JOINDER DECLARATION

This Joinder Declaration to become a Collaborating Party ("**Joinder Declaration")** is made by the below signed party (the "**Joining Party**") to that the Joining Party becomes a member of the IVAS codec Public Collaboration, which terms and conditions (the **“ToR”**) are set out in Exhibit A,

WHEREAS, the Joining Party wishes to join as a Contributor to the IVAS codec Public Collaboration; and

WHEREAS, the Joining Party is a new member pursuant to section 3.13 of the ToR according to the status as either Contributor or Observer.

NOW, THEREFORE, Joining Party declares:

1. By executing this Joinder Declaration, the Joining Party/Parties agrees to be bound by all ToR set out in Exhibit A applicable to the status as either Contributor or Observer and is hereby deemed to be a Collaborating Party to the IVAS codec Public Collaboration.
2. The ToR is incorporated by reference in its entirety into this Joinder Declaration.

The Joining Party represents that it is executing this Joinder Declaration in accordance with section 3.13 of the ToR.

1. If joining as a Contributor, the Joining Party assigns as Program Manager:

Donald Duck, Donald.duck@duck\_company.com

1. If joining as a Contributor, the Joining Party intends to involve the following Subcontractor(s):

Goose Consultancies, Ltd.
1 Goose Road, Goosetown 12345, Goosia

**Attachments to this Joinder Declaration:**

Exhibit A: The ToR

In witness whereof, the Joining Party has caused this Joinder Declaration to be duly signed and executed by its authorized representatives as indicated below:

**Joining Party:**

Company Name: **DUCK INTERNATIONAL BUSINESSES**, a company duly incorporated under the laws of Duckia, with its principal office at 7 Duckroad, 12345 Ducktown, Duckia (“**Ducks**”);

By:

Name:

Title:

Date:

# Terms and conditions of IVAS codec Public Collaboration (hereinafter referred to as Terms of Reference “ToR”)

1. Purpose of the Public Collaboration

1.1. The purpose of the IVAS codec public collaboration (the “**Public Collaboration**”) is the multi-party development of a candidate for the IVAS codec, meeting the objectives of the 3GPP IVAS\_Codec Work Item, and carrying out its Work Program in a transparent and collaborative manner, and in the event the final candidate gets selected as 3GPP IVAS standard, the maintenance of the set of IVAS standard specifications, and to support the adoption of the IVAS codec standard in 3GPP realm,

hereafter designated as the **“Purpose”**.

1.2. The effort to pursue the Purpose is characterized by the following key principles:

a. The Public Collaboration shall be a joint effort among all Collaborating Parties.

b. Participation as a Collaborating Party, either as Contributor or Observer, is open to all parties, provided that the Collaborating Party or any of its Affiliated Companies is an Individual Member of 3GPP. Such party may participate in the Public Collaboration because it has, by virtue of such 3GPP membership, either by itself or through an Affiliated Company, demonstrated (a) interest, and the relevant scientific or technical competence, experience, or responsibility in the subject, and (b) a commitment to make licenses available on terms consistent with section 5.2 below. 3GPP means will be used to announce the Public Collaboration to 3GPP members.

c. Recognizing that the multi-party approach may result in a superior codec, Collaborating Parties agree in good faith to follow the terms and spirit of the Public Collaboration to jointly develop and propose for standardization the Public Collaboration Candidate.

d. The Public Collaboration is based on open information sharing. Beyond open information access, Observers are additionally given the right to participate in the Public Collaboration meetings and thereby gain first-hand insights into pertinent matters.

2. Definitions

**"3GPP"** means the 3rd Generation Partnership Project.

**"Affiliated Companies"** of a Collaborating Party shall mean a company or other legal entity which controls, is controlled by, or is under common control with such Collaborating Party, but any such company or other legal entity shall be deemed to be an Affiliated Company only as long as such control exists, and for the purposes of this definition, "control" shall mean direct or indirect ownership of more than fifty percent (50%) of the voting power, capital or other securities of the controlled or commonly controlled entity.

**“Codec Submission”** means the release of an executable program of the Public Collaboration Candidate to 3GPP or an entity mandated by 3GPP to evaluate it as part of selecting the 3GPP Standardized Codec for the EVS Codec Extension for Immersive Voice and Audio Services.

**"Copyright"** means all copyrights in whatever form or media whether or not registered in any copyright or intellectual property office in any country recognized by the Berne Convention.

**“Collaborating Party”** means a company taking part in the Public Collaboration by signing the Joinder Declaration Form and indicating its intended status as Contributor or Observer.

**“Contributor”** means a Collaborating Party that intends to actively participate in the Public Collaboration, make contributions under the Work Program and bind themselves to fund the selection and characterization process for the 3GPP IVAS codec.

**“Derivative Work(s)”** means a work based upon one or more pre-existing works of Software such as a translation, modification, revision, abridgement, condensation, expansion, collection, compilation or any other form in which a work may be recast, transformed or adapted.

**“Essential IPR”** means as defined in the ETSI IPR Policy.

**“Exploitation or Exploit”** means a right for a Collaborating Party to either itself or through a third party i) undertake further research activities, ii) develop, create, manufacture, market and sell a product, process, and/or a service, iii) undertake standardization activities, and/or iv) grant sublicenses for the activities set forth in ii) above.

**“Funding Agreement”** means the Co-Funding agreement for the Testing and Characterization Process for the 3GPP IVAS Codec being part of the IVAS selection deliverables.

**“Individual Member of 3GPP”** means a member of 3GPP having an Individual Membership as defined by the 3GPP Working Procedures.

