**3GPP TSG CT WG3 Meeting #137 *C3-245408***

**Hefei, CN, 14 - 18 October, 2024 (Revision of C3-245111)**

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  | **29.549** | **CR** | **0325** | **rev** | **1** | **Current version:** | **19.0.0** |  |
|  |
| *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 |  | Radio Access Network |  | Core Network | **X** |

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|  |
| ***Title:***  | Metaverse introduction. |
|  |  |
| ***Source to WG:*** | Nokia,Samsung |
| ***Source to TSG:*** | CT3 |
|  |  |
| ***Work item code:*** | Metaverse\_App |  | ***Date:*** | 17-10-2024 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***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-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
|  |  |
| ***Reason for change:*** | As TS 23.437 introduces the spatial anchor service and spatial map servie using SEAL architecture. The new SEAL API has to be introduced for Spatial Anchor Management. Also Metaverse study in SA6 introduces Digital asset management support as a SEAL service.. |
|  |  |
| ***Summary of change:*** | Spatial Anchor management service and Spatial map management reference, terms, abbreviations, details are added. Digital asset management is added in SEAL service. |
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| ***Consequences if not approved:*** | There is a gap between Stage 2 and stage 3 in terms of Spatial anchor management.. |
|  |  |
| ***Clauses affected:*** | 2, 3.2, 4 |
|  |  |
|  | **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 does not impact the OpenAPI descriptions defined in this specification. |
|  |  |
| ***This CR's revision history:*** |  |

\* \* \* \* First Change \* \* \* \*

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 23.434: "Service Enabler Architecture Layer for Verticals (SEAL); Functional architecture and information flows".

[3] 3GPP TS 29.122: "T8 reference point for Northbound Application Programming Interfaces (APIs)".

[4] IETF RFC 6455: "The Websocket Protocol".

[5] IETF RFC 9112: "HTTP/1.1".

[6] IETF RFC 9110: "HTTP Semantics".

[7] Void.

[8] Void.

[9] IETF RFC 9111: "HTTP Caching".

[10] Void.

[11] Void.

[12] IETF RFC 9113: "HTTP/2".

[13] IETF RFC 8259: "The JavaScript Object Notation (JSON) Data Interchange Format".

[14] 3GPP TS 29.501: "5G System; Principles and Guidelines for Services Definition; Stage 3".

[15] Open API: "OpenAPI Specification Version 3.0.0", <https://spec.openapis.org/oas/v3.0.0>.

[16] 3GPP TS 29.222: "Common API Framework for 3GPP Northbound APIs; Stage 3".

[17] 3GPP TS 23.222: "Common API Framework for 3GPP Northbound APIs; Stage 2".

[18] 3GPP TS 33.122: "Security Aspects of Common API Framework for 3GPP Northbound APIs".

[19] IETF RFC 6749: "The OAuth 2.0 Authorization Framework".

[20] 3GPP TS 29.523: "5G System; Policy Control Event Exposure Service; Stage 3".

[21] 3GPP TS 29.571: "5G System; Common Data Types for Service Based Interfaces; Stage 3".

[22] 3GPP TS 29.500: "5G System; Technical Realization of Service Based Architecture; Stage 3".

[23] 3GPP TS 29.468: "Group Communication System Enablers for LTE (GCSE\_LTE); MB2 reference point; Stage 3".

[24] 3GPP TR 21.900: "Technical Specification Group working methods".

[25] 3GPP TS 33.210: "3G security; Network Domain Security (NDS); IP network layer security".

[26] 3GPP TS 33.434: "Service Enabler Architecture Layer for Verticals (SEAL); Security Aspects".

[27] 3GPP TS 29.486: "V2X Application Enabler (VAE) Services; Stage 3".

[28] 3GPP TS 29.522: "5G System; Network Exposure Function Northbound APIs; Stage 3".

[29] IEEE 802.1Qcc-2018: "IEEE Standard for Local and Metropolitan Area Networks—Bridges and Bridged Networks".

[30] 3GPP TS 29.514: "5G System; Policy Authorization Service; Stage 3".

[31] 3GPP TS 29.572: "5G System; Location Management Services; Stage 3".

