**3GPP TSG-SA WG1 Meeting # 103**  ***<S1-232zzz>***

 **Gothenborg, Sweden, Aug 21, 2023 - Aug 25, 2023**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
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|  | **22.856** | **CR** | **<CR#>** | **rev** | **<Rev#>** | **Current version:** | **19.0.0** |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network |  |

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| ***Title:***  | Clean up |
|  |  |
| ***Source to WG:*** | Samsung |
| ***Source to TSG:*** | SA1 |
|  |  |
| ***Work item code:*** | FS\_Metaverse |  | ***Date:*** | 2023-07-10 |
|  |  |  |  |  |
| ***Category:*** | F |  | ***Release:*** | Rel-19 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
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| ***Reason for change:*** | Diverse small editorial problems remain in TR 22.856 after its creation.The text in 2 editor's notes were turned into normal text. (Otherwise, the CR would be category D.) |
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| ***Summary of change:*** | User's consent becomes user consent.Editor's Notes are replaced with the text they suggested.PR numbering format has been harmonized throughout the TR. |
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| ***Consequences if not approved:*** | Editorial problems will remain in TR 22.856 and it is best to clean these up as soon as possible once under change control. |
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| ***Clauses affected:*** | 5.1.5, 5.4.6, 5.8.5, 5.11.6, 5.16.6, 5.21.6, 5.24.6, 5.25.6, 5.26.6 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **x** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **x** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **x** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

FIRST CHANGE

### 5.1.6 Potential New Requirements

[PR 5.1.6-1] The 5G system shall enable third parties to make known the availability of application services (i.e. provided by Application Servers) associated with a precise location.

[PR 5.1.6-2] The 5G system shall provide suitable exposure mechanisms for application services (i.e. provided by Application Servers) associated with a precise location available in the user's proximity (e.g. within line of sight), such that the mobile metaverse services can conform to specific service constraints.

NOTE: The term 'service constraints' implies that certain targets of service discovery are supported, e.g. to find 'restaurants.'

[PR 5.1.6-3] The 5G system shall provide suitable means to discover mobile metaverse services (i.e. provided by mobile metaverse servers) associated with a precise location available in the user's proximity.

[PR 5.1.6-4] The 5G system shall enable the rendering of diverse media, from one or more mobile metaverse services associated with a single location, to be combined to form a single location related service experience.

SECOND CHANGE

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

[PR 5.4.6-1] Subject to operator policy, the 5G system shall enable an authorized third party to establish an association between a physical location (in three dimensional space, an orientation, etc.) and service information, where the service information is provided to the 5G system and the spatial anchor is either provided or determined by the 5G system.

[PR 5.4.6-2] Subject to operator policy, the 5G system shall be able to establish an association between a physical location (in three dimensional space, an orientation, etc.) and service information, where the service information is provided to the 5G system and the spatial anchor is either provided or determined by the 5G system.

[PR 5.4.6-3] Subject to operator policy, the 5G system shall enable an authorized third party to obtain all of the spatial anchors located in a given three dimensional area.

NOTE 1: How the authorized third party identifies which three dimensional area to request spatial anchors in is not in scope of the 3GPP standard. Spatial localization and mapping information could be used to identify areas of interest.

[PR 5.4.6-4] Subject to operator policy, the 5G system shall enable a third party to request the service information associated with the precise location of a specific spatial anchor. Making use of this service and location information, the third party can access a mobile metaverse server to obtain AR media.

NOTE 2: How the service and location information is used by the third party to access a mobile metaverse server and the AR media itself is out of scope of this requirement.

[PR 5.4.6-5] Subject to operator policy, the 5G system shall provide an authorized third party a means to manage the spatial anchor(s), e.g. add, remove or modify spatial anchors, determine privacy and security aspects, and specifically to enable the third party to define which spatial anchors they manage have restricted access conditions.

[PR 5.4.6-6] The 5G system shall be able to collect charging information for the establishment or management of an association between a physical location and service information, where a third party creates, deletes or changes a spatial anchor or associated service information.

[PR5.4.6-7] The 5G system shall be able to collect charging information associated with the network operator exposure of spatial anchors to authorized third parties, and of service information associated with spatial anchors.

NOTE: The preceding requirements assumes that exposure of network anchors and associated service information can be a service provided by a network operator to third parties.

THIRD CHANGE

### 5.8.5 Existing features partly or fully covering the use case functionality

The 5G system can support different communication performance policies for services and provides some support for resolving conflicts between the policies of different services.

There is however no way to for the 5G system to coordinate the communication performance delivered so that divergence in communication performance is reduced for distinct services (i.e. from different service providers).

3GPP TS 23.503 [63] clause 4.3.1 includes the following general requirement "The PCC framework shall allow the resolution of conflicts which would otherwise cause a subscriber's Subscribed Guaranteed Bandwidth QoS to be exceeded.".

3GPP TS 23.503 [63] clause 6.1.3.7 explains that "Service pre-emption priority enables the PCF to resolve conflicts where the activation of all requested active PCC rules for services would result in a cumulative authorized QoS which exceeds the Subscribed Guaranteed bandwidth QoS.".

A note in 3GPP TS 23.503 [63] clause 6.1.3.7 includes the following sentence: "Normative PCF requirements for conflict handling are not defined."

FOURTH CHANGE

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

[PR 5.11.6-1] The IMS shall allow multimedia conversational communications between two or more users providing real time conversational transfer of animated user digital representation and speech data.

[PR 5.11.6-2] The 5G system shall support a means for UEs to produce 3D avatar media to be sent uplink, and to receive this media downlink.

