**3GPP TSG-SA WG1 Meeting # 104**  ***S1-23xxxx***

**Chicago, USA, 13 - 17 November 2023**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **22.856** | **CR** | **00xx** | **rev** | **-** | **Current version:** | **19.1.0** |  |
|  | | | | | | | | |
| *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 | **x** | Radio Access Network | **x** | Core Network | **x** |

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| ***Title:*** | Essential correction to clause 7 | | | | | | | | | |
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| ***Source to WG:*** | Huawei, Orange, Nokia | | | | | | | | | |
| ***Source to TSG:*** | SA1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | FS\_Metaverse | | | | |  | ***Date:*** | | | 2023-10-25 |
|  |  | | | |  | |  | | |  |
| ***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 can be 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:*** | | CR0002 (as agreed in S1-232477) has not been correctly implemented in the TR, and wrong information needs to be corrected. | | | | | | | | |
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| ***Summary of change:*** | | To fully align with the agreed CR0002, the following changes are included:  - In table 7.1.1-1, [CPR 1.5] is added;  - In table 7.1.3-1, one additional Original PR is added to [CPR 3.8];  - In table 7.1.5-1, [CPR 5.8] is updated. | | | | | | | | |
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| ***Consequences if not approved:*** | | Agreement in SA1 #103 is not correctly reflected in TR 22.865. | | | | | | | | |
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| ***Clauses affected:*** | | 7.1.1, 7.1.3, 7.1.5 | | | | | | | | |
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|  | | **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

7 Consolidated potential requirements and KPIs

7.1 Consolidated potential requirements

7.1.1 Localized Mobile Metaverse Service Functionality

**Table 7.1.1-1 – Localized Mobile Metaverse Service Functionality Consolidated Requirements**

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| --- | --- | --- | --- |
| **CPR #** | **Consolidated Potential Requirement** | **Original PR #** | **Comment** |
| [CPR 1.1] | Subject to operator policy, the 5G system shall provide a means to define and expose to an authorized third party a spatial anchor, i.e. an association between a physical location (a point or volume in three dimensional space) and service information.  NOTE: Service information can include information to enable users to discover and access services, e.g. type of service, URLs, configuration data, the distance between the user and the spatial anchor, etc. | [PR 5.1.6-1]  [PR 5.1.6.2]  [PR 5.1.6.3]  [PR 5.4.6-2]  [PR 5.4.6-3] |  |
| [CPR 1.2] | Subject to operator policy, the 5G system shall enable an authorized third party to request the information associated with a specific spatial anchor.  NOTE: 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 5.4.6-4] |  |
| [CPR 1.3] | Subject to operator policy, the 5G system shall provide an authorized third party a means to define authorization to access spatial anchor information and to manage the spatial anchor(s), e.g. add, remove or modify spatial anchors. | [PR 5.4.6-5] |  |
| [CPR 1.4] | Subject to operator policy, regulatory requirements and user consent, the 5G system shall provide a means for a UE to provide sensor data, (e.g. from UE sensors, cameras, etc.) to the network in order to derive localization information, e.g. to produce or modify a spatial map or discover or find spatial anchors. The 5G system shall enable an authorized third party to obtain all of the spatial anchors located in a given three-dimensional area.  NOTE: How an 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 5.5.6.1-1]  [PR 5.5.6.1-2]  [PR 5.5.6.2-2]  [PR 5.5.6.2-3]  [PR 5.4.6-3] |  |
| [CPR 1.5] | Subject to operator policy and regulatory requirements, the 5G system shall support mechanisms to expose a spatial map or derived localization information to authorized third parties. | [PR 5.5.6.1-3] |  |
| [CPR 1.6] | Subject to operator policy, regulatory requirements and user consent, the 5G System shall be able to process and expose information related to a UE’s location and direction of orientation to authorized third parties.    NOTE: This requirement does not affect the ability of regulatory services, e.g., legal intercept service, to access required information without consent of the user. | [PR 5.19.6-1] |  |

SECOND CHANGE

7.1.3 Operational efficiency, exposure, and coordination of mobile metaverse services

**Table 7.1.3-1 – Operational efficiency, exposure, and coordination of mobile metaverse services Consolidated Requirements**

