not so much the picking up of sound, rather the reproduction of it when used in home studios. Here automatic equalization, calibration, room control, etc. are at stake. It applies to both making music and professional audio.</p> <p>It was mentioned that 3D audio is gradually entering use in headsets and other sound applications. Here room calibration becomes even more of an issue.</p> <p>To reach out for more info on 3D recording Industry, Torben Ch. proposed to contact Sennheiser that already in 2017 had a first solution released. One person to contact could be Veronique Larcher. Ph.D., Sennheiser.</p> <p>She in turn has recommended us to contact Henrik Oppermann from Schallgeber, who apparently is an expert in the field and has done several activities with Sennheiser. (Birger has contacted Henrik Oppermann after the meeting. We need to define better, what we want)</p> <p>We expect that there will be a breakthrough in the area emerging from leading hi-tech companies in the foreseeable future.</p> <p>Miika will also try to identify people that could assist in setting up an event on the theme.</p> <p><b>The subject was not addressed in the meeting and will be taken up again at the next meeting.</b></p>

#	Subject	Background
23b	3D sound recording for use in e.g. test & simulation applications	<p>The focus for the event will be 3D audio used in test, simulation and reproduction contexts for audio products.</p> <p>For example, hearing companies are using spacious recordings to test their products. GN informs that they use an anechoic chamber equipped with 50+ speakers. Test material is obtained through recordings in real world sound environments, recording sound/noise employing ambisonic microphones. In addition, they also use computer simulated sound for rendering during test applications. In some cases, virtual testing is used since it is cheaper and faster.</p> <p>WSA employs a similar strategy. They use an anechoic chamber with a 15+ loudspeaker environment.</p> <p>FORCE offers testing facilities as a service, supporting 3D rendering. In their normal setup, at 5+ loudspeaker setup. In addition, they make available a dataset library, 150+ audiovisual scenes.</p> <p>Although use of 3D sound in test applications can be difficult to handle and setup and may require costly environments normally outside the availability for most SMEs, it is still highly relevant to focus on the opportunity in a ‘Future Sound Tech’ context. Examples on how larger companies today use the opportunity combined with the fact that service is available makes it realistic also for smaller companies to consider.</p> <p>The topic could also suggest how we can bring partners together who can take advantage of the opportunities presented in the webinar, e.g. through an EU-funded project. The webinar will thereby contribute to our strategy of bringing partners together.</p> <p>There is also a desire that, in the context of the webinar, we contribute to conveying project results that have already been collected.</p> <p>Persons willing to contribute</p> <ul style="list-style-type: none"> <li>• Tore Stegenborg or Søren Vase Legarth, Force Technologies about 3D sound recordings and data sets for use when testing products. SenseLab is very willing to contribute and talk about the above database and its use.</li> <li>• Christian Sejer Pedersen, AAU about spacious sound recordings and their use to recreate a "sound" space. Has announced his willingness to contribute (Jesper).</li> <li>• TREBLE, Iceland, is willing to contribute with a theme on simulation for 3D Audio. Daniel Gert Nielsen, Treble, (Facundo)</li> <li>• Hearing Aid companies (Morten and Facundo will check with their respective organizations, if they can contribute) Contact Jesper Udesen, GN.</li> </ul>

