**3GPP TSG-SA WG1 Meeting #111 S1-253082r1**

**Goteborg, Sweden, 25-29 August, 2025**

Title: 22.870 pCR Update of Use case on Critical Immersive Communications

Agenda Item: 8.1.6 (6G study - Immersive Reality)

Source: Samsung

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*Abstract: This paper updates a use case on critical immersive communications to correct Figure 9.6.1-1 and add performance requirements (and thereby satisfy an outstanding Editor's Note.)*

**Discussion**

The contribution updates the existing use case 9.6.1

- Corrects a content error in Figure 9.6.1-1, which is now editable.

- Adds KPIs for the synchronization requirement, thereby justifying the removal of this editor's note:
"Editor’s Note: Specific KPIs for the synchronization requirement are FFS."

update in r1

- Add 6G System including IMS to requirement -1 [China Unicom]

- Add a note concerning the association of different applications whose media are synchronized under requirement -1 [Huawei]

**Proposal**

It is proposed to make the change listed below to TR 22.870, 0.3.1.

Begin changes

## 9.6 Use case on multiple application media synchronization

### 9.6.1 Description

In critical immersive communications such as 3D remotely controlled repairs or surgery, users may be equipped with multiple devices for multiple media components (e.g. haptic device for pressure, VR glasses for video, wireless headphones for audio) and each device receives traffic for the corresponding media component from the networks.

Unless the user receives synchronized information from all application media flows involved in the remotely controlled activity – in this example, presented to the user through haptic gloves and headset – the user can easily make errors, e.g. destroying the equipment that is being remotely repaired, or harming the patient by remote surgical procedures.

**Remote Repair Room**

**Remote Technician**

App for remote control/haptics

UE

RAN

Core Network

App for visual

App for sensor data

App for audio

Figure 9.6.1-1: An example of remotely controlled repair

Then, the tighter synchronization between different media components is required. For example, a group of data carrying multiple media components is defined as a chunk of haptic data and chunk of video data and the group of data need to be delivered collectively within a required time window.

Also, the group of data including more than one media components can be delivered via more than one traffic flows and/or UEs when each device is receiving corresponding media component via specific flow.

In a case when the network condition is poor or varying, it would be hard to support this level of synchronization without the network to understand the inter-dependent packets across multiple flows.

The corresponding 5G requirements from TS 22.261 [14] below is defined for the multi-modality but it does not cover the above mentioned scenario.

-The 5G system shall enable an authorized 3rd party to provide policy(ies) for flows associated with an application. The policy may contain e.g. the set of UEs and data flows, the expected QoS handling and associated triggering events, other coordination information.

-The 5G system shall support a means to apply 3rd party provided policy(ies) for flows associated with an application. The policy may contain e.g. the set of UEs and data flows, the expected QoS handling and associated triggering events, other coordination information.

In this use case there are different distinct application flows that must be synchronized, whereas in existing requirements, the media for a single application is synchronized.

### 9.6.2 Potential New Requirements needed to support the use case

[PR 9.6.2-1] Subject to operator policy, the 6G system including IMS shall support the synchronization of independent traffic flows of one or more applications, to be delivered to more than one device (i.e. UE or tethered devices).

NOTE: The applications whose traffic flows are synchronized are associated. The association is known to the 6G system. Further detail concerning this association. e.g. whether it is predefined or dynamic, are not specified in the requirement.

Table 9.6.2-1: KPIs for media synchronization for multiple applications

|  |  |  |  |
| --- | --- | --- | --- |
| **Use case** | **Audio-Haptic synchronization thresholds**  | **Video- Haptic synchronization thresholds**  | **Audio-video synchronisation thresholds** |
| Remotely controlled repair | - In the range of [50 ms to 0 ms] for audio delayed (NOTE 1)- In the range of [25 ms to 0 ms] for audio advanced (NOTE 1) | - In the range of [15 ms to 0 ms] for video delayed (NOTE 1)- In the range of [50 ms to 0 ms] for video advanced (NOTE 1) | - In the range of [125 ms to 5 ms] for audio delayed (NOTE 2)- In the range of [45 ms to 5 ms] for audio advanced] (NOTE 2) |
| NOTE 1: as defined in TS 22.261 [14] clause 6.43.1.NOTE 2: as defined in TS 22.261 [14] clause 7.6.1. |

End of changes