**3GPP TSG-CT3 Meeting #142 C3-253598**

**Gothenburg, SE, 25 - 29 August, 2025** (revision of C3-253419)

**Source: Samsung**

**Title: Pseudo-CR on SS\_SmManagement API service operation description and other updates**

**Spec: 3GPP TS 29.437 (v1.0.0)**

**Agenda item: 19.42**

**Document for: Approval**

**1. Introduction**

This pCR proposes the service operation description for SS\_SmManagement service API.

**2. Reason for Change**

The SS\_SmManagement API is specified in TS 23.437, allows VAL server or SEAL SM Client to manage spatial maps on SEAL SM server. The service operation descriptions of this API need to be implemented in TS 29.437.

Note 1: The related API data model for SS\_SmManagement API is already available in TS 29.437.

Also, the API data model definition needs to be updated based on the below agreed CRs in stage-2:

1. S6-251228 - Retrieving spatial map augmented layer information
   1. Update GET method with augument layer information
2. S6-252106 - Correction for spatial map subscription
   1. LocationInformation and Pose in 6.1.1.6.2.15 TargetSpatialMaps

**4. Proposal**

It is proposed to agree the following changes to 3GPP TS 29.437 v1.0.0

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

### 5.3.X SS\_SmManagement API

#### 5.3.X.1 Service Description

The SS\_SmManagement API service enables a service consumer to:

- manage spatial maps on SEAL SM server.

- get spatial maps information from SEAL SM server.

- subscribe and receive spatial maps related events from SEAL SM server.

#### 5.3.X.2 Service Operations

##### 5.3.X.2.1 Introduction

The service operation defined for the SS\_SmManagement API are shown in the table 5.3.X.2.1-1.

Table 5.3.x.2.1-1: Operations of the SS\_SmManagement API

|  |  |  |
| --- | --- | --- |
| Service operation name | Description | Initiated by |
| SS\_SAnUsage\_Create | This service operation enables a service consumer to request the creation of a new spatial map at the SEAL SM server. | e.g., VAL Server |
| SS\_SAnUsage\_Request | This service operation enables a service consumer to retrieve the spatial map information from the SEAL SM server. | e.g., VAL Server |
| SS\_SmManagement\_Update | This service operation enables a service consumer to update the existing spatial maps information at the SEAL SM server. | e.g., VAL Server |
| SS\_SmManagement\_Delete | This service operation enables a service consumer to delete the existing spatial maps information from the SEAL SM server. | e.g., VAL Server |
| SS\_SmManagement\_Subscribe | This service operation enables a service consumer to request the creation of spatial maps subscription at the SEAL SM Server. | e.g., VAL Server |
| SS\_SmManagement\_Notify | This service operation enables a service consumer to receive the spatial maps related event(s) reports. | SM Server |
| SS\_SmManagement\_Subscribe\_Update | This service operation enables a service consumer to request the update of an existing spatial maps subscription at the SEAL SM Server. | e.g., VAL Server |
| SS\_SmManagement\_Unsubscribe | This service operation enables a service consumer to request the deletion of an existing spatial maps subscription from the SEAL SM Server. | e.g., VAL Server |

##### 5.3.x.2.2 SS\_SmManagement\_Create

5.3.x.2.2.1 General

This service operation is used by a service consumer to request the creation of a new Spatial Map at the SEAL SM Server.

The following procedures are supported by the "SS\_SmManagement\_Create" service operation:

- Spatial Map Creation.

5.3.x.2.2.2 Spatial Map Creation

Figure 5.3.x.2.2.2-1 depicts a scenario where a service consumer sends a request to the SEAL SM Server to request the creation of Spatial Maps (see also clause 9.3 of 3GPP TS 23.437 [13]).



Figure 5.3.x.2.2.2-1: Procedure for Spatial Maps Creation

1. In order to create a new Spatial Map, the service consumer shall send an HTTP POST request to the SEAL SM Server targeting the URI of the "Spatial Maps" collection resource, with the request body including the SpatialMapCreateReq data structure.

2a. Upon success, the SEAL SM Server shall respond with an HTTP "201 Created" status code with the response body containing a representation of the created "Spatial Maps" resource within the SpatialMap data structure, and an HTTP "Location" header field containing the URI of the created resource.

2b. On failure, the appropriate HTTP status code indicating the error shall be returned and appropriate additional error information should be returned in the HTTP POST response body, as specified in clause 6.2.1.7.