**“IVAS Codec Baseline”** means any agreed intermediate version of the Software under the candidate development for EVS Codec Extension for Immersive Voice and Audio Services developed by the Public Collaboration intended for submission to 3GPP.

**“Needed”** means in respect of Exploitation, technically essential and the Public Collaboration Intellectual Property Rights would be necessarily infringed without the access rights being granted.

**“Observer”** means a Collaborating Party that intends to have access to and review the Work Program including the right to participate in Public Collaboration meetings but elect not to fund the selection and characterization process for the 3GPP IVAS codec and not to actively participate under the Work Program.

**“Open Source Software”** means software that is provided under any license requiring as a condition of use, modification or distribution of software (A) (i) the making available of Source Code, design descriptions or other materials, and (ii) the granting of permission for creating derivative works; or (B) that a royalty-free license relating to the software or derivative work or patents be granted to any third party.

**“Patent”** means any patent rights, including utility models, and patent applications for such rights in any country, but excluding design patents, registered designs, Copyright and like protection. References to the Patents of a Party hereto shall be taken to mean Patents owned or controlled by a Party or its Affiliated Companies and licensable by such Party or its Affiliated Companies without a requirement for payment to any 3rd party by the Party or its Affiliated Companies licensing such Patents. For the sake of clarity, payments not directly caused by the Party or its Affiliated Companies licensing such Patents (e.g., legally mandated patent inventor rewards or payments due to settlement unrelated to such licensing) shall not cause the Patents to be excluded from this definition.

**“Program Manager”** means as defined under 3.14.

**“Public Collaboration Background”** means the software, know-how and any other information and material, including any Public Collaboration Intellectual Property Rights thereto, developed or controlled by a Collaborating Party prior to the date of signing the ToR or created independently from the development under the ToR as proven by written records, and which is delivered to the other Collaborating Parties for the Purpose. Such Public Collaboration Background shall include the technologies and software developed by a Collaborating Party delivered to the other Collaborating Parties for the Purpose as well as any other information or material a Collaborating Party chooses to deliver to the other Collaborating Parties for the Purpose or uses in the Public Collaboration Candidate.

**“****Public Collaboration Candidate”** means the candidate for EVS Codec Extension for Immersive Voice and Audio Services developed by the Public Collaboration intended for submission to 3GPP.

**“Public Collaboration Foreground”** means the software, know-how, development results and any other information and material, including any Public Collaboration Intellectual Property Rights thereto, developed or controlled by a Collaborating Party during the course of the development of the Public Collaboration Candidate under the ToR and which is delivered to the other Collaborating Parties for the Purpose.

**“Public Collaboration Intellectual Property”** means Public Collaboration Foreground and Public Collaboration Background.

**“Public Collaboration Intellectual Property Rights (“IPR”)”** means Patents, other patents, registered designs, and other protection for the appearance of a product, chip topography rights and other like protection, Copyright, database rights and applications for any of the foregoing respectively. References to the IPR of a Party hereto shall be taken to mean IPR owned or controlled by a Party or its Affiliated Companies and licensable by such Party or its Affiliated Companies without a requirement for payment to any 3rd party by the Party or its Affiliated Companies licensing such IPR. For the sake of clarity, payments not directly caused by the Party or its Affiliated Companies licensing such IPR (e.g., legally mandated patent inventor rewards or payments due to settlement unrelated to such licensing) shall not cause the IPR to be excluded from this definition.

**“Purpose”** meansthe multi-party development of a candidate for the IVAS codec according to section 1.1.

**“Software”** means the software provided as Public Collaboration Background or Public Collaboration Foreground for the Purpose, all in Source Code form and where applicable any documentation delivered with Software in written or electronic form.

**“Source Code”** means software in human readable form normally used to make modifications to it, including scripts to control compilation and installation.

**“Adopted IVAS Codec”** means the Public Collaboration Candidate (or any parts thereof) that are adopted by 3GPP as a STANDARD or TECHNICAL SPECIFICATION as those terms are defined in ETSI IPR Policy.

**“Work Program”** means as defined in Appendix A of this document.

3. Operation of the Public Collaboration

3.1. The Collaborating Parties shall work for the Purpose in accordance with Appendix A (“Work Program”) and Appendix B (“Software Handling”). The Work Program and Software Handling may be subject to changes by agreement among the Contributors should the Contributors decide that aspects of the Work Program and Software Handling need to be updated in view of changing circumstances. Any such change becomes effective once agreed according to section 3.9 and published by the Administrator.

3.2. To make contributions under the Work Program, a Collaborating Party who wish to do so must execute this ToR as Contributor. If a Collaborating Party doesn’t want to make contributions under the Work Program, it can participate in the Public Collaboration through executing this ToR as Observer.

3.3. Joining as a Contributor is possible until three months prior to Codec Submission to allow for appropriate technical integration work. However, based on judgement of technical feasibility, joining within the three months prior to Codec Submission requires agreement by all Contributors.

3.4. All Contributors agree to share the funds required for the 3GPP IVAS codec selection and characterization process associated with the IVAS codec candidate of the Public Collaboration in a fair, reasonable and equal manner and in accordance with 3GPP agreements on test cost sharing.

Each Contributor shall have signed the Funding Agreement and provided a PDF copy thereof to the Administrator to be eligible to participate as a Contributor under the Public Collaboration .

3.5. Under the provision that the Public Collaboration Candidate is selected as 3GPP IVAS standard, each Contributor shall contribute in good faith, on a reasonable and fair share basis, to the maintenance or improvement of any IVAS codec specification published by 3GPP that includes any contribution of such Contributor as may be customary, such as code bug fixing, specification corrections and conformance procedures for proper implementation.