[32] 3GPP TS 29.508: "5G System; Session Management Event Exposure Service; Stage 3".

[33] 3GPP TS 29.520: "5G System; Network Data Analytics Services; Stage 3".

[34] 3GPP TS 23.433: "Service Enabler Architecture Layer for Verticals (SEAL); Data Delivery enabler for vertical applications".

[35] 3GPP TS 29.548: "Service Enabler Architecture Layer for Verticals (SEAL); SEAL Data Delivery (SEALDD) Server Services; Stage 3".

[36] 3GPP TS 23.247: "Architectural enhancements for 5G multicast-broadcast services; Stage 2".

[37] 3GPP TS 23.246: "Multimedia Broadcast/Multicast Service (MBMS); Architecture and functional description".

[38] 3GPP TS 23.436: "Functional architecture and information flows for Application Data Analytics Enablement Service".

[39] 3GPP TS 23.502: "Procedures for the 5G System; Stage 2".

[40] IETF RFC 4122: "A Universally Unique IDentifier (UUID) URN Namespace".

[41] 3GPP TS 23.435: "Procedures for Network Slice Capability Exposure for Application Layer Enablement Service".

[42] 3GPP TS 29.435: "Service Enabler Architecture Layer for Verticals (SEAL); Network Slice Capability Exposure (NSCE) Server Services; Stage 3".

[43] 3GPP TS 29.558: "Enabling Edge Applications; Application Programming Interface (API) specification; Stage 3".

[44] 3GPP TS 29.214: "Policy and Charging Control over Rx reference point".

[45] 3GPP TS 23.437: "Service Enabler Architecture Layer for Verticals (SEAL); Spatial map and Spatial anchors".

[46] 3GPP TS 23.438: "Service Enabler Architecture Layer for Verticals (SEAL); Digital asset".

\* \* \* \* Next changes \* \* \* \*

## 3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

5GS 5G System

ADAE Application Data Analytics Enablement

A-ADRF Application layer - Analytical Data Repository Function

A-DCCF Application layer - Data Collection and Coordination Function

ADAES ADAE Server

AEF API Exposing Function

API Application Programming Interface

BDT Background Data Transfer

DS-TT Device-Side TSN Translator

JSON JavaScript Object Notation

NDS Network Domain Security

NDS/IP NDS for IP based protocols

NRM Network Resource Management

NSCE Network Slice Capability Enablement

PLMN Public Land Mobile Network

REST Representational State Transfer

SAn Spatial Anchors Server

SCEF Service Capability Exposure Function

SCS Service Capability Server

SEAL Service Enabler Architecture Layer for Verticals

SEALDD SEAL Data Delivery

SM Spatial Map

TMGI Temporary Mobile Group Identity

TSC Time Sensitive Communication

TSN Time Sensitive Networking

UE User Equipment

VAL Vertical Application Layer

\* \* \* \* Next changes \* \* \* \*

# 4 Overview

3GPP has considered in 3GPP TS 23.434 [2], 3GPP TS 23.433 [34] (for SEALDD), 3GPP TS 23.435 [41] (for NSCE), 3GPP TS 23.437 [45] (for SM and Spatial Anchor), and 3GPP TS 23.437 [46] (for Digital Asset) the development of Service enabler architecture layer for verticals (SEAL) over 3GPP networks to support vertical applications (e.g. V2X applications). It specifies the functional architecture for SEAL and the procedures, information flows and APIs for each service within SEAL in order to support vertical applications over the 3GPP systems. To ensure efficient use and deployment of vertical applications over 3GPP systems, SEAL services includes, group management, configuration management, location management, identity management, key management, network resource management, network slice capability enablement (NSCE), application data analytics enablement (ADAE) and data delivery management (SEALDD), spatial anchor management, spatial map management, digital asset management.

Clause 6 of 3GPP TS 23.434 [2] specifies the functional entities and domains of the functional model, reference points descriptions and SEAL APIs for SEAL services.

The present document specifies the APIs needed to support SEAL. 3GPP TS 29.548 [35] specifies the APIs needed for SEALDD. 3GPP TS 29.435 [42] specifies the APIs needed for NSCE.

\* \* \* \* End of Changes \* \* \* \*