##### 5.3.x.2.3 SS\_SmManagement\_Request

5.3.x.2.3.1 General

This service operation is used by a service consumer to retrieve an existing "Spatial Maps" resource from the SEAL SM Server.

The following procedures are supported by the " SS\_SmManagement\_Request" service operation:

- Spatial Map Request.

5.3.x.2.3.2 Spatial Map Request

Figure 5.3.x.2.3.2-1 depicts a scenario where a service consumer sends a request to the SEAL SM Server to retrieve the existing spatial maps information (see also clause 9.3 of 3GPP TS 23.437 [13]).



Figure 5.3.x.2.3.2-1: Procedure for Spatial Map Request

1. In order to retrieve the existing Spatial Maps Information, the service consumer shall send an HTTP GET request to the SEAL SM Server targeting the URI of the corresponding "Spatial Maps" resource with the request URI query parameters including the filter criteria to discover the matching spatial map usage information.

2a. Upon success, the SEAL SM Server shall respond with an HTTP "200 OK" status code with the response body containing a list of spatial map information within the SpatialMapRetResp data structure.

2b. On failure, the appropriate HTTP status code indicating the error shall be returned and appropriate additional error information should be returned in the HTTP GET response body, as specified in clause 6.2.1.7.

##### 5.3.x.2.4 SS\_SmManagement\_Update

5.3.x.2.4.1 General

This service operation is used by a service consumer to update the existing "Individual Spatial Map" resource at the SEAL SM Server.

The following procedures are supported by the "SS\_SmManagement\_Update" service operation:

- Spatial Map Update.

5.3.x.2.4.2 Spatial Map Update

Figure 5.3.x.2.4.2-1 depicts a scenario where a service consumer sends a request to the SEAL SM Server to update the existing spatial map information (see also clause 9.3 of 3GPP TS 23.437 [13]).



Figure 5.3.x.2.2.2-1: Procedure for Spatial Maps Information Update

1. In order to update an existing spatial map, the service consumer shall send an HTTP PUT/PATCH request to the SEAL SM Server, targeting the URI of the corresponding "Individual Spatial Map" resource, with the request body including either:

- the updated representation of the resource within the SpatialMap data structure, in case the HTTP PUT method is used; or

- the requested modifications to the resource within the SpatialMapPatch data structure, in case the HTTP PATCH method is used.

NOTE: An alternative service consumer (i.e., other than the one that requested the creation/update of the targeted resource) can initiate this request.

2a. Upon success, the SEAL SM Server shall update the targeted "Individual Spatial Map" resource accordingly and respond with either:

- an HTTP "200 OK" status code with the response body containing a representation of the updated "Individual Spatial Maps" resource within the SpatialMap data structure; or

- an HTTP "204 No Content" status code.

2b. On failure, the appropriate HTTP status code indicating the error shall be returned and appropriate additional error information should be returned in the HTTP PUT/PATCH response body, as specified in clause 6.2.1.7.

##### 5.3.x.2.5 SS\_SmManagement\_Delete

5.3.x.2.5.1 General

This service operation is used by a service consumer to request the deletion of an existing "Individual Spatial Map" resource at the SEAL SM Server.

The following procedures are supported by the "SS\_SmManagement\_Delete" service operation:

- Spatial Map Deletion.

5.3.x.2.5.2 Spatial Map Deletion

Figure 5.3.x.2.5.2-1 depicts a scenario where a service consumer sends a request to the SEAL SM Server to request the deletion of an existing spatial map (see also clause 9.3 of 3GPP TS 23.437 [13]).



Figure 5.3.x.2.5.2-1: Procedure for Spatial Maps Deletion

1. In order to request the deletion of an existing spatial map, the service consumer shall send an HTTP DELETE request to the SEAL SM Server targeting the URI of the corresponding "Individual Spatial Map" resource.

NOTE: An alternative service consumer (i.e., other than the one that requested the creation/update of the targeted resource) can initiate this request.

2a. Upon success, the SEAL SM Server shall respond with an HTTP "204 No Content" status code.

2b. On failure, the appropriate HTTP status code indicating the error shall be returned and appropriate additional error information should be returned in the HTTP DELETE response body, as specified in clause 6.2.1.7.

##### 5.3.x.2.6 SS\_SmManagement\_Subscribe

5.3.x.2.6.1 General

This service operation is used by a service consumer to request the creation of spatial maps subscription at the SEAL SM Server.

The following procedures are supported by the "SS\_SmManagement\_Subscribe" service operation:

- Spatial Maps Subscription Creation.

