**Agenda item:** 10.7

**Source:** Nokia, Samsung Electronics Co., Ltd.

**Title: [AvCall-MED] UE Avatar ID Acquisition**

**Document for** Discussion andAgreement

# Introduction

In this contribution, we propose content for the UE Avatar ID acquisition for Avatar Communication, as well as the updated call flow on call setup and capability negotiation.

In TR 26.813, clause 8.3.1, it is indicated that BAR (Base Avatar Repository) stores the Base Avatar Representations and their associated Avatar IDs. Furthermore, One or more Base Avatars may be stored for a user, and each Base Avatar is identified with an Avatar ID. Accordingly, in clause 8.3.2.1, when UE sends capability negotiation requests using the application data channel through MF to the DC AS. The message for capability negotiation requests carries parameters including an avatar id chosen by UE. The current call flows start from the point where the UE has obtained the avatar ID without detailed description.

In TS 23.228, AC.11.3, it is indicated that the avatar ID list can be downloaded via application data channel or pre-configured in the UE locally.

Also, in TR 33.790 clause 7.2, as part of the Conclusions for Key Issue #2: Security of IMS based Avatar Communication: Avatar ID sent by the UE1 should be verified by the IMS network about whether it belongs to the UE1.

Therefore, it is necessary to address the related procedures and details in the call flow during the call setup and capability negotiation, and to align with SA2 and SA3 related work.

# Proposed Changes

#### 2.1 Proposed changes to TS 26.264

It is proposed to add general description of of Avatar ID(s) acquisition in the main CR to TS 26.264, A.1.6 Avatar Animation Call Flow, see S4-250917.

#### 2.2 Proposed changes to TR 26.813

It is proposed to include detailed procedures to the main CR to TS 26.264 under subclauses of the Annexas below.

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#### 8.3.2.1 Call Setup and Capability Negotiation

The parameters of the session are negotiated if UE centric mode or network centric mode is needed. This includes exchanging capability information, media and metadata descriptions and formats. The involved entities agree on assignment of avatar generation, animation tasks and media requirements.

For Avatar communication over the IMS data channel, the list of Avatar ID(s) and/or Avatar Representations is obtained by the UE using one of following options:

- Pre-configured in the UE: The Avatar ID List and/or Avatar Representations are provisioned or downloaded to the UE before a data channel for the avatar call is established.

- Through bootstrap data channel: The Avatar ID List is fetched by the DC AS from the BAR when the associated Avatar communication application is downloaded and transferred from the DC AS to the DCSF and downloaded to UE through the bootstrap data channel.

- Through application data channel: The Avatar ID List is fetched by the DC AS from the BAR and downloaded to the UE through the application data channel.

##### 8.3.2.1.1 Call Setup and Capability Negotiation Flow

Figure 22: Call Setup and Capability Negotiation Flow

The capability negotiation procedure is based on the avatar type (2D or 3D) and the capability information of sender/receiver UEs and MF. The capability information includes the animation data type(s) (e.g., text, expression data and motion signals for joints) supported by either UEs or MF. For network centric mode, after capability negotiation, the IMS AS instructs MF to download UE1’s base avatar from BAR, generate animation data from the source data received from UE1, and animate UE1’s base avatar using the animation data received from UE1 or generated by MF itself.

0. (optional) An Avatar ID List is downloaded through the Bootstrap Data Channel (see details in AC 11.3.1 in TS 23.228 [23]) or an Avatar ID is pre-configured in UE1.

NOTE: The step 0 is optional. The Avatar ID List is provisioned or downloaded to the UE before a data channel for avatar call is setup. The UE and the BAR may interact by means out of the scope of 3GPP.

1: An audio/video session is established between UE1 and UE2.

2: The bootstrap and application data channels are established between UE1, the MF, and the DC AS.

3: UE1 selects an avatar representation to be used for the avatar call. The list of available avatar representations may already be known to UE1.

4: UE1 sends a capability negotiation request using the application data channel through the MF to the DC AS. The message carries parameters which may include an avatar ID associated with the selected avatar representation selected in step 3 (if the avatar ID is downloaded or pre-configured in UE1),animation data types (e.g., text, expression data, or motion signals for joints) supported by UE1, and related rendering requirement or capability information.

If UE1 does not have any downloaded Avatar ID List or pre-configured avatar ID, it may request to obtain Avatar ID List through the established application data channel via a capability negotiation request.

5. (optional): If the message in step 3 carries parameters including, e.g., an avatar ID downloaded or pre-configured in step 0, then the avatar ID needs to be further verified by the BAR through a verification request from the DC AS to the BAR. If UE1 requests to obtain an Avatar ID List via a capability negotiation request, the DC AS sends the request to the BAR.

6. (optional) According to the request received in step 4, the BAR verifies the avatar ID and sends response to the DC AS. If the avatar ID does not pass the verification by the BAR, an error message is sent to the UE1. If the BAR receives an Avatar ID List request, the BAR (generates and) sends the Avatar ID List to the DC AS.

NOTE: Steps 5 and 6 are optional. Whether and which user identity(ies) should be used by the user of the sending UE (UE1) and/or the receiving UE (UE2) for the download of the Avatar Representations in the case of a receiving UE rendering mode will be decided by SA WG3 and the procedure will be aligned with SA WG3 decision.

7: The DC AS sends an avatar capability request to the MF.

8: The MF sends a response with its avatar capability information to the DC AS.

NOTE1: Step 7 and 8 are optional. The need for DC AS interacting with the MF (e.g. querying) for the MF’s avatar capability is related to SA2’s decision on a possible interface between DC AS and MF.

NOTE2: The service of avatar capability provided by MF will be further defined in CT1/CT4 if needed.9: (optional) Through an established P2A application data channel, MF/DC AS sends a capability negotiation request to the UE2. The message may include the same information as in described in step 4

10: (optional) UE2 sends the capability negotiation response to MF/DC AS. The message carries the capability negotiation result related to UE2’s preference.

11: The DC AS gets the avatar type (2D or 3D, from base avatar retrieved from BAR or to be generated by the MF) associated with the avatar ID and confirms the capability negotiation result based on the avatar type and the capabilities supported by UE1,MF and UE2. The capability negotiation result includes the rendering mode and animation method (e.g., by audio, text or expression data and motion signals for joints).

12: The DC AS sends the capability negotiation response to UE1 through MF. The message carries the capability negotiation result.

13: (optional) Depending on capability negotiation result for the selected avatar representation, media re-negotiation may take place between UE1 and UE2 in order to establish the necessary media streams.

14: The subsequent procedure continues.

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# Proposals

We propose adding the above content into the base CR on Avatar Communication to TS 26.264.