#	Subject	Background
26	Autonomous Response to Audio	<p>Some companies, e.g. hearing aid companies, are highly interested in how sound influences human bodies, i.e. human nerve systems. In the past, these companies frequently sent students to Roskilde Festival with equipment to measure and indicate the effects that sound had on the human body.</p> <p>Today, some companies instead send students to New York, so that students can experience on their own body how the surrounding sound and noise are influencing them.</p> <p>Some companies also work closely with schools on the topic. However, there are ethical aspects related to this as well, when techniques are transformed into use in other contexts, e.g. the office, at political events, etc.</p> <p><b>Potential speaker:</b></p> <ul style="list-style-type: none"> <li>• Jeppe Høy Konvalinka Christensen, Eriksholm Research Lab <ul style="list-style-type: none"> <li>- How daily-life noise impacts stress levels in hearing-aid users, and how this might be linked to listening effort.</li> <li>- How having a good SNR is crucial not only for improving speech intelligibility but also for lowering stress levels.</li> <li>- How big-city noises (New York) can induce stress in young people, and how we can measure this.</li> <li>- How synchrony in heart rate between people might relate to (auditory) engagement in real life.</li> </ul> </li> <li>• A possible candidate from SDU (through Jeppe Høy)</li> <li>• Mette Sørensen, RUC (mettes@cancer.dk) see <a href="https://www.bmj.com/content/386/bmj-2024-080664">https://www.bmj.com/content/386/bmj-2024-080664</a></li> <li>• Jens Hjortkær, DTU (group of Jeremy)</li> </ul> <p>The topic is about physiological response to different stimuli. Noise is well known to create a lot of issues in that context.</p> <p>The WG agrees that the topic is highly interesting.</p> <p>Torben Christiansen has been in contact with Jeppe Høy Konvalinka Christensen, Eriksholm Research Lab on the subject. There is acceptance for participation and Jeppe's presentation is quite extensive, so it will probably exceed the normal duration (30 min) for many of our presentations.</p> <p>No progress since the previous meeting. Jeppe has not had time to engage further. Further discussion is postponed until the next meeting</p>

#	Subject	Background
28	Cultural, ethical, and social consequences of new use of sound	<p>How will the way we consume music/sound in the future affect the way we interact?  What are the social consequences?  How should audio producers take this into account?</p> <p>For example, future use of Auracast may also have an undesired effect of isolation people socially, since the sound transmitted directly into earbud may counteract social contact to people around. Similar effect when people use artificial vision solutions. When developing an augmented world, it is important that we make it distinct able, so that people can realize the differences.</p> <p>Important to understand how to handle the negative effects of new sound solutions. It is probably difficult to get people to give formal presentations on the topic, so a panel debate may prove a more efficient way to structure the theme.</p> <p>A new book “Kig op” (Danish) by Jakob Sorgenfri Kjær has been published. He addresses how people cannot find rest, cannot focus, because they are overloaded by massive information streams. Although his focus is on video content rather than audio, a similar effect is likely to influence humans due to massive audio info. May be Jakob Sorgenfri Kjær could contribute to a webinar, offering an “audio angle”?</p> <p>In general, it may be important not just to fill our lives up with audio but ensure quality and relevant purpose of surrounding audio. Augmenting audio should be as natural as possible.</p> <p>Many new technological developments add cognitive load to our brains, but our brains are the results of thousands of years of development, so there is limit to how much cognitive load, we can handle on top of what we already handle.</p> <p>In addition, how do we convey emotions through e.g. video/audio connections? Hi-Tech companies are currently identifying a problem with people working remotely and hence only participate through video meetings that creativity is dropping, because employees do not meet informally e.g. in front of a coffee machine to exchange ideas.</p> <p>Suggestion that we could try to have it set up as a debate in e.g. the lobby of 'Politiken' to reach a wider audience.</p> <p>An important participant is Jakob Sorgenfri Kjær, who in his book has already pointed out very worrying situations where our time is stolen. It is the Tech Giants' strategy to steal as much of our time as possible, because the longer we listen to them, the greater the chance that they can sell us services that we are willing to pay for.</p> <p>In our audio world, the situation could be, for example, that when we finally roll out the new Auracast, Bluetooth LE solution, we must listen to the channel all the time when we move around in airports or other places, to get online information. But in that situation, it could be obvious for smart people to simultaneously initiate advertisements, alternatively perhaps make us pay not to get the advertisements, etc.</p> <p>We already know the challenge from school children, which the Tech giants have already hijacked, so that the children sit for many hours a day with their mobile phones turned on to follow games and other things. It is difficult to get that time back. Therefore, a debate could focus on what we should do up-front, so that we do not mindlessly end up in a similar addiction with e.g. Auracast solutions.</p> <p>The technology lends itself well to being exploited heavily by commercial interests, who see another opportunity to tie users to a new social media, here Auracast.</p> <p>One solution is of course to pull your earbuds out of your ears if you feel abused by advertisements and the need to 'be on' all the time. But as has also been shown with other social media, you can 'opt out'. Consequences are great, if you isolate yourself in a social context, because everyone else continues to use the same media to communicate.</p> <p>We have difficulty pointing to candidates who can contribute to a debate but recognize that the topic is very important and deserves that we, DSC, get a 'voice in the debate'. Have we gone too far, and what efforts are being made today to reduce, e.g. schoolchildren's dependence on social media, including through proposals to limit the use of mobile phones.</p> <p>We will continue the discussion at the next meeting, and everyone is encouraged to keep their eyes and ears open for possible candidates for a panel debate on the subject.</p> <p><b>Torben will contact Jakob Sorgenfri Kjær, and based on their conversation, we will take up the topic again. Jakob Sorgenfri Kjær is top reporter at “Politiken”, and our ambition is to have a physical event on the themes, possibly at “Politiken.”</b></p> <p><b>Will be discussed again at our next meeting.</b></p>