5.3.x.2.6.2 Spatial Maps Subscription Creation

Figure 5.3.x.2.6.2-1 depicts a scenario where a service consumer sends a request to the SEAL SM Server to request the creation of a Spatial Maps Subscription (see also clause 9.3 of 3GPP TS 23.437 [13]).



Figure 5.3.x.2.6.2-1: Procedure for Spatial Maps Subscription Creation

1. In order to create a new Spatial Maps Subscription, the service consumer shall send an HTTP POST request to the SEAL SM Server targeting the URI of the "Spatial Maps Subscriptions" collection resource, with the request body including the SpatialMapsSub data structure.

2a. Upon success, the SEAL SM Server shall respond with an HTTP "201 Created" status code with the response body containing a representation of the created "Individual Spatial Maps Subscription" resource within the SpatialMapsSub data structure, and an HTTP "Location" header field containing the URI of the created resource.

2b. On failure, the appropriate HTTP status code indicating the error shall be returned and appropriate additional error information should be returned in the HTTP POST response body, as specified in clause 6.2.1.7.

##### 5.3.x.2.7 SS\_SmManagement\_Notify

5.3.x.2.7.1 General

This service operation is used by a SEAL SM Server to notify a previously subscribed consumer on:

- Spatial Maps related Event(s) Reports.

The following procedures are supported by the "SS\_SmManagement\_Notify" service operation:

- Spatial Maps Notification.

5.3.x.2.7.2 Spatial Maps Notification

Figure 5.3.x.2.7.2-1 depicts a scenario where the SEAL SM Server sends a request to notify a previously subscribed service consumer on Spatial Maps related events report(s) (see also clause 9.3 of 3GPP TS 23.437 [13]).



Figure 5.2.1.2.7.2-1: Procedure for Spatial Maps Notification

1. In order to notify a previously subscribed service consumer on Spatial Maps related Event(s) report(s), the SEAL SM Server shall send an HTTP POST request to the service consumer with the request URI set to "{notifUri}", where the "notifUri" variable is set to the value received from the service consumer during the creation and/or update of the corresponding Spatial Maps Subscription using the procedures defined in clauses 5.3.x.2.6 and 5.3.x.2.8, the request body including the SpatialMapsNotif data structure.

2a. Upon success, the service consumer shall respond to the SEAL SM Server with an HTTP "204 No Content" status code to acknowledge the reception of the notification.

2b. On failure, the appropriate HTTP status code indicating the error shall be returned and appropriate additional error information should be returned in the HTTP POST response body, as specified in clause 6.2.1.7.

##### 5.3.x.2.8 SS\_SmManagement\_Subscription\_Update

5.3.x.2.8.1 General

This service operation is used by a service consumer to request the update of an existing Spatial Maps Subscription at the SEAL SM Server.

The following procedures are supported by the "SS\_SmManagement\_Subscription\_Update" service operation:

- Spatial Maps Subscription Update.

5.3.x.2.8.2 Spatial Maps Subscription Update

Figure 5.3.x.2.8.2-1 depicts a scenario where a service consumer sends a request to the SEAL SM Server to request the update of an existing Spatial Maps Subscription (see also clause 9.3 of 3GPP TS 23.437 [13]).



Figure 5.3.x.2.8.2-1: Procedure for Spatial Maps Subscription Update

1. In order to update an existing Spatial Maps Subscription, the service consumer shall send an HTTP PUT/PATCH request to the SEAL SM Server, targeting the URI of the corresponding "Individual Spatial Maps Subscription" resource, with the request body including either:

- the updated representation of the resource within the SpatialMapSub data structure, in case the HTTP PUT method is used; or

- the requested modifications to the resource within the SpatialMapSubPatch data structure, in case the HTTP PATCH method is used.

NOTE: An alternative service consumer (i.e. other than the one that requested the creation of the targeted resource) can initiate this request.

2a. Upon success, the SEAL SM Server shall update the targeted "Individual Spatial Maps Subscription" resource accordingly and respond with either:

- an HTTP "200 OK" status code with the response body containing a representation of the updated "Individual Spatial Maps Subscription" resource within the SpatialMapsSub data structure; or

- an HTTP "204 No Content" status code.

2b. On failure, the appropriate HTTP status code indicating the error shall be returned and appropriate additional error information should be returned in the HTTP PUT/PATCH response body, as specified in clause 6.2.1.7.

##### 5.3.x.2.9 SS\_SmManagement\_Unsubscribe

5.3.x.2.9.1 General

This service operation is used by a service consumer to request the deletion of an existing Spatial Maps Subscription at the SEAL SM Server.