3.6. Communication among Contributors in furtherance of the Purpose shall be by electronic mail distributed to all Contributors via an email reflector. Members of the general public may openly access the mails distributed over the email reflector.

3.7. Meetings including online meetings will be scheduled at least 10 workdays in advance of the meeting (or with shorter notice if all Contributors agree) in a manner that affords Contributors a reasonable opportunity to attend and participate. Meeting participants may take notes or otherwise make a personal record of proceedings and presentations. Within a reasonable time following each meeting, a report of the meeting will be published to the email reflector and/or a website accessible to general public without restrictions upon its further dissemination.

3.8. Collaborating Parties intend to abide by applicable personal data protection regulations. Collaborating Parties shall adopt appropriate “Privacy by Design” measures to minimize the processing of personal data related to participating representatives of Collaborating Parties. By using the Public Collaboration websites and services or by otherwise providing personal data to the other Collaborating Parties, Collaborating Parties acknowledge and agree to the collection and use of the personal data of their participating representatives in accordance with the terms of these Terms of Reference. Participating representatives of Collaborating Parties have the right of objection and rectification of their personal data that the other Collaborating Parties holds. Collaborating Parties will retain personal data only for as long as is needed for the Purpose.

3.9. Contributors will make reasonable, good faith efforts to reach decisions by consensus (consensus means lack of sustained objection). If consensus cannot be achieved in a reasonable manner a 71% majority vote is taken. In case of majority vote decision taking, each Contributor shall be eligible to one vote. However, if two or more Contributors are Affiliated Companies, these Contributors will not have one vote each, but they will have one vote together.

3.10. The Collaborating Parties make publicly available electronic communications of the Public Collaboration via the used email reflector, meeting reports, code contributions and technical documentation as well as current and previous versions of the IVAS Codec Baseline of the Public Collaboration.

3.11. Observers may closely follow in good faith the pursuit of the Purpose of the Public Collaboration based on the shared information. In addition to the information shared with the public, such Observers have the right to participate in IVAS Public Collaboration meetings giving them first-hand insights into IVAS Public Collaboration matters. Observers have no right to take part in any decision making according to the ToR of the Public Collaboration.

3.12. The terms and conditions regarding the Public Collaboration under this ToR will be made available to the public. Each Collaborating Party shall sign the appended Joinder Declaration Form indicating the aspired status as either Contributor or Observer and confirming the acceptance of the terms and conditions.

3.13. In order to join the Public Collaboration, parties shall send their duly signed and executed Joinder Declarations in form of a paper original and a PDF copy to the below-specified Administrator. The administrator will promptly notify the Collaborating Parties of the new Joinder Declaration. If a Collaborating Party raises concerns under section 7.2.b within two weeks after the Administrator providing such notification, the joinder of the new party shall be suspended until the concern is resolved.

3.14. When joining the Public Cooperation as Contributor, such party must designate a person to represent the joining party (“Program Manager”). Any change must be reported to the Administrator. The Program Managers shall be responsible for (a) representing their respective parties in all matters relating to the Purpose and (b) submitting requests for changes to Appendix A (“Work Program”), Appendix B (“Software Handling”).

3.15. In case a Contributor subcontracts any work to third party persons, companies or organizations (hereinafter referred to as "Subcontractor"), this Contributor has to state those of its Subcontractor(s) either already in the Joinder Declaration or later through informing the Administrator and the other Contributors in writing about the names of any further Subcontractor(s) involved after joining. Each Contributor using a Subcontractor shall be responsible for any failure of its Subcontractor(s).

3.16. The Collaborating Parties agree upon joining this Public Collaboration on having Koninklijke Philips N.V. as Administrator. The task of the Administrator is to collect and archive on behalf of the Collaborating Parties the Joinder Declarations of the joining parties. For parties joining as Contributor, the Administrator will additionally collect and archive the PDF copies of their signed Funding Agreements. The Administrator is further tasked to publish a list of Collaborating Parties including their status as Contributor or Observer on the public file server dedicated to the Public Collaboration (see 4.3.d) and distribute PDF copies of the Joinder Declarations and the Funding Agreements among the Collaborating Parties. Collaborating parties shall upon request provide an executed paper counterpart of their Joinder Declaration directly to other Collaborating Parties making such a request.

3.17. The Public Collaboration will be publicly announced to 3GPP/SA4 with the intended effective date of May 30, 2022 along with this ToR. This announcement will also endorse the Administrator. The Public Collaboration will become effective 2 weeks after the Administrator or Interim Administrator, as the first Collaborating Party, has produced their Joinder Declaration, published its name on a list of Collaborating Parties and announced to 3GPP/SA4 the start of the Public Collaboration.

3.18. In case Koninklijke Philips N.V. has not produced its Joinder Declaration by May 16, 2022, then the first Collaborating Party to produce its Joinder Declaration (an “Interim Administrator”) shall publish its name on a list of Collaborating Parties and announce to 3GPP/SA4 the start of the Public Collaboration.  The Interim Administrator shall collect and archive on behalf of the Collaborating Parties the Joinder Declarations of additionally joining parties, publish a list of Collaborating Parties and distribute PDF copies of the Joinder Declarations among the Collaborating Parties.  The Interim Administrator may be replaced by an Administrator selected by a majority vote of the Contributors that are part of the Public Collaboration on the date that shall be thirty (30) days after the announced start of the Public Collaboration.

4. Development of the Public Collaboration Candidate

4.1. The development of the Public Collaboration Candidate shall target to fulfil the requirements and objectives as set forth by 3GPP in the IVAS\_Codec work item [1] and the best possible insights into market needs and opportunities.