#	Subject	Background
29	Competition for students at universities	<p>Competition among Students at Universities to come up with advanced solutions, novel ideas, for Future Sound Tech Solutions.</p> <p>Best idea/concept/solution wins a prize of e.g. 25.000 DKK. Event for Prize Award, where e.g. DR1 and TV2 are invited to broadcast winners and ideas in the news.</p> <p>The WG endorsed the idea. In our next meeting, we will try to frame how such an event can be activated and how we can find sponsorships for the price.</p> <p><b>Our current financing model does not allow us to pay for student activities. The idea must await that we find alternative funding solutions to pay for an activity. .</b></p>
30	<b>Audio in use with drones and robots</b> <b>New Theme</b>	<p>It is proposed to focus on:</p> <p><b>Drone Detection</b></p> <p>The use of audio in drone and robotic applications is a rapidly evolving field, combining aspects of acoustics, artificial intelligence, and robotics to solve diverse challenges. From detecting and identifying drones through their unique acoustic signatures to enabling robots to perform acoustic monitoring in natural environments, the potential applications are vast. These technologies can be used for tasks such as surveillance, environmental monitoring, and human-robot interaction.</p> <p>Potential contributors:</p> <ul style="list-style-type: none"> <li>• MyDefense, Aalborg, Denmark (Jesper)</li> <li>• Squarehead Technology, Norway (Jesper)</li> <li>• Invisio, Copenhagen, Denmark (Jeppe)</li> <li>• <b>Falcom A/S (GN subsidiary) (Facundo)</b></li> </ul> <p>Drones over your head! For soldiers in modern warfare, the sound of drones is a real nightmare. In the past, soldiers could hide from the enemy. You can't do that today. For a soldier in Ukraine, the reality is that there are constantly many drones hanging over their heads, and that a drone can be the difference between life and death. It can see you, and you can't hide. The sound of drones gives nightmares, probably also PTSD for many years after the war, when a former combat soldier hears sounds that can be reminiscent of drones.</p> <p>The Danish defense talks about introducing drones into future preparedness, but today the Danish military knows almost nothing about drones. We are pure novices. The experience is found on the battlefield in Ukraine.</p> <p>But if a drone detection system can help identify drones early, for example by detecting the sound of the drones, then there is a possibility of being able to protect soldiers better. It is interesting to promote this kind of detection system because the use of drones has changed the course of modern warfare and is certainly a challenge, in which detection systems will also play a significant role. (See #30.b)</p> <p><b>At our next meeting we will try to narrow the contributions based on the contacts the members of the working Group have with potential companies.</b></p>

