**3GPP TSG-CT WG3 Meeting #108-eC3-201214**

**E-Meeting, 19th – 28th February 2020 *(revision of C3-200xyz)***

**Source: Ericsson, Huawei?**

**Title: Pseudo-CR on Clarify target UE identity**

**Spec: 3GPP TS 29.517 v1.0.1**

**Agenda item: 16.5**

**Document for: Decision**

**1. Introduction**

<Introduction part (optional)>

**2. Reason for Change**

If a request to the AF was made based on an External Group ID, the AF may respond with data pertaining to an external Group ID as well. The current version of the specification assumes that GPSI is the only UE Identifier.

Additionally, if the AF is located within the trust domain, NWDAF will use Internal Group ID or SUPI in requests, and expect the same type of identifier in notifications.

The existing exterGroupIds attribute incorrectly specifies that it is an array of GroupId data types. However, GroupId is used to specify Internal Group Id.

According to TS 23.288, cl.6.7.3.4, area of interest and application id may be provided as AF input data in Naf\_EventExposure.

**3. Conclusions**

* Added supis and intGroupIds to EventFilter table
* Fixed exterGroupIds in EventFilter table to point to ExtGroupId
* Added supi to SvcExperience, UeMobilityCollection and UeCommunicationCollection tables
* Clarified that one identifier shall always be present.
* Add feature applicability for different events in EventFilter table.
* Change the data type UeTrajectoryInfo to UeTrajectoryCollection in data model.

**4. Proposal**

It is proposed to agree the following changes to 3GPP TS 29.517 v1.0.1.

\* \* \* 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 23.501: "System Architecture for the 5G System; Stage 2".

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

[4] 3GPP TS 23.288: "Architecture enhancements for 5G System (5GS) to support network data analytics services".

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

[6] 3GPP TS 29.501: "5G System; Principles and Guidelines for Services Definition; Stage 3".

[7] IETF RFC 7540: "