| **CPR #** | **Consolidated Potential Requirement** | **Original PR #** | **Comment** |
| --- | --- | --- | --- |
| [CPR 3.1] | Subject to operator policy, the 5G system shall support a mechanism that enables flexible adjustment of communication services based on e.g. the type of devices (e.g., wearables), or communication duration (e.g. more than one hour), such that the services can be operated with reduced energy utilization.  NOTE: Metaverse service experience over an extended period of time (e.g. 2h) requires significant power consumption by the UE. In some cases, a device with no external power supply cannot sustain downloading and rendering of media over a long interval, e.g. for the duration of an entire feature film or athletic event. | [PR 5.7.6-1]  [PR 5.7.6-2] |  |
| [CPR 3.2] | The 5G system shall be able to provide a means to associate and coordinate data flows related to one or multiple UEs e.g. associated with the same object in digital twin applications provided by the mobile metaverse service. | [PR 5.20.6-1]  [PR 5.20.6-2]  [PR 5.20.6-3] |  |
| [CPR 3.3] | Subject to operator policy, regulatory requirements and user consent, the 5G system (including IMS) shall be able to expose network performance information (e.g., observed or predicted bitrate, latency or packet loss) related to one or more users to an authorized third party metaverse application.  NOTE: The network performance information can be per UE and take into account all available access network types, i.e. 3GPP and non-3GPP. | [PR 5.25.6-1]  [PR 5.9.6.2] | The addition was motivated by the change in 22.856 CR0007. |
| [CPR 3.4] | Subject to operator policy, the 5G system (including IMS) shall support a mechanism, including enabling one or more authorized third party(ies), to coordinate multiple service data flows of a single mobile metaverse service delivered to/from one or more UE(s). Multiple UEs may be associated with one user/location or different users at different locations potentially using different access networks, i.e. 3GPP and non-3GPP.  NOTE 1: Coordination refers to the ability to provide an acceptable level of user experience for a given service, e.g. based on latency and synchronization constraints (due to multiple sources or long distance between UEs/users). This can be based on a quantitative bound.  NOTE 2: It is not assumed that it is always possible to coordinate and provide the same capabilities regardless of whether 3GPP or non-3GPP access is used. | [PR 5.27.6-3]  [PR 5.9.6.1]  [PR 5.3.6.2-3]  [PR 5.25.6-2]  [PR 5.10.6-1]  [PR 5.12.6-1] | The addition was motivated by the change in 22.856 CR0007. |
| [CPR 3.5] | The 5G system shall enable the coordination of diverse media, transmitted to a UE from one or more mobile metaverse services associated with a physical location, to be combined to form a localized service experience. | [PR 5.1.6-4]  [PR 5.4.6-1] |  |
| [CPR 3.6] | Subject to operator policy, the 5G system shall support exposure mechanisms enabling an authorized third party to determine one or more subscribers to whom mobile metaverse media can be distributed in a resource efficient manner. | [PR 5.27.6-1] |  |
| [CPR 3.7] | Subject to operator policy and user consent, the 5G system shall support a means to provide resource efficient communication of third party mobile metaverse media to one or more subscribers. | [PR 5.27.6-2] |  |
| [CPR 3.8] | The 5G system shall provide to maintain consistent user experience, for a given UE, when XR media from different mobile metaverse services have different communication performance, e.g., resolution, latency or packet loss. | [PR 5.8.6-1]  [PR 5.27.6-5] |  |

THIRD CHANGE

7.1.5 Digital Asset Management

**Table 7.1.5-1 – Digital Asset Management Consolidated Requirements**

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| **CPR #** | **Consolidated Potential Requirement** | **Original PR #** | **Comment** |
| [CPR 5.1] | Subject to operator policy, regulatory requirements and user consent, the 5G system shall be able to provide functionality to store digital assets associated with a user, and to remove such digital assets associated with a user. | [PR 5.13.6-1]  [PR 5.15.6-1]  [PR 5.16.6.2-1] |  |
| [CPR 5.2] | Subject to operator policy, regulatory requirements and user consent, the 5G system shall provide a means to allow a user to securely access and update their digital assets. | [PR 5.13.6-1]  [PR 5.15.6-1]  [PR 5.16.6.2-1] |  |
| [CPR 5.3] | Subject to user consent, the 5G system shall be able to allow a trusted third party to retrieve the digital asset(s) associated with a user, e.g. when the user accesses a specific application.  NOTE: When a user accesses an immersive mobile metaverse service, the authorized third party (service provider) could obtain relevant digital assets of a user associated with that service. | [PR 5.13.6-2]  [PR 5.13.6-3]  [PR 5.14.6-1]  [PR 5.15.6-2] |  |
| [CPR 5.4] | Subject to operator requirements and regulatory requirements, the 5G system shall provide secure means to authorize the use of digital assets associated with a user (e.g. digital assets belonging to a third party customer). | [PR 5.16.6.2-2]  [PR 5.13.6.5]  [PR 5.15.6-3] |  |
| [CPR 5.5] | The 5G system shall provide mechanisms to certify the authenticity of the digital assets associated with a user. | [PR 5.13.6-4] |  |
| [CPR 5.6] | The 5G system shall be able to associate a stored digital asset with one or more User Identities. | [PR 5.28.6-1] |  |
| [CPR 5.7] | Subject to operator policy, regulatory requirements and user consent, the 5G system shall support a mechanism for users to define conditions (e.g. based on user location information) to restrict the access to, and management of, stored digital assets associated with User Identity. | [PR 5.28.6-2] |  |
| [CPR 5.8] | The 5G system shall support mechanisms to request specific formats of stored digital assets associated with a user by an authorized mobile metaverse service.  NOTE: The main use case considered during development of this requirement was that stored digital assets such as avatar representation can be provided at different levels of graphical accuracy. | [PR 5.14.6-2] |  |

END OF CHANGES