#	Subject	Background
30a	<b>Drones and robots:</b>  Biomimicry/-acoustics	<p>A promising area of development is biomimicry, where systems such as artificial echolocation are designed to mimic natural sonar used by animals like bats and dolphins navigating in low light conditions.</p> <p><b>Potential speakers/companies:</b></p> <ul style="list-style-type: none"> <li>Frederike Dümbgen, <a href="https://ieeexplore.ieee.org/document/9844245">https://ieeexplore.ieee.org/document/9844245</a></li> <li>Jan Steckel, <a href="https://scholar.google.be/citations?user=ZYunNBIAAAAJ&amp;hl=en">https://scholar.google.be/citations?user=ZYunNBIAAAAJ&amp;hl=en</a></li> <li>Robin Kerstens, <a href="https://scholar.google.be/citations?user=693RB6MAAAAJ&amp;hl=en">https://scholar.google.be/citations?user=693RB6MAAAAJ&amp;hl=en</a></li> </ul> <p>In another type of applications echolocation, a company like Teledyne-RESON, Slangerup, market leader in underwater acoustic sensors, state-of-the-art echosounders, multibeam sonar systems, transducers, hydrophones, may be a potential company to include. TH company has been involved in e.g. use of sonar in torpedoes. Several other companies in Denmark have deep roots in sonar applications. .</p>
30b	<b>Drones and robots:</b>  Drone detection	<p>Humanoid robots equipped with advanced audio perception capabilities are also gaining interest, providing opportunities for improving assistive technologies and enhancing human-robot interaction. The field also touches on sound-based navigation, and auditory scene analysis, which could be beneficial in complex, dynamic environments</p> <p>The use of acoustic solutions in connection with defense-related research and development has obtained focus in these years. Some solutions focus on the use of acoustics, e.g. acoustic arrays with fixed microphones and microphones placed on soldiers in the field to detect drones in the area. Solutions are used in addition to other detection solutions.</p> <p>Companies with such solutions include e.g. MyDefense in Aalborg, Squarehead Technology in Norway and others.</p> <p><b>Potential speakers/companies:</b></p> <ul style="list-style-type: none"> <li>Ines Hafizovic, <a href="https://www.sqhead.com/drone-detection">https://www.sqhead.com/drone-detection</a></li> <li>Robin Kerstens, <a href="https://ieeexplore.ieee.org/abstract/document/10465875">https://ieeexplore.ieee.org/abstract/document/10465875</a></li> <li>MyDefense, Aalborg <a href="https://mvdefence.dk/">https://mvdefence.dk/</a></li> </ul>
30c	<b>Drones and robots:</b>  Localization/Tracking of humans	<p>Sound control is seen as an opportunity to supplement other sense technologies in connection with e.g. mobile robots on industrial floors, in hospitals and elsewhere.</p> <p>Interesting users could be companies such as:</p> <ul style="list-style-type: none"> <li>Mobile Industrial Robots (MIR)</li> <li>Nilfisk</li> </ul> <p>And others</p> <p><b>Potential speakers/companies:</b></p> <ul style="list-style-type: none"> <li>Benjamin Yen, <a href="https://scholar.google.dk/citations?hl=da&amp;user=WigDXw4AAAAJ&amp;view_op=list_works&amp;sort_bv=pubdate">https://scholar.google.dk/citations?hl=da&amp;user=WigDXw4AAAAJ&amp;view_op=list_works&amp;sort_bv=pubdate</a></li> </ul>

