Source: Samsung Electronics Co. Ltd

**Title: on UE coverage of Avatar Processing Blocks**

**Agenda Item: 9.10**

**Document for: Discussion and Agreement**

# **Introduction**

This contribution proposes descriptions on UE's coverage on Application Processing Block (APB).

# **UE Avatar Processing Block coverage**

Figure 1 illustrates the possible variations of process selection and execution by UEs for End-to-end Application Processing Blocks (APB). When the scope of process execution changes, the media and data to be transmitted from UE to the network may vary. UE need to consider factors such as terminal performance required for process execution, time limits for real-time interactive communication services, the amount of data to be transmitted from UE to the network, and available QoS allowed for the UE from the network. Additionally, to delegate some of the processes in the End-to-end processing to the network, it is necessary to determine whether the UE's network subscription plan is eligible and appropriate. Finally, the performance of counterpart's terminal (indicated as UE2 in the diagram) responsible for End-to-end also needs to be assessed. If UE2 cannot complete the process within the required real-time constraints, QoE on the real-time interactive communication cannot be achieved. Negotiations between UE1 and the network, as well as between the network and UE2, can occur separately. However, UE1, UE2, and the service provider supporting the Avatar call service can assess the performance of the End-to-end path and, based on this assessment, can determine the processes to be executed on the terminals and the network. Consequently, the type and the amount of media and data to be transmitted from terminals to the network and vice versa may vary accordingly.

1a) The UE can transmit captured data from the user. The captured data is the Input as identified to generate the Animation Command (such as video capturing user's gestures and facial expressions), Avatar Model and Animated Avatar (such as 3D audio and haptic information) in clause 5.5.2. The rest processes of the end-to-end process will be executed by network and/or counterpart's UEs.

1b) The UE can transmit the Animation Command and the Avatar Model in addition to the data described in 1a. The format of the Animation Command and Avatar Model can be determined based on the negotiation between Avatar Model Animator on network or counterpart's UE.

1c) The UE can transmit the Animated Avatar Model in addition to the data described in 1b. The format of the Animated Avatar Model can be determined based on the negotiation between Scene Manager on network or counterpart's UE.

1d) The UE can transmit the Scene with relevant resources such as Animated Avatar. The UE may negotiate with the counterparts' UEs and generate AR and/or VR scenes and may transmit separately upon the device types of the UEs.

1e) The UE can transmit the 2D rendered scene for the counterpart's UE. The rendered scene may require post-processing such as re-projection on counterpart's UE.

2a) The counterpart's UE can receive the 2D rendered scene from network or the UE (UE1). The counterpart's UE may send its pose information to minimize the post-processing such as re-projection on it.

2b) The counterpart's UE can receive the Scene with relevant resources such as Animated Avatar. The counterpart's UE may send its preferences or device information to select AR or VR scene from the Scene Manager.

2c) The counterpart's UE can receive the Animated Avatar Model. The counterpart's UE may decide whether to synchronize a VR or AR scene with the UE. For synchronization of the Scene, the counterpart's UE can exchange the required information to update the Scene with UE.

2d) The counterpart's UE can receive the Animation Command from network or UE. Prior download of the relevant Avatar Model instructed by UE and required authentication on avatar rights management should be completed to establish the avatar call service.

2e) The counterpart's UE can receive the captured data from UE. Prior download of the Avatar Model and authentication should be done accordingly. It depends on counterpart's UE to select proper technology to actuate the Avatar Model. Negotiation between UEs may decide the format of the Avatar Model.



Figure 1 UE coverages of Avatar Processing Blocks

# **3. Proposal**

It is proposed to add clause 2 into clause 7 of TR 26.813. Separate contribution S4-231768 provides pCR to incorporate the proposed changes to the TR.