4.2. The initial IVAS Codec Baseline for the development and enhancement under the contribution process shall be selected by the Contributors, be based on the 3GPP EVS codec and represent a suitable platform for development. The initial IVAS Codec Baseline is not expected to be a feature-complete IVAS codec, but rather the point from which the candidate codec will be developed and enhanced.

4.3. Development of the Public Collaboration Candidate will be a contribution-driven iterative process, whereby each accepted contribution shall lead to an enhancement to the latest IVAS Codec Baseline.

a. Public Collaboration Candidate development shall be done based on floating-point code. If SA4 decides to standardize IVAS fixed-point reference C-code, each Contributor will be responsible for delivering its contributions in fixed-point C-code. The floating-point and/or fixed-point C-code shall be ready in time to meet SA4-agreed IVAS standardization schedules.

b. Code contributions shall be made in form of Source Code updates compliant with the SOFTWARE HANDLING specified in section Appendix B accompanied by a technical description and evaluation.

c. Code contributions shall not, without prior unanimous agreement of all Contributors, include Open Source Software or any Software in respect of which the Contributor(s) do not own or control all respective Copyright.

d. Information and materials relevant for the Purpose and development process should, to the extent permitted, be made available to all Contributors. All contributions, including code, technical documentation, and other materials (e.g., materials to enable contribution cross-checks), shall be contributed by uploading to a public GitLab server (under 3GPP Forge URL: https://forge.3gpp.org/rep/ivas-codec-pc) dedicated to the Public Collaboration. Not all evaluation data and sound data can be shared or made public. Note that it is an obligation of each Contributor, if it desires to use evaluation or sound data, to obtain permission to any required rights to use such evaluation data or sound data from the owners thereof. In case, however, Contributor’s submission received a negative evaluation result from an evaluation agency, it is encouraged that relevant evaluation data and sound data will be shared with the submitting Contributor for the purpose of re-evaluating the negative evaluation result.

e. Decisions regarding the acceptance of contributions as an enhancement to the latest IVAS Codec Baseline shall be based on technical merit, being improved distortion/rate performance, reduced complexity/memory footprint at equivalent quality, improved error resilience, or other improved (or added) features that are consistent with the Purpose. Increased complexity/memory footprint may be acceptable if it is commensurate with offered improvements.

f. The acceptance of a contribution will typically require testing by the proponent of the contribution, and a cross-check by at least one other Contributor.

g. Contributions shall be accepted based on technical merit, relying on information provided by the Contributor and the results of a cross-check process involving other Contributors.

h. The contribution history on the used GitLab server shall be retained allowing at all times to trace back the original source of a contribution.

4.4. Sub-groups of Contributors may desire to develop a joint contribution to the Public Collaboration. Any such activity shall be disclosed to all Contributors, listing all Contributors participating in such sub-group. Contributors jointly developing a contribution shall not be involved in the cross-check process of that contribution.

4.5. Contributors will endeavour to resolve in good faith potential technical conflicts regarding contributions, taking into account technical merit and progress toward the 3GPP IVAS\_Codec work item objectives.

4.6. Once the Public Collaboration Candidate has been agreed according to the decision rule in section 3.9, that Public Collaboration Candidate will be submitted to 3GPP for IVAS codec selection.

5. Intellectual Property

5.1. a. Subject to section 5.6 each Contributor grants to all other Contributors a limited, paid-up, worldwide, non-exclusive and non-transferable license to the granting Contributor’s and its Affiliated Companies’ Public Collaboration Intellectual Property in the IVAS Codec Baseline, and in all contributions, for using and modifying it, and creating Derivative Works and compile Software and Derivative Works thereof, for the limited, non-commercial Purpose of this Public Collaboration only, and only during the term of the Public Collaboration. Such license will continue until the end of the Public Collaboration even if the Contributor leaves the Public Collaboration early for any reason.

b. Subject to section 5.6 each Observer grants to all Contributors a limited, paid-up, worldwide, non-exclusive and non-transferable license to the granting Observer’s and its Affiliated Companies’ Patents in the IVAS Codec Baseline, and in all contributions, for using and modifying it, and creating Derivative Works and compile Software and Derivative Works thereof, for the limited, non-commercial Purpose of this Public Collaboration only, and only during the term of the Public Collaboration. Such license will continue until the end of the Public Collaboration even if the Observer leaves the Public Collaboration early for any reason.

5.2. Each Collaborating Party agrees it and its Affiliated Companies will make available licenses to its Essential IPR including Copyright in any Adopted IVAS Codec in accordance with the then applicable ETSI IPR policy.

Contributors and Observers are reminded of their and their Affiliated Companies’ obligations under 3GPP partner organizations' IPR policies.

5.3 In relation to any and all parts of the Public Collaboration Candidate that are not included in any Adopted IVAS Codec, each Collaborating Party (Contributor/Observer) agrees it will make available licenses to the Contributors with respect to its and its Affiliated Companies’ respective Public Collaboration Intellectual Property used and/or incorporated in such non-adopted parts of the Public Collaboration Candidate, if Needed for Exploitation of a Contributor’s own Public Collaboration Foreground, as demonstrated to the reasonable satisfaction of the Collaborating Party owning or controlling such Public Collaboration Background or Public Collaboration Foreground, on market terms to be negotiated in good faith between the concerned Collaborating Parties. For the avoidance of doubt, the obligation to make available licenses to Public Collaboration Intellectual Property in this section does not include any IPRs in Public Collaboration Background or Public Collaboration Foreground that are Essential IPRs in any Adopted IVAS Codec or any other 3GPP STANDARD or TECHNICAL SPECIFICATION or are IPRs essential to any other telecommunications standard whatsoever.