#	Subject	Background
30d	<b>Drones and robots:</b>  Robot audition	<p>The area focuses on how to optimize applications where inherent noise is a problem and the signal/noise ratio must be optimized to achieve useful applications.</p> <p>Is e.g. a challenge in connection with drones, not least if you want to use drones for sound observation.</p> <p><b>Potential speakers/companies</b></p> <ul style="list-style-type: none"> <li>Benjamin Yen, <a href="https://scholar.google.dk/citations?hl=da&amp;user=WigDXw4AAAAJ&amp;view_op=list_works&amp;sort_bv=pubdate">https://scholar.google.dk/citations?hl=da&amp;user=WigDXw4AAAAJ&amp;view_op=list_works&amp;sort_bv=pubdate</a></li> <li>Elisa Tengan, <a href="https://scholar.google.dk/citations?user=0241cisAAAAJ&amp;hl=en">https://scholar.google.dk/citations?user=0241cisAAAAJ&amp;hl=en</a></li> </ul> <p>All 4 topics within the 'Robot &amp; Drone' area make sense, but it is hardly realistic to be able to find content to make webinars on all 4 areas. Therefore, we agreed to focus on the topic "Robot audition" first. A webinar could then take subtopics from one or more of the other areas, e.g. a post about drone detection.</p> <p>Jesper is looking at making a presentation for a proposal for a webinar, with this aim, and then we will talk again at the next meeting.</p>
31	"VLP" (Virtual Listener Panel)  <b>New Theme</b>	<p>SenseLab has developed a machine learning model, 'Virtual Listener Panel', VLP, for use when listening to recordings of e.g. headphones, and evaluate various attributes in the recorded sound. The model is trained on data from listening tests with expert listeners. It is currently trained on Bass strength, Treble strength, Midtone strength, timbre (dark-light), Brilliance and Bass depth.</p> <p>The next step is to train it on e.g. canned sound, metallic etc. attributes that describe more resonant phenomena. Later come dynamic attributes, such as 'Punch'.</p> <p>VLP cannot replace listening tests 100%, but it can help companies in their development of e.g. headphones/earbuds etc. in the development phase, where you typically need to test several times to see which way you are moving.</p> <p>Later in the development process, however, you must use listening tests to confirm your results.</p> <p>VLP is a breakthrough in the use of models, and it could be interesting to include the solution in a webinar, perhaps together with other machine learning techniques in connection with the development of audio products.</p> <p>The SenseLab developed database model can be used as input for, for example, with AI-based tools when developing solutions. The data material is unique, no others in the market that offer this kind of thing yet, so it points towards new development methodologies.</p> <p>It is the heart of companies how to optimize their tools, and usually not something that is shared with others. But it could be interesting to test the methodology.</p> <p>The most realistic way to create more interest in 'Virtual Listener panels' is to seek to establish a pilot project collaboration, where a company tries to use SenseLabs' tool in the test phase in connection with the development of audio products. DSC expects in connection with a new round of the cluster program to have the opportunity to support SME companies. We envision a collaboration where at least two companies join forces (at least two SMEs and preferably one or more larger ones, but only SMEs will be able to obtain public support). The working group is encouraged to be aware of the opportunity and possibly. sign up with potential candidates.</p>

#	Subject	Background
32	OTC hearing aids <b>Resumed Theme</b>	<p>On September 9, 2024, Apple announced that the latest model of the company's mobile phone/earbuds will also be able to be used as an OTC hearing aid. The software is FDA approved.</p> <p>The functions are intended for people over 18 years of age with mild to moderate hearing loss.</p> <p>With Apple's entry into the OTC market, interest in OTC may have been created again. In Denmark at least the 'Høreforeningen' has shown interest, not least because the new hype can support acceptance of the use of professional hearing aids. But even though the Apple product offers the option of self-testing, the 'Høreforeningen' advises that you get a professional hearing test done.</p> <p>An OTC hearing aid is in fact to be considered a traditional hearing aid, but where a procedure has been introduced by law so that the user can avoid involving a dispenser in the fitting of hearing aids. So, OTC is basically software, and where the users adapt to the hearing aid themselves. How well the users succeed in this is always open to speculation.</p> <p>Several professional hearing aid manufacturers also have OTC products in their portfolio, but do not sell OTC convincingly today. Apparently, no one really does.</p> <p>For the user, it can be difficult to understand why one OTC product is better or worse than another, since all products in the marketing are touted as being really good, but with very large differences in price. Since there is no professional dispenser in the loop, a user is left in a dilemma as to what is good and should one choose a traditional hearing aid instead.</p> <p>There may also be the challenge that an OTC product does not work optimally, but the user, who may not know any better, gets used to a chosen solution and does not arrive at an optimal solution to their hearing problems.</p> <p>It is important to note that OTC only concerns hearing aids, where the dispensing task is different. Instead of using a professional dispenser, users can adjust their hearing aid themselves using support software.</p> <p>This option now exists, but only in the USA, where such solutions are now allowed. In fact, several states in the USA have had the option previously through dispensation, but now it applies generally. However, only in the USA and not, for example, in Europe</p> <p>Several Asian manufacturers see OTC as a great opportunity, others are skeptical, and the OTC market still seems to be underdeveloped.</p> <p>At the next meeting, Morten will give a “down to earth” presentation of what OTC really stands for today.</p> <p>We will take it as the first item at the meeting.</p>