The following procedures are supported by the "SS\_SmManagement\_Unsubscribe" service operation:

- Spatial Maps Subscription Deletion.

5.3.x.2.9.2 Spatial Maps Subscription Deletion

Figure 5.3.x.2.9.2-1 depicts a scenario where a service consumer sends a request to the SEAL SM Server to request the deletion of an existing Spatial Maps Subscription (see also clause 9.3 of 3GPP TS 23.437 [13]).



Figure 5.2.1.2.9.2-1: Procedure for Spatial Anchors Subscription Deletion

1. In order to request the deletion of an existing Spatial Maps Subscription, the service consumer shall send an HTTP DELETE request to the SEAL SM Server targeting the URI of the corresponding "Individual Spatial Maps Subscription" resource.

NOTE: An alternative service consumer (i.e. other than the one that requested the creation of the targeted resource) can initiate this request.

2a. Upon success, the SEAL SM Server shall respond with an HTTP "204 No Content" status code.

2b. On failure, the appropriate HTTP status code indicating the error shall be returned and appropriate additional error information should be returned in the HTTP DELETE response body, as specified in clause 6.2.1.7.

\* \* \* Next Change \* \* \* \*

6.2.1.3.2.3.2 GET

The HTTP GET method allows a service consumer to retrieve a spatial map information from the SM Server.

This method shall support the URI query parameters specified in table 6.2.1.3.2.3.2-1.

Table 6.2.1.3.2.3.2-1: URI query parameters supported by the GET method on this resource

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description | Applicability |
| svc-id | string | M | 1 | Contains the VAL application service identifier. |  |
| map-id | SpatialMapId | M | 1 | Contains the identifier of the spatial map. |  |
| map-layer-list | SpatialMapLayers | O | 0..1 | Contains a list of spatial map layers. |  |
| aug-with | AugmentLayerList | O | 0..1 | Contains the information augmented with the spatial map layers. |  |

This method shall support the request data structures specified in table 6.2.1.3.2.3.2-2 and the response data structures and response codes specified in table 6.2.1.3.2.3.2-3.

Table 6.2.1.3.2.3.2-2: Data structures supported by the GET Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| n/a |  |  |  |

Table 6.2.1.3.2.3.2-3: Data structures supported by the GET Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| SpatialMapRetResp | M | 1 | 200 OK | Successful case. The requested spatial map information shall be returned. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection.  The response shall include a Location header field containing an alternative URI of the resource located in an alternative SM Server.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [2]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection.  The response shall include a Location header field containing an alternative URI of the resource located in an alternative SM Server.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [2]. |
| NOTE: The mandatory HTTP error status codes for the HTTP GET method listed in table 5.2.6-1 of 3GPP TS 29.122 [2] shall also apply. | | | | |

Table 6.2.1.3.2.3.2-4: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains an alternative URI of the resource located in an alternative SM Server. |

Table 6.2.1.3.2.3.2-5: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains an alternative URI of the resource located in an alternative SM Server. |

\* \* \* Next Change \* \* \* \*

##### 6.2.1.6.1 General

This clause specifies the application data model supported by the API.

Table 6.2.1.6.1-1 specifies the data types defined for the SS\_SmManagement API.