5.4. Each Contributor retains all right, title and interest in its contributions under the Work Program. If Public Collaboration Intellectual Property Rights in any new invention, design, or work vests in two or more Contributors, then such Contributors shall decide on the arrangements for the ownership and Exploitation thereof.

5.5. Information and materials shared among the Contributors shall be deemed public information. This includes contributed code, technical documentation, and information exchanged orally in conference calls and physical meetings. However, except as expressly provided in section 5, the sharing of information among Contributors shall not be construed as implicitly granting a license or any other right under any intellectual property right of a Contributor. Information and materials shared by a Contributor (including contributions) may continue to be used by other Contributors for the Purpose and during the term of the Public Collaboration, even if the sharing Contributor leaves the Public Collaboration early for any reason. For the avoidance of doubt, a departing Collaborating Party’s rights to other member’s IPR under section 5.1 are terminated upon termination of that party’s status as a Contributor, unless that party rejoins the Public Collaboration as a Contributor.

5.6. The licenses made available to the Contributors under this section 5 are sub-licensable to such Contributors’ Affiliated Companies.

6. Term of the Public Collaboration

6.1. The term of the Public Collaboration shall continue until the final decision by 3GPP/TSG SA to select an IVAS candidate codec as IVAS codec standard, unless terminated early by mutual agreement of all Contributors. Irrespective of that, the Contributors will continue to contribute according to their commitments for maintenance and IVAS standard adoption support beyond the end of the collaboration, according to the Purpose.

6.2. Any Collaborating Party may withdraw from the Public Collaboration at any time by giving notice thereof to all other Collaborating Parties through the email reflector.

7. Compliance with Laws

7.1. Collaborating Parties shall comply with all applicable antitrust and competition laws and regulations. In particular, the Collaborating Parties shall take care not to share any competitively sensitive information.

a. A statement regarding the required compliance with all applicable antitrust and competition laws shall be read before each meeting of the Public Collaboration.

b. Each Contributor contributes under the premise that the multi-party approach of the Public Collaboration may result in a technically superior codec, and each Collaborating Party in good faith participates in the Public Collaboration for such purpose. In addition, each Contributor recognizes that a successful cooperation to achieve the Purpose within the time period available will require the dedication by each Contributor of significant resources, including personnel, time and attention devoted solely for the work under the ToR. Therefore, (subject to applicable competition and antitrust laws), each Contributor agrees that its efforts in development of a candidate for the IVAS codec will be devoted to the development as set forth in the ToR. In line with that, no Collaborating Party shall take any actions that may compromise the Purpose.

However, no provision of the ToR shall be construed to limit any Collaborating Party’s right to independently develop or acquire products, services or technologies (“Assets”) unconnected with that to which the work under the ToR relates, including Assets that compete with the Assets developed for the Purpose of the Public Collaboration or other Assets developed by another Collaborating Party or their affiliates, without the use of another Collaborating Party’s Public Collaboration Intellectual Property contributed for the Purpose and without breach of the ToR. For clarification, the licenses referenced in section 5 do not include a license to use contributions to the Public Collaboration outside of or independent of this Public Collaboration.

7.2. Each Collaborating Party is responsible for ensuring that its activities, both within and outside of the Public Collaboration, comply with all applicable sanctions and export control laws and regulations that may apply.

a. Only public contributions shall be made, such as for example through a public file server or email reflector.

b. To ensure compliance with applicable laws and regulations, no new party (a party that is not yet member of the Public Collaboration) may join the Public Collaboration if such new party is subject to applicable sanctions and export control restrictions that would, based on the written opinion of a third party law firm with experience in the area of export controls that is engaged by a Collaborating Party, cause any one or more of the Collaborating Parties on the Public Collaboration to violate any applicable laws and regulations if such new party were to be included in the Public Collaboration. In such event the Collaborating Parties will give good faith consideration as to whether, subject to the first paragraph of this section 7.2, reasonable accommodations could be made to facilitate such new party’s observance of, or contribution to, the development of the candidate IVAS codec. Such written legal opinion need not be shared with the Collaborating Parties, but the Collaborating Party that requested such opinion will, upon request of any other Collaborating Party, accurately summarize the conclusion of such opinion.

8. Warranty

8.1. The sole obligation of each Collaborating Party with respect to Public Collaboration Background and Public Collaboration Foreground disclosed by it to any other Collaborating Party shall be to use reasonable efforts to correct errors that might have occurred in same without undue delay after such errors become known to the Collaborating Party which forwarded them.

If and to the extent Software is delivered on tangible media, the delivering Collaborating Party represents and warrants for a period of ninety (90) days after delivery that such media will be free from defects in materials and workmanship. The delivering Collaborating Party's sole liability regarding breach of this warranty is to replace the defective media.

8.2. Except as expressly provided above in section 8.1 of this ToR, each Collaborating Party disclaims any and all representations and warranties, express or implied, with respect to its Public Collaboration Background and Public Collaboration Foreground and regarding their performance of Codec Development, including but not limited to the implied warranties of non-infringement, merchantability and fitness for a particular purpose.