#	Subject	Background
33	<b>AudioGlasses</b> <b>New Theme</b>	<p>AudioGlasses is a technological innovation. The glasses have directional microphones on the front, and have small speakers in the temple, which direct the amplified sound towards the ears. The products have 6-8 hours of operating time today.</p> <p>There is a slight difference in the market segment. One segment is aimed at people who want to achieve a new sound experience, listen to books/podcasts without earphones while cycling or walking, maintain attention to their surroundings, etc.</p> <p>For example, such a product can be purchased at Fruugo for <b>699 kr.</b></p> <p><a href="https://www.fruugo.dk/smart-audio-briller-tradlost-bt-musikbriller-musik-handfri-opkald-blat-lys-blokerende-briller-stel-med-mikrofon-til-maend-kvinder/p-267877730-592359505?language=da&amp;ac=croud&amp;asc=pmax&amp;gad_source=1&amp;gbr_aid=0AAAAADpXug3sFBKrDnIWKJgW6oSYELCxcg&amp;gclid=CjwKCAjw8lfABhBXEiwAxRHlsIX04N--TXwN3yYPfWKpicz4aJ88wIBEJ1hvob6KDIULI7y2WKCkrhoCAaoQAvD_BwE">https://www.fruugo.dk/smart-audio-briller-tradlost-bt-musikbriller-musik-handfri-opkald-blat-lys-blokerende-briller-stel-med-mikrofon-til-maend-kvinder/p-267877730-592359505?language=da&amp;ac=croud&amp;asc=pmax&amp;gad_source=1&amp;gbr_aid=0AAAAADpXug3sFBKrDnIWKJgW6oSYELCxcg&amp;gclid=CjwKCAjw8lfABhBXEiwAxRHlsIX04N--TXwN3yYPfWKpicz4aJ88wIBEJ1hvob6KDIULI7y2WKCkrhoCAaoQAvD_BwE</a></p> <p>More professional solutions are aimed at the OTC market, such as NuanceAudio.com, a company owned by the dominant eyeglass lens manufacturer EssilorLuxottica, Here the expected price is around <b>1,200 US\$</b>, which hardly includes customized lenses. This product has received good reviews, is available in black or burgundy, and has 8 hours of operating time. The design employs 6 pcs. directional microphones which ensure good sound recording from the front, perhaps worse from the side (how in company?), crisp sound, etc..</p> <p><a href="https://www.youtube.com/watch?v=rJUNV9o2dyA">https://www.youtube.com/watch?v=rJUNV9o2dyA</a></p> <p>How will these new product types affect the market? Will they put more focus on the OTC market, which has not really had the expected breakthrough so far, or will they primarily be used by people without any special hearing challenges beyond what the current living environment or user situation entails?</p> <p>And had DSC a role in spreading information about the new market segment, including pros and cons?</p> <p><b>We will discuss this in the next meeting, after we have also received Morten Kroman's review of the OTC market in general.</b></p>