Table 6.2.1.6.1-1: SS\_SmManagement API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Clause defined | Description | Applicability |
| AugmentLayer | 6.2.1.6.3.3 | Represents the information about layer augmentation. |  |
| AugmentLayerInfo | 6.2.1.6.2.4 | Represents the augmented spatial map layer information. |  |
| AugmentLayerList | 6.2.1.6.2.X | Represents the list of augment layer values. |  |
| EventFilter | 6.2.1.6.2.16 | Represents the event filters for spatial map events subscription. |  |
| MapEvent | 6.2.1.6.3.4 | Represents the spatial map event. |  |
| MapEventSub | 6.2.1.6.2.14 | Represents the spatial map event subscription details. |  |
| MapLayerInfo | 6.2.1.6.2.9 | Represents the layer specific information of an spatial map layer. |  |
| MapObjectChangeEvent | 6.2.1.6.3.5 | Represents the detected change in spatial map object. |  |
| MapObjectInfo | 6.2.1.6.2.10 | Represents the spatial map object. |  |
| MapObjectChangeReport | 6.2.1.6.2.20 | Represents the map object change details. |  |
| MapsReport | 6.2.1.6.2.19 | Represents the spatial map event report details. |  |
| SpatialMapCreateInfo | 6.2.1.6.2.3 | Represents the spatial map information to create. |  |
| SpatialMapCreateReq | 6.2.1.6.2.2 | Represents the spatial map creation request. |  |
| SpatialMapId | 6.2.1.6.3.2 | Represents the spatial map identifier. |  |
| SpatialMapLayers | 6.2.1.6.2.7 | Represents the spatial map layers information. |  |
| SpatialMapLayerInfo | 6.2.1.6.2.8 | Represents the individual spatial map layer. |  |
| SpatialMapsNotif | 6.2.1.6.2.18 | Represents the spatial maps event notification. |  |
| SpatialMapProfile | 6.2.1.6.2.6 | Represents the spatial map profile information. |  |
| SpatialMap | 6.2.1.6.2.5 | Represents the spatial map resource representation. |  |
| SpatialMapPatch | 6.2.1.6.2.11 | Represents the partial spatial map resource representation. |  |
| SpatialMapRetResp | 6.2.1.6.2.12 | Represents the spatial map information returned in response. |  |
| SpatialMapSub | 6.2.1.6.2.13 | Represents the spatial map events subscription request. |  |
| SpatialMapSubPatch | 6.2.1.6.2.17 | Represents the spatial map event subscription modification. |  |
| SpatialMapTempRes | 6.2.1.6.2.21 | Represents the spatial map temporary response. |  |
| TargetSpatialMaps | 6.2.1.6.2.15 | Represents the target spatial maps for events. |  |

Table 6.2.1.6.1-2 specifies data types re-used by the SS\_SmManagement API from other specifications, including a reference to their respective specifications, and when needed, a short description of their use within the SS\_SmManagement API.

Table 6.2.1.6.1-2: SS\_SmManagement API re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| AllowedRules | 6.1.1.6.2.8 | Represents the allowed entity details. |  |
| DateTime | 3GPP TS 29.122 [2] | Represents a date and a time. |  |
| Local3dPointUncertainityElliosoid | 3GPP TS 29.572 [16] | Represents a 3D point. |  |
| LocationInfo | 3GPP TS 29.122 [2] | Represents location information. |  |
| ReportingInformation | 3GPP TS 29.523 [19] | Represents the reporting requirements information. |  |
| ServiceArea | 3GPP TS 29.558 [18] | Represents the service area information. |  |
| SupportedFeatures | 3GPP TS 29.571 [15] | Represents the list of supported feature(s) and used to negotiate the applicability of the optional features. |  |
| Uint32 | 3GPP TS 29.571 [15] | Represents an unsigned integer. |  |
| Uri | 3GPP TS 29.122 [2] | Represents an URI. |  |

\* \* \* Next Change \* \* \* \*

6.2.1.6.2.4 Type: AugmentLayerInfo

Table 6.2.1.6.2.4-1: Definition of type AugmentLayerInfo

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| augWith | AugmentLayerList | M | 1 | Contains the information augmented with the spatial map layers. |  |
| augLyrDet | array(string) | O | 0..1 | Contains the augmented spatial map layer information. |  |

\* \* \* Next Change \* \* \* \*

6.2.1.6.2.12 Type: SpatialMapRetResp

Table 6.2.1.6.2.12-1: Definition of type SpatialMapRetResp

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| svcId | string | O | 0..1 | Contains the identifier of the VAL application service. |  |
| mapInf | SpatialMapProfile | M | 1 | Contains the information of the spatial map. |  |
| augLyrInf | AugmentLayerInfo | O | 0..1 | Contains the augmented spatial map layer information. |  |

\* \* \* Next Change \* \* \* \*

6.2.1.6.2.X Type: AugmentLayerList

Table 6.2.1.6.2.X-1: Definition of type AugmentLayerList

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| augWith | array(AugmentLayer) | M | 1..N | Contains the information augmented with the spatial map layers. |  |

\* \* \* Next Change \* \* \* \*

6.2.1.6.2.15 Type: TargetSpatialMaps

Table 6.2.1.6.2.15-1: Definition of type TargetSpatialMaps

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| mapIds | array(SpatialMapId) | C | 1..N | Contains the list of spatial map identifiers. |  |
| area | ServiceArea | C | 0..1 | Contains the three dimensional area of information related to spatial maps. |  |
| locInfo | LocationInfo | C | 0..1 | Contains the location and orientation information related to the spatial maps. |  |
| pose | string | C | 0..1 | Contains the pose information related to the spatial maps. |  |
| NOTE: At least one of these attributes shall be present. | | | | | |

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