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Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
 - 1 presented to TSG for information;
 - 2 presented to TSG for approval;
 - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

Introduction

iTeh STANDARD PREVIEW

This document specifies a functional architecture for service enabler architecture layer (SEAL) over 3GPP networks to support vertical applications (e.g. V2X applications). This functional architecture will include common application plane and signalling plane entities. A set of common services (e.g. group management, configuration management, location management) specified in this document can be shared across vertical applications.

The SEAL functional architecture takes into consideration the common capabilities to support mission critical and other vertical applications.

1 Scope

The present document specifies the functional architecture for service enabler architecture layer (SEAL) and the procedures, information flows and APIs for each service within SEAL in order to support vertical applications over the 3GPP system. The present document is applicable to vertical applications using E-UTRAN or NR access based on the EPC or 5GS architecture defined in 3GPP TS 23.401 [9] and 3GPP TS 23.501 [10]. To ensure efficient use and deployment of vertical applications over 3GPP systems this specification for SEAL services includes the group management, configuration management, location management, identity management, key management and network resource management.

NOTE: In the present document, the multicast services offered by SEAL are only applicable for EPS.

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*.

- STANDARD PREVIEW**
(standards.iteh.ai)
- <https://standards.iteh.ai/catalog/standards/sist/d3c97d34-886a-4e78-b7d2-153c866731/etsi-ts-123-434-v16-7-0-2021-07>
- ETSI TS 123 434 V16.7.0 (2021-07)
- [1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
 - [2] 3GPP TS 22.104: "Service requirements for cyber-physical control applications in vertical domains".
 - [3] 3GPP TS 23.379: "Functional architecture and information flows to support Mission Critical Push To Talk (MCPTT); Stage 2".
 - [4] 3GPP TS 23.280: "Common functional architecture to support mission critical services; Stage 2".
 - [5] 3GPP TS 23.281: "Functional architecture and information flows to support Mission Critical Video (MCVideo); Stage 2".
 - [6] 3GPP TS 23.282: "Functional architecture and information flows to support Mission Critical Data (MCData); Stage 2".
 - [7] 3GPP TS 23.286: "Application layer support for V2X services; Functional architecture and information flows".
 - [8] 3GPP TS 23.222: "Functional architecture and information flows to support Common API Framework for 3GPP Northbound APIs; Stage 2".
 - [9] 3GPP TS 23.401: "General Packet Radio Service (GPRS) enhancements for Evolved Universal Terrestrial Radio Access Network (E-UTRAN) access".
 - [10] 3GPP TS 23.501: "System Architecture for the 5G System; Stage 2".
 - [11] 3GPP TS 23.502: "Procedures for the 5G System; Stage 2".
 - [12] 3GPP TS 23.303: "Proximity-based services (ProSe); Stage 2".
 - [13] 3GPP TS 23.682: "Architecture enhancements to facilitate communications with packet data networks and applications".
 - [14] 3GPP TS 23.002: "Network Architecture".
 - [15] 3GPP TS 23.228: "IP Multimedia Subsystem (IMS); Stage 2".

- [16] 3GPP TS 23.468: "Group Communication System Enablers for LTE (GCSE_LTE); Stage 2".
- [17] 3GPP TS 23.246: "Multimedia Broadcast/Multicast Service (MBMS); Architecture and functional description".
- [18] 3GPP TS 23.203: "Policy and charging control architecture".
- [19] 3GPP TS 23.503: "Policy and Charging Control Framework for the 5G System; Stage 2".
- [20] 3GPP TS 26.348: "Northbound Application Programming Interface (API) for Multimedia Broadcast/Multicast Service (MBMS) at the xMB reference point".
- [21] 3GPP TS 29.214: "Policy and charging control over Rx reference point".
- [22] 3GPP TS 29.468: "Group Communication System Enablers for LTE (GCSE_LTE); MB2 Reference Point; Stage 3".
- [23] 3GPP TS 36.300: "Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall description; Stage 2".
- [24] IETF RFC 6733 (October 2012): "Diameter Base Protocol".
- [25] ETSI TS 102 894-2 (V1.2.1): "Intelligent Transport Systems (ITS); Users and applications requirements; Part 2: Applications and facilities layer common data dictionary Multimedia Broadcast/Multicast Service (MBMS); Protocols and codecs".
- [26] ETSI TS 102 965 (V1.4.1): "Intelligent Transport Systems (ITS); Application Object Identifier (ITS-AID); Registration".
- [27] ISO TS 17419: "Intelligent Transport Systems - Cooperative systems - Classification and management of ITS applications in a global context".
- [28] 3GPP TS 26.346: "Multimedia Broadcast/Multicast Service (MBMS); Protocols and codecs".
- [29] 3GPP TS 33.434: "Service Enabler Architecture Layer (SEAL); Security aspects for Verticals".
- [30] 3GPP TS 29.549: "Service Enabler Architecture Layer for Verticals (SEAL); Application Programming Interface (API) specification; Stage 3".

3 Definitions, symbols and abbreviations

3.1 Definitions

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

VAL user: An authorized user, who can use a VAL UE to participate in one or more VAL services.

VAL user ID: A generic name for the user ID of a VAL user within a specific VAL service.

VAL UE: A UE that can be used to participate in one or more VAL services.

VAL client: An entity that provides the client side functionalities corresponding to the vertical applications.

SEAL client: An entity that provides the client side functionalities corresponding to the specific SEAL service.

VAL service: A generic name for any service offered by the VAL service provider to their VAL users.

SEAL service: A generic name for a common service (e.g. group management, configuration management, location management) that can be utilized by multiple vertical applications.

SEAL provider: Provider of SEAL service(s).

VAL server: A generic name for the server application function of a specific VAL service.

SEAL server: An entity that provides the server side functionalities corresponding to the specific SEAL service.

VAL system: The collection of applications, services, and enabling capabilities required to support a VAL service.

Primary VAL system: VAL system where the VAL user profiles of a VAL user are defined.

Partner VAL system: A VAL system that has a business relationship with the primary VAL system such that service can be offered to primary VAL system users.

VAL group: A defined set of VAL UEs or VAL users configured for specific purpose in a VAL service.

NOTE: The set could be of either VAL UEs or VAL users depending on the specific VAL service.

VAL group home system: The VAL system where the VAL group is defined.

VAL group member: A VAL service user, whose VAL user ID is listed in a particular VAL group.

Vertical: See vertical domain.

Vertical application: An application catering to a specific vertical.

For the purposes of the present document, the following terms and definitions given in 3GPP TS 22.104 [2] apply:

Vertical domain

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
CAPIF	Common API Framework for northbound APIs
CRUDN	Create, Retrieve, Update, Delete and Notify
EPC	Evolved Packet Core
NR	New Radio
PCC	Policy and Charging Control
SCEF	Service Capability Exposure Function
SEAL	Service Enabler Architecture Layer for Verticals
VAL	Vertical Application Layer

4 Architectural requirements

4.1 General

4.1.1 Description

This subclause specifies the general requirements for SEAL.

4.1.2 Requirements

[AR-4.1.2-a] The SEAL shall support applications from one or more verticals.

[AR-4.1.2-b] The SEAL shall support multiple applications from the same vertical.

[AR-4.1.2-c] The SEAL shall offer SEAL services as APIs to the vertical applications.