### Ad 3: Ideas for themes for Collaborative SME projects

#	Subject	Background
P1	<b>Use of VLP library</b>	The SenseLab developed machine learning model, 'Virtual Listener Panel', VLP, is aimed at use when listening to recordings of e.g. headphones and evaluating various attributes in the recorded sound. If we could identify e.g. two SME companies that might take an interest in the use of the LP library, that may serve as a nucleus for an upcoming SME project.
P2	<b>AudioGlasses</b>	Is there a role for Danish SME's to engage in this market segment, should we try to encourage, or is it a mass market that lends itself well towards companies with "deep pockets" and not so much Danish SMEs?  <a href="https://www.youtube.com/watch?v=rJUNV9o2dyA">https://www.youtube.com/watch?v=rJUNV9o2dyA</a>  See also Webinar Theme No. 33
P3	<b>Audio hardware platform</b>	There is a need for a flexible audio hardware platform for experimental use in development work and in learning situations at universities, vocational colleges and perhaps even in high schools. We imagine a device with a central programmable processor, a number of sensors and perhaps even sound emitters, wires that users can use to contact the device and/or get signals out, etc. Such a device would be desirable in many situations.  Market size is uncertain. But if we could bring together a few SME companies that see this as an exciting niche market for their business, then there is certainly an exciting opportunity.

## Next meeting

The next meeting in the working group on “Future Sound Tech Solutions” will take place:

- **Tuesday, May 27, 2025, 14:00 – 15:00**

### Agenda:

1. Introduction to OTC, the basics – Morten Kroman
2. Webinars, Physical events and potential Projects during 2025:
  - a. Follow-up on proposals and ideas from meeting # 21 including additional comments and proposals.
  - b. Proposals for possible speakers
  - c. New themes?
3. Collaborative projects, update of proposals, indication of possible project consortia.
4. News from DSC secretariate
5. A.O.B.

## Appendix 1: Participants in the meeting

Facundo Ramón	GN Hearing	Senior Research Scientist
Jesper Rindom Jensen	AAU, Inst. f. Electronic Systems	Associate Professor
Torben Christiansen	EPOS Group A/S	Director of Technology
Tore Stegenborg Andersen	FORCE Technology	Senior Researcher
Birger Schneider	CHAMAJ Consult ApS	Director
Jeppe Lindegaard	Danish Sound Cluster	Program Manager

## Appendix 2: Events proposed and promoted by the working group

#	Title	Comments	Event type	Date
1.a	AI/Machine Learning	Workshop (Edge)	On-line	5 April, 2022
1.c	AI in signal processing		Webinar	
2	“Demant Discovery”	Start-up in dialogue with Demant	Networking event	17 March, 2022
4	Audio & privacy	Part of physical conference	Panel discussion	4 May, 2022
5	Sound Quality in Digital Meetings	<ul style="list-style-type: none"> <li>• Position paper</li> <li>• Conference session</li> </ul>	Conference	4 May, 2022
6	Multisensory Processing		Webinar	7 December 2021
7	Sustainable transformation in Audio Companies	Green footprint in sound	Webinar	25 January, 2022
9	Personalization of User Needs		Webinar	1 June, 2022
10	Data Simulation for AI		Webinar	7 June, 2022
11	Perceptual Audio Evaluation		Webinar	13 October, 2021
12	Key Note, Sound Day 2021 “The Sound of Metal”	Oscar Winning Mikkel E.G. Nielsen, Film editor & Nicolas Becker, Sound Designer	Conference, Sound Day 2021	17 November, 2021
	AI in Audio Applications	Conference event at Digital Hi-Tech Summit, Bella Center	Conference	26 October, 2022
19	AI in Audio Applications		Webinar	13 December, 2022
8	Emerging Acoustic Sensor Technologies and Applications		Webinar	14 March, 2023
14	Feedback and noise cancellation		Webinar	9 May, 2023
17	Use of sound with robotics		Webinar	23 May, 2023
27	AI in Music & Sound		Webinar	26 October 2023
25	Immersive Audio & Quality Development in Digital Meetings		Webinar	30 April 2024
21a	"Auracast is the Future of Audio!"		Webinar	25 September, 2024