**3GPP TSG|WG4 Meeting #119-e meeting *S4-220696***

**11th – 20th May 2022**  Revision of S4-220431

**Source: Xiaomi**

**Title: *Draft SID: Feasibility Study on Diverse*** ***audio Capturing system for End-user Devices***

**Document for: Approval**

**Agenda Item: 7.7**

3GPP™ Work Item Description

Information on Work Items can be found at <http://www.3gpp.org/Work-Items>   
See also the [3GPP Working Procedures](http://www.3gpp.org/specifications-groups/working-procedures), article 39 and the TSG Working Methods in [3GPP TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm)

Title: Feasibility Study on Diverse audio Capturing system for End-user Devices

Acronym: FS\_DaCED

Unique identifier:

Potential target Release: Rel-18

# 1 Impacts

*{For Normative work, identify the anticipated impacts. For a Study, identify the scope of the study}*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Affects:** | **UICC apps** | **ME** | **AN** | **CN** | **Others (specify)** |
| **Yes** |  | X |  | X |  |
| **No** | X |  | X |  |  |
| **Don't know** |  |  |  |  | X |

# 2 Classification of the Work Item and linked work items

## 2.1 Primary classification

### This work item is a …

|  |  |
| --- | --- |
| X | **Feature** |
|  | **Building Block** |
|  | *Work Task* |
|  | **Study Item** |

## 2.2 Parent Work Item

For a brand-new topic, use “N/A” in the table below. Otherwise indicate the parent Work Item.

|  |  |  |  |
| --- | --- | --- | --- |
| **Parent Work / Study Items** | | | |
| **Acronym** | **Working Group** | **Unique ID** | **Title (as in 3GPP Work Plan)** |
|  |  |  |  |

### 2.3 Other related Work Items and dependencies

|  |  |  |
| --- | --- | --- |
| **Other related Work /Study Items (if any)** | | |
| **Unique ID** | **Title** | **Nature of relationship** |
| *770024* | *EVS Codec Extension for Immersive Voice and Audio Services* | *Codec for spatial audio in conversational services* |
| *950015* | *Media Capabilities for Augmented Reality Glasses* | *To define media capabilities for AR devices* |
| 830005 | *Terminal Audio quality performance and Test methods for Immersive Audio Services* | Develop test specifications for objective characterization of terminals for 3GPP immersive services |

**Dependency on non-3GPP (draft) specification:**

n/a

# 3 Justification

Following the development of the 4G/5G high-speed wireless access to telecommunications, providing immersive voice and audio service by end-user devices is becoming more and more practicable. For the creation of immersive services and experiences, related requirements have been investigated in 3GPP TR 22.891. Several use cases for VR are envisioned in TR 26.918, and for these the capturing system for channel-based audio, object-based audio and scene-based audio are generally considered. As such, capturing capabilities is crucial for truly immersive audio experiences.

Due to physical constraints on their outline shapes and sizes, end-user devices are usually configured with different numbers of microphones and different microphone setup configurations, hence different audio format generation capabilities. If to use accessory capturing device, more varied audio formats are expected. Since smartphones are expected to be one of the preferred end-user devices for a real-time communication service, e.g. two smartphones should be able to negotiate the best appropriate input format depending on the capturing and rendering capabilities of each, and the network environment characteristics. Therefore, specific signalling information should be used for building up the bilateral link.

The goal is to explore diverse audio capturing methods for end-user devices, so as to recommend appropriate audio capturing methods and identify applicable audio input formats for the end-user device considering the current physical and Software constraints, and the applicable formats that are to be used for negotiation of best input formats between two end-user devices when establishing communication service.

# 4 Objective

This work item defines codec-independent immersive voice and audio capturing configuration for end-user devices. In particular, the following objectives are considered:

* Define reference audio capturing configurations for end-user devices.
  + Specify test methods for audio capturing performance.
* Define end-user device categories that addresses the capabilities constraints of audio formats.
* For the end-user device categories
  + Specify set of supported input formats, including mono, stereo, binaural, multichannel, MASA, object-based audio, scene-based audio.
  + *Identify optimum audio input formats based on supported input formats?*
  + ~~Identify new suitable input formats~~*~~.~~*
  + Specify signalling parameters for indicating audio input format capabilities.

Note: Smartphone is the highest priority end-user device, other device may be considered.

# 5 Expected Output and Time scale

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **New specifications {One line per specification. Create/delete lines as needed}** | | | | | |
| **Type** | **TS/TR number** | **Title** | **For info  at TSG#** | **For approval at TSG#** | **Rapporteur** |
| *TR* | *26.XXX* | *Diverse Audio Capturing system* | *SA#XXX* | *SA#XXX* | *TBD* |
|  |  |  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Impacted existing TS/TR {One line per specification. Create/delete lines as needed}** | | | |
| **TS/TR No.** | **Description of change** | **Target completion plenary#** | **Remarks** |
|  |  |  |  |
|  |  |  |  |

# 6 Work item Rapporteur(s)

*{Wang Bin. Wangbin23@xiaomi.com}*

*{Optional: <FamilyName>, <GivenName>, <Company>, <email address>: Secondary task(s).}*

# 7 Work item leadership

SA4

# 8 Aspects that involve other WGs

none

# 9 Supporting Individual Members

|  |
| --- |
| **Supporting IM name** |
| Xiaomi |
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