EXCEPT AS EXPRESSLY SPECIFIED IN THIS SECTION 8, THE PUBLIC COLLABORATION BACKGROUND, PUBLIC COLLABORATION FOREGROUND, AND RELATED DOCUMENTATION IS PROVIDED "AS IS" WITHOUT WARRANTY OR CONDITION OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NONINFRINGEMENT OF THIRD PARTIES INTELLECTUAL PROPERTY RIGHTS. THE ENTIRE RISK ARISING OUT OF USE, PERFORMANCE OR DISTRIBUTION, AS APPLICABLE, OF THE PUBLIC COLLABORATION BACKGROUND, PUBLIC COLLABORATION FOREGROUND, AND ANY DOCUMENTATION IS WITH THE RECEIVNG COLLABORATING PARTY AS APPLICABLE.

THE SOFTWARE IS NEITHER FAULT TOLERANT NOR DESIGNED OR INTENDED FOR USE IN SECURITY-CRITICAL ACTIVITIES OR ANY ACTIVITIES WITH A HIGH RISK FOR ENVIRONMENTAL DAMAGES, PERSONAL INJURY OR DEATH OF PERSONS. NO EXPLICIT OR IMPLICIT WARRANTY OF FITNESS FOR SUCH PURPOSE AND USE IS GIVEN. THE LICENSES GRANTED UNDER THIS TOR SHALL TERMINATE WITH IMMEDIATE EFFECT, IF THE SOFTWARE IS USED IN SUCH ACTIVITIES.

9. Liability

UNDER NO CIRCUMSTANCES AND UNDER NO LEGAL THEORY, WHETHER TORT (INCLUDING NEGLIGENCE), CONTRACT, OR OTHERWISE, A COLLABORATING PARTY SHALL, OR ANY SUPPLIER OF A COLLABORATING PARTY, BE LIABLE TO ANOTHER COLLABORATING PARTY FOR ANY INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL OR PUNITIVE DAMAGES OF ANY CHARACTER INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF GOODWILL, WORK STOPPAGE, COMPUTER FAILURE OR MALFUNCTION, OR ANY AND ALL OTHER COMMERCIAL DAMAGES OR LOSSES, EVEN IF THE COLLABORATING PARTY SHALL HAVE BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. THIS LIMITATION OF LIABILITY SHALL NOT APPLY TO LIABILITY FOR DEATH OR PERSONAL INJURY RESULTING FROM SUCH COLLABORATING PARTY'S NEGLIGENCE TO THE EXTENT APPLICABLE LAW PROHIBITS SUCH LIMITATION. THE LIMITATION OF LIABILITY DOES FURTHERMORE NOT APPLY IN CASES OF DAMAGES CAUSED INTENTIONALLY OR IN CASES OF DAMAGES CAUSED BY GROSS NEGLIGENCE TO THE EXTENT APPLICABLE LAW PROHIBITS SUCH LIMITATION.

10. Survival

Sections 3.5, 5 and 6.1 shall survive the expiration or termination of this ToR, including, for the avoidance of doubt, as to a Collaborating Party who withdraws from this ToR pursuant to section 6.2.

11. Applicable law & dispute settlement

This ToR shall be construed in accordance with the laws of Switzerland.

Any dispute, controversy or claim arising out of or in relation to this ToR, including the breach, termination or validity or invalidity thereof (but for the avoidance of doubt not including issues related to Patents such as for example the validity or infringement of any Patent) between the Collaborating Parties shall be finally settled by arbitration in accordance with the Swiss Rules of International Arbitration of the Swiss Chambers of Commerce in force on the date when the Notice of Arbitration is submitted in accordance with these Rules. The number of arbitrators shall be three. The seat of arbitration shall be Geneva, Switzerland. The procedural law of this place shall apply where the Rules are silent. The language to be used in the arbitration proceeding shall be English.

12. References

[1] TD SP-170611: “New WID on EVS Codec Extension for Immersive Voice and Audio Services”, 3GPP TSG SA Meeting #77, Sapporo, Japan, 13-15 September 2017

**13. Appendices**

Appendix A: Work Program

Appendix B: Software Handling

Appendix C: Joinder Declaration Form

APPENDIX A

WORK PROGRAM

# A.1 General goals

* The goal of the collaboration is to develop technically the most viable solution for the EVS Codec Extension for Immersive Voice and Audio Services meeting the requirements set by 3GPP, taking into account the trade-offs between the various parameters of the design, such as compression efficiency, quality, complexity, delay, a.s.o. To achieve this goal, new stereo/immersive modes will be developed along with a codec framework to operate these modes (see details under section A.2.1).
* Any IVAS Codec Baseline up to the Public Collaboration Candidate are based on the EVS codec standardized by 3GPP. The Public Collaboration Candidate will be developed as an additional feature within the 3GPP EVS codec framework. The Public Collaboration Candidate should preferably use tools of the standardized EVS codec if technically reasonable.

* The Public Collaboration Candidate shall comprise a fully compliant EVS codec implementation according to 3GPP TS 26.444.
* The Public Collaboration Candidate shall be built based on technical merits. Conflicting technical proposals should be identified as soon as possible, allowing for timely conflict resolution.
* The initial IVAS Codec Baseline should offer a set of initial features in order to provide a strong basis for the development of the most competitive candidate for IVAS meeting the requirements and timelines set by 3GPP. The Public Collaboration aims at enhancing these initial features and developing additional features further enhancing the competitiveness of the Public Collaboration Candidate.

# A.2 Technical work

# A.2.1 Description of codec framework (informative)

Features contributed to the IVAS Codec Baseline are expected to meet the requirements and objectives as set forth by 3GPP in the IVAS\_Codec work item [1] and the relevant IVAS permanent documents as well as the best possible insights into market needs and opportunities.