NOTE 1: In some scenarios, avatar media transmission entails a significantly lower data transfer rate than video.

[PR 5.11.6-3] The 5G system shall support a means for the production of 3D avatar media to be accomplished on a UE to support confidentiality of the data used to produce the 3D avatar (e.g. from the UE cameras, etc.)

[PR 5.11.6-4] Subject to user consent, the 5G system shall support a means to provide bidirectional transitioning between video and avatar media for parties of an IMS call.

NOTE 2: An example where an IMS call could transition to an IMS based 3D avatar call is where the communication performance of one or more parties declines to the extent that video is no longer of sufficient quality or even possibility. In this case, an avatar call between the same parties can replace the video call.

[PR 5.11.6-5] The 5G system shall support a means to enable locally generated media (e.g. text or video) of a party to be transcoded before it is rendered for the receiving party.

NOTE 3: The locally generated media could allow a party to control the appearance of its avatar, e.g. to express behavior, movement, affect, emotions, etc.

NOTE 4: The transcoding of media enables 3D avatar communication to be supported in scenarios in which UE participating in the IMS call does not support e.g. FACS, encoding avatar media, presenting avatar media, etc.

[PR 5.11.6-6] The 5G system shall support collection of charging information associated with initiating and terminating an IMS-based 3D avatar call.

FIFTH CHANGE

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

[PR 5.16.6.2-1] Subject to user consent, the 5G system shall support mechanisms to securely register, store and update the digital assets for a user.

NOTE 1: The user could be a human user using a UE with a certain subscription, or an application running on or connecting via a UE, or a device behind a gateway UE. The user could also be a third party, which is typically an enterprise customer having service level agreement with the operator and interacting with the 3GPP network via an application server.

[PR 5.16.6.2-2] Subject to regulatory requirements and operator’s policy, the 5G system shall provide suitable and secure means to allow trusted third-party to authorize the use of the digital assets (that belong to the third-party enterprise customer) by a user.

NOTE 2: In a typical example the user is an employee of the third-party enterprise customer.

[PR 5.16.6.2-3] The 5G system shall be able to collect charging information per UE for managing (e.g. register, store and update) the digital assets for an end user (e.g. typically a human user with a certain subscription).

[PR 5.16.6.2-4] The 5G system shall be able to collect charging information per application for managing (e.g. register, store and update) the digital assets for the third party (e.g. typically an enterprise customer having service level agreement with the operator).

[PR 5.11.6.2-5] Subject to regulatory requirements and user consent, the 5G system shall support real-time transmission, between a UE and the network, of the body movement information (e.g. body motion or facial expressions) of a human user in order to ensure immersive voice/audio and visual experience.

NOTE 3: The body movement information (e.g. body motion or facial expressions) of a human user is used for rendering of the avatar of this user.

[PR 5.11.6.2-6] Subject to regulatory requirements, user consent and operator’s policy, the IMS shall support the capabilities of rendering the avatar based on the body movement information (e.g. body motion or facial expression) of a human user.

SIXTH CHANGE

### 5.21.5 Existing features partly or fully covering the use case functionality

No existing features are identified.

SEVENTH CHANGE

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

[PR 5.24.6-1] Subject to regulatory requirements, user consent and operator’s policy, the 5G system shall support mechanisms to identify an avatar and associate the avatar with a subscriber (i.e. the owner of the avatar).

[PR 5.24.6-2] Subject to regulatory requirements, user consent and operator’s policy, the 5G system shall be able to authorize the avatar to be used in mobile metaverse services.

[PR 5.24.6-3] Subject to regulatory requirements, user consent and operator’s policy, the 5G system shall provide time-bound authorization services for an avatar to be used in mobile metaverse services.

[PR 5.24.6-4] Subject to regulatory requirements, user consent and operator’s policy, the 5G system shall be able to support mechanisms to manage the authorization information about the use of an avatar in mobile metaverse services (e.g. the applied time-bound authorization services, the authorized users).

[PR 5.24.6-5] Subject to regulatory requirements, user consent and operator’s policy, the 5G system shall be able to identify the subscriber who has the right to use an avatar in mobile metaverse services.

EIGHTH CHANGE

### 5.25.6 Potential New Requirements

[PR 5.25.6-1] Subject to operator policy and user consent, 5G system shall be able to provide means to expose network performance information (e.g., bitrate, latency) to an authorized 3rd party metaverse application.

NOTE: The network performance information can be per UE and take into account all available 5G access network types with the aim of improving user experience.

[PR 5.25.6-2] 5G system shall be able to provide means to enable authorized 3rd party to synchronize the metaverse traffic which is routed or steered over available 5G access networks.

NINTH CHANGE

### 5.26.6 Potential New Requirements

 [PR 5.26.6-1] The 5G system shall support the encoding of sensor data capturing the facial expression and movement and gestures of a person, in a standard form, such that as part of the avatar encoding.

[PR 5.26.6-2] The 5G system shall support a set of transcoders from and to avatar representations e.g. between text, speech and avatar encoding.

[PR 5.26.6-3] The 5G system shall support the avatar transcoding functionality to control the appearance of the avatar based on the preferences of its associated user. Examples of the controlled appearance could be for the avatar to express behavior, movement, affect, emotions, etc.

[PR 5.26.6-4] The 5G system shall support a set of transcoders to facilitate accessibility of avatar representation from and to GTT to control the appearance of the encoded avatar.

[PR 5.26.6-5] The 5G system shall be able to collect charging information for transcoding services associated with IMS-based avatar call.

END OF CHANGES