**3GPP TSG SA WG 1 Meeting #108 S1-244506**

**Orlando, USA, 18-22 November 2024** *(revision of S1-244107)*

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**pCR Title: Pseudo-CR on XR rendering offload support**

**Draft Spec: 3GPP TR** **22.870 v0.0.0**

**Agenda item: 8.1.4**

**Document for: Approval**

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*Abstract: <provide a short description of the content>*

**1. Introduction**

Please see the use case below.

**2. Reason for Change**

This pCR introduce use case and requirements on XR rendering offload support for FS\_6G-REQ.

**3. Conclusions**

Define the requirements.

**4. Proposal**

It is proposed to agree the following changes to 3GPP TR 22.870 v0.0.0.

\* \* \* First Change \* \* \* \*

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[X] ITU-R Recommendation M.2160-0 (11/2023): "Framework and overall objectives of the future development of IMT for 2030 and beyond" (<https://www.itu.int/rec/R-REC-M.2160-0-202311-I/en>).

[Y] 3GPP TS 23.502: "Procedures for the 5G System".

\* \* \* Second Change \* \* \* \*

# 8 Immersive Communication

Editor's Note "Immersive communication" require support for mixed traffic of video, audio, haptic and other environment data in a reliable and synchronous manner, combining low latency and high data rates.

## 8.X Use Case X: XR rendering offload support

### 8.x.1 Description

There is a growing demand that people can use diverse types of devices other than smartphones, which connect to mobile network system [X]. Then, in 6G, a number of devices around us are expected to be connected to 6G system. With the trend, wearable devices are expected to be more popular devices for people, but even with such devices like XR devices, users would like to experience immersive applications which require much computing capability for processing application data. However, due to the limited computing capability, user experience could be affected. Therefore, there will be strong needs for such devices to be able to offload application data processing to the edge/cloud server.

In current computing technology, we can offload application data processing to edge/cloud server with completely separated way from mobile network system. However, from user experience point of view, 6G system shall support network and/or device control based on computing offload use of user devices.

This use case aims to provide a service scenario that user wants computing offload service supported by network and requirements for 6G system.

8.x.2 Pre-conditions

John's AR glasses can be connected to a mobile network operator's network.

John subscribes to a cloud rendering service to offload the processing functions of the terminal.

NOTE: The cloud rendering service is provided by a function outside the 3GPP system.

8.x.3 Service Flows

1. John is now walking outside. He wants to communicate with one of his friends by using holographic interaction application which is adequately coordinated for his AR glasses.
2. However, the glass is lightweight and it will take a lot of time to render the hologram image, so he decided to use the cloud rendering service he contracted to improve the experience.
3. The network obtains information from the cloud rendering service and the interaction app that John uses, such as the communication related requirements (e.g., required latency) and the computing related requirements (e.g., processing capacity, energy consumption).
4. Based on this information, the network controls QoS and provides guidance to cloud rendering service and application on optimal offloading (e.g., placement of compute processing nodes).

8.x.4 Post-conditions

The network was able to understand the computing requirements of John's apps and the offload requirements of the cloud rendering service, and set up QoS for John's device, allowing him to use the XR offload service comfortably.

### 8.x.5 Existing features partly or fully covering the use cases functionality

Solution for QoS modification based on communication requirements from application is specified in cl. 4.15.6.6 of TS 23.502 [Y].

### 8.x.6 Potential New Requirements needed to support the use case

[PR 8.x.6-001] The 6G system shall be able to support QoS control e.g., providing suitable communication latency for user, based on computing requirements e.g., computing resource availability information from third party application.

[PR 8.x.6-002] The 6G system shall be able to provide a guidance on compute offloading for third party application to decide suitable compute offload sites to process application data.

\* \* \* End of Changes \* \* \* \*