The work is expected to include development/enhancement of the following IVAS Codec features, which does not exclude additional features to be proposed:

* Stereo/binaural
* Scene-based audio (FOA/HOA)
* Channel-based audio (Multi-channel audio coding, LFE coding)
* Object-based audio
* Special audio formats (e.g. MASA)
* VAD/DTX/CNG
* Rendering
* PLC
* JBM
* RTP Payload format
* Other, e.g.
	+ Combined audio formats
	+ Audio format simplification, pre-rendering
	+ Special features (e.g. Capture device orientation, Simultaneous binaural/stereo rendering, Rendering control)

A subset of the features listed above may pre-exist in the initial IVAS Codec Baseline to be chosen by the Contributors upon launch of the Public Collaboration, others may be contributed in the course of the Public Collaboration. All features are expected to be continuously enhanced during the Public collaboration.

# A.2.2 Conventions related to contributions proposed for inclusion

* Technical contributions for inclusion in the code shall be evaluated on technical grounds. The technical contributions are intended to provide a missing functionality in the codec framework or to bring an overall performance improvement (in terms of quality, complexity, delay, bitrate savings etc.). Any complexity/memory increase must be justified by commensurate performance improvements.

* All technical contributions should be developed in a separate branch (development branch). It is under the responsibility of the technology-proponent to strive to keep the development branch up to date with the latest IVAS Codec Baseline.
* All contributions shall be accompanied by description and justification (e.g. in form of evaluation results). At the time of the evaluation by the proponent, the branch the technical contribution resides in should be up to date with the latest IVAS Codec Baseline.
* Each contribution should be confined to a single logical entity. This means that unrelated contributions shall be submitted as separate contributions and committed in separate branches.
* For contributions that change a large portion of the codec framework, the amount of changes to the codec framework shall be commensurate with the realized improvements.

* Each contribution shall be introduced under a single compilation flag (#define switch) used to activate/deactivate it for cross-checking purposes.
* Each contribution should strive for alignment with the rest of the code. It should follow the Software Handling (see below), avoiding duplicating routines, buffers, parameters, structures, etc.
* Each contribution shall be cross-checked by at least one Contributor other than the technology proponent. An exception can be made for simple bug fixes or for a clean-up or a tuning done by the proponent and limited to its own proposal.
* Testing shall be commensurate with the magnitude of the potential impact of the change and should cover relevant operational conditions.
* For a contribution to be accepted, the evaluation results shall demonstrate a significant improvement (e.g. 95% significance or non-overlapping CIs).
* The development work shall be done in floating-point framework.

* Parties shall be prepared to develop fixed-point implementations of their contributions being part of the IVAS Codec Baseline once it is required by 3GPP SA4 to supply fixed-point implementations of the candidate(s) for EVS Codec Extension for Immersive Voice and Audio Services.
* A contribution may be removed at any time if the contributing company does not provide appropriate maintenance support (debugging, code clean-up and harmonization, documentation, supplementary evaluation if needed, etc.).

APPENDIX B

SOFTWARE HANDLING

# B.1 Programming practices

A unified structure for the IVAS framework is envisioned, including MSVC development environment, version 15 (2017), and Makefiles. For MSVC, the MSVC solution and project files are located in “Workspace\_msvc” subfolder.

The file structure is adapted for integration by providing an API for the libraries of major modules and the following file structure is adopted with six main subfolders:

* “apps” for applications files
* “lib\_enc” for algorithmic encoder-specific files
* “lib\_dec” for algorithmic decoder-specific files
* “lib\_com” for algorithmic files used both at the encoder and at the decoder
* “lib\_util” for files used for handling codec framework inputs/outputs
* “lib\_debug” for files used exclusively for debugging purposes

All scripts for external testing and verification of the codec framework, for automatic testing and verification, and for the maintenance of the source code are located in the “\scripts” subfolder. External executables needed for testing/verification purpose shall be added in the “\scripts\tools” subfolder. These executables shall be available for Windows, Linux (x86) and macOS (64 bit) platforms. The self-test tool located in “scripts” folder shall be used for internal testing of the codec framework. The self-test shall be used by Contributors when introducing new contributions in order to avoid unexpected side effects.

# B.2 Structure of the codec framework

The C source code shall be modular. The “main()” routine is located in encoder.c and decoder.c. High-level functions should be kept merely as a list of function calls, clearly keeping the high-level information flow of the codec framework.

High-level variables which describe elementary settings/configurations of the codec framework shall only be set by appropriate functions, for instance when initializations or reconfigurations are required.

# B.3 Programming guidelines

New IVAS related functions that are called in more than one .c file shall be declared in lib\_com\ivas\_prot.h header file and the definition of such function in an appropriate .c source file. The name of new IVAS files should start with a prefix ivas\_\*. Functions, logically falling in one category and/or functions with similar functionality can be put in the same .c file. Functions that are called in a single .c file shall be declared and defined within that file as “static”. The declaration of such function shall appear at the beginning of that file.

The file lib\_com\tools.c shall not be extended with new functions. New functions related to IVAS shall be placed in files dedicated to stereo or immersive. Simple common generic stereo/immersive tools shall be defined within the file lib\_com\ivas\_tools.c. The same guideline shall be applied to constants (declared e.g. as #define GAIN\_H 5.0f). Constants that are needed only in one .c file shall be defined within that file. All other constants related to IVAS shall be defined in lib\_com\ivas\_cnst.h header file and commented. Capital letters should be used for constants. Constants should be meaningfully grouped for easy reference. IVAS enumeration types (typedef enum) shall also be placed in lib\_com\ivas\_cnst.h header file.

All IVAS related constant arrays, ROM tables and vectors should be grouped as ‘const’ in lib\_com\ivas\_rom\_com.c, lib\_dec\ivas\_rom\_dec.c and lib\_enc\ivas\_rom\_enc.c files. Large tables may be kept in separate .c files. The declaration of these tables shall be done in lib\_com\ ivas\_rom\_com.h, lib\_dec\ ivas\_rom\_dec.h, and lib\_enc\ ivas\_rom\_enc.h header files, using the keyword “extern”. These header files are then to be added at the beginning of .c source files, wherever needed.

All new static variables related to the EVS mono operation shall be placed in the respective static structures as used for EVS. In addition, new static structures are created for IVAS and should contain sub-structures, parameters and buffers related to the stereo/immersive functionalities. Sub-structures within the main encoder/decoder static memory structures are desirable. The declaration of those structures (typedef struct) shall be part of the lib\_com\ivas\_stat\_com.h, lib\_enc\ivas\_stat\_dec.h, and lib\_dec\ivas\_stat\_enc.h header files. Static variables qualified with the keyword “static” and defined inside function bodies shall be avoided.

All compilation flags (i.e. #define switches to activate/deactivate contributions, one per contribution) shall be defined in lib\_com\options.h for easy reference. These flags should be defined and used as follows:

#define CONTRIB (defined in e.g. options.h)

…

#ifdef CONTRIB (elsewhere in the code)

…

#endif

The debugging part of the code shall be encompassed in #ifdef DEBUGGING … #endif.

Asserts or parts of the C source code leading to the termination of the codec framework executable(s) shall have a message explaining the reason for the termination.

An automated tool (WMC tool) is used for the complexity and memory estimation. The complexity macros are added automatically by the tool. Short parts of the code can be instrumented manually using the STL2019 floating point instrumentation library following the rules and guidelines outlined in the ITU-T STL2019 documentation. In order to get consistent results, the manual instrumentation should only be done at instances where the automatic instrumentation leads to obviously incorrect estimations. All C source code belonging to the manual complexity instrumentation must be encompassed within #define WMC\_TOOL\_MAN … #undef WMC\_TOOL\_MAN which in effect turns off the WMC automatic instrumentation. Memory estimation (static and dynamic RAM and ROM) is done automatically by the WMC tool. Both complexity and memory estimation shall be part of the DEBUGGING.

# B.4 Formal aspects

C99 code is targeted throughout the whole framework, compatible with the reference compilers. Platform specific macros or functions (e.g. MSC\_VER) should be avoided. The usage of global variables, // for comments or #pragma shall be avoided except for debugging. The code shall compile without warnings for the reference compilers. Reference compilers are:

* gcc [v9]
* clang [v13]
* Visual Studio 2017, Warning Level 4

Each function shall be accompanied with a short description of its functionality, in similar manner as other functions already in the EVS framework. Function parameters shall be defined one by line in the function definition (using i/o: …), and commented. The "const" qualifier should be used for all input arguments that are not supposed to be changed inside that function. If possible, describe the data range (min/max value) and/or precision required.

Variable names shall not be changed when passed from higher-level to lower-level functions. The only exception are short lowest-level generic functions or multi-purpose math tools, like mvr2r(), set\_f(), fir() or sum\_s(). The structure pointer may be passed to the lower-level function instead of its multiple members, if the number of function arguments would become too high. In case the structure pointer is passed to lower level functions, no variables of the same structure shall be passed in addition to the structure pointer.

For numerical operations in the IVAS algorithmic part, the standard signed and unsigned integer types are deprecated and the fixed width integer data types “(u)int8\_t”, “(u)int16\_t”, “(u)int32\_t”, “(u)int64\_t” (as defined in stdint.h) shall be used instead, except for cases where the ITU-T Basic Operators are used.

Unless motivated by numerical reasons, the default should be to use single precision floating point arithmetic and variables.

To ensure a common formatting scheme, the code is auto-formatted using a clang-format code formatting tool. Versions 9 and later are supported and the ‘.clang-format’ configuration file is part of the repository. Every developer should obey the rules in the configuration and run clang-format on the code before committing the code to the repository.

APPENDIX C

JOINDER DECLARATION FORM

This Joinder Declaration to become a Collaborating Party ("**Joinder Declaration")** is made by the below signed party (the "**Joining Party**") to that the Joining Party becomes a member of the IVAS codec Public Collaboration, which terms and conditions (the **“ToR”**) are set out in Exhibit A,

WHEREAS, the Joining Party wishes to join as a [Contributor/Observer] to the IVAS codec Public Collaboration; and

WHEREAS, the Joining Party is a new member pursuant to section 3.13 of the ToR according to the status as either Contributor or Observer.

NOW, THEREFORE, Joining Party declares:

1. By executing this Joinder Declaration, the Joining Party/Parties agrees to be bound by all ToR set out in Exhibit A applicable to the status as either Contributor or Observer and is hereby deemed to be a Collaborating Party to the IVAS codec Public Collaboration.
2. The ToR is incorporated by reference in its entirety into this Joinder Declaration.

The Joining Party represents that it is executing this Joinder Declaration in accordance with section 3.13 of the ToR.

1. If joining as a Contributor, the Joining Party assigns as Program Manager:

person name, email

1. If joining as a Contributor, the Joining Party intends to involve the following Subcontractor(s):

…

**Attachments to this Joinder Declaration:**

Exhibit A: The ToR

In witness whereof, the Joining Party has caused this Joinder Declaration to be duly signed and executed by its authorized representatives as indicated below:

**Joining Party:** [Company Name]:

By: By:

Name: Name:

Title: Title:

Date: Date: