**3GPP TSG|WG4 Meeting #116 S4-211496**

**November 10 – 19, 2021, Electronic Meeting**

**Source: Xiaomi, Qualcomm Incorporated**

**Title:** **Draft New WID Media Capabilities for Augmented Reality Glasses**

**Document for: Approval**

**Agenda Item: 10.10**

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: Media Capabilities for Augmented Reality Glasses

Acronym: MeCAR

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.

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| --- |
| **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** |
| 810006 | Extended Reality (XR) in 5G | Initial study on AR/MR and key use cases. |
| 880011 | Study on 5G Glass-type AR/MR Devices | Study on the support of AR/MR with 5G glass-type devices. TR 26.998 concludes 5G Real-time Communication as an area for potential standardisation. |

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

n/a

# 3 Justification

In TR 26.928 and TR 26.998, XR and AR device architectures have been developed and details on relevant media formats are documented, for example in TR 26.998, clause 4.4. In particular, it is identified in TR 26.998 that for AR design glasses (referred to as WLAR and EDGAR in Table 4.2.2.1-1), implementation and operational requirements are significantly more stringent than for smart phones. As an example, consuming media on AR glasses requires functionalities to address very low power consumption, low area size, low latency options, new formats, operation of multiple decoders in parallel, etc.

To support basic interoperability for AR applications in context of 5G System based delivery, a set of well-defined media capabilities are essential to create the conditions of a successful ecosystem. These capabilities may be used in different services and applications, therefore it is relevant to define them in a service-independent manner. The media capabilities typically address three main scenarios:

* Support of basic media applications on such AR glasses with simple rendering functionalities, also applicable on other device types.
* Support of split-rendering, for which a pre-rendering of eye buffers is carried out in the cloud/edge
* Support of sensor and device data streaming to the network in order to support network-based processing or device sensor information

Media functions are relevant for the Media Access function as defined in clause 4.2.5 of TR 26.998. The media capabilities are importantly driven by realistic deployment options addressing device capabilities as documented in TR 26.998, clause 4.5.2 as well as the relevant KPIs.

The media capabilities may be referenced and added to 3GPP Media service enablers. In particular, inclusion into 5G Media Streaming is foreseen.

# 4 Objective

This work item defines service-independent media capabilities for AR Glasses. In particular, the following objectives are considered:

* Define a reference terminal architecture for AR devices
* Define at least one AR device category that addresses the constraints of an EDGAR-type AR glass
	+ Note: Additional device categories may be defined, but with lower priority
* For each AR device category
	+ Define media types and formats, including basic scenes, audio, graphics and video as well as sensor data.
	+ Define decoding capabilities, including support for multiple parallel decoders
	+ Define encoding capabilities
	+ Define security aspects related to the media capabilities
* Define relevant KPIs and QoE Metrics for AR media
* Encapsulation into RTP and ISO BMFF/CMAF
* Add AR media capabilities to 5G Media Streaming
* Define suitable 5GMS profile supporting the AR media capabilities

# 5 Expected Output and Time scale

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| --- |
| **New specifications {One line per specification. Create/delete lines as needed}** |
| **Type**  | **TS/TR number** | **Title** | **For info at TSG#**  | **For approval at TSG#** | **Remarks** |
| *TS* | *26.XXX* *(suggest 26.119)* | *AR Media Capabilities* | *SA#99* | *SA#100* | *Emmanuel Thomas (thomase@xiaomi.com)* |
|  |  |  |  |  |  |

|  |
| --- |
| **Impacted existing TS/TR {One line per specification. Create/delete lines as needed}** |
| **TS/TR No.** | **Description of change**  | **Target completion plenary#** | **Remarks** |
| *TS 26.511* | *Addition of AR Media Capabilities for 5G Media Streaming* | *SA#100* |  |
|  |  |  |  |

# 6 Work item Rapporteur(s)

*Emmanuel Thomas, Xiaomi, thomase@xiaomi.com*

*[Thomas Stockhammer, Qualcomm Incorporated,* *tsto@qti.qualcomm.com**]*

# 7 Work item leadership

SA4

# 8 Aspects that involve other WGs

none

# 9 Supporting Individual Members

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| --- |
| **Supporting IM name** |
| Xiaomi |
| Qualcomm Incorporated |
| Facebook |
| Tencent |
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