Source: Samsung Electronics

**Title: [FS\_5GSTAR] Proposed text for general**

**Agenda Item: 11.10**

**Document for: Discussion and Agreement**

# **Introduction**

This contribution proposes draft text for clause 4.1 General.

# **Proposed Text Change**

\*\*\* Change #1 \*\*\*

## 4.1 General

After a series of feasibility studies and normative works on VR, the feasibility study on eXtended Reality (XR) in 5G (FS\_XR5G), documented in TR 26.928 [4.3.a], analysed the frameworks for eXtended Reality (XR) as a conceptual umbrella for representing the virtual, augmented, and mixed realities in a consistent fashion. This study, 5G glass-type Augmented Reality (AR) / Mixed Reality (MR) classified the XR devices into different form factors, including AR glasses, also referred to as optical head-mounted displays (OHMDs) and pointed out their power and tethering issues with the sidelink. A key aspect of this study is to identify the details of AR glasses including the capabilities for communication, processing, media handling, and offloading of power consumption.

Based on the findings in clause 8 of TR 26.928, this clause follows up on some parts of the conclusions and proposed short term actions:

* Develop a flexible XR centric device reference architecture as well as a collection of device requirements and recommendations for XR device classes based on the considerations in clause 7.2 of TR 26.928.
* Study detailed functionalities and requirements for glass-type AR/MR UEs with standalone capability according to clause 7.6 of TR 26.928 and addresses exchange formats for AR centric media, taking into account different processing capabilities of AR devices.

For the device reference architecture, it is identified as three different types of approaches in this clause. One major distinction among the types is capabilities of whether stand-alone processing of required AR media processing (4.2.2.2 STAR UE) or having dependencies on entity in charge of offloading of power consuming processes, which the entity can be a cloud/edge service (4.2.2.3 EDGAR UE) and 5G wireless connectivity (4.2.2.4 WLAR UE).

For the detailed functionalities for the device reference architecture of AR glasses, AR runtime (4.2.3) is identified for AR/MR system capability discovery, AR/MR session management, tracking of surrounding area, and rendering of AR/MR content in scene graph. Scene manager (4.2.4) is able to process a scene graph and render the corresponding 3D scene. 5G Media Access Function (4.2.4) is identified to support AR UE and the scene manager to access and stream components of AR content (4.4).

AR content consists of one or more AR objects in terms of primitives (4.4.4) and their spatial and temporal compositions described by a scene description (4.4.2). Processing of AR/MR functions may require additional metadata (4.4.3) to properly recognize user’s pose and surrounding area.

Related works (4.5) on AR/MR in 3GPP, MPEG, and ETSI are identified for the considerations on collaborative work on device function architecture (4.2) and AR content formats and codecs (4.4).

\*\*\* End of Change #1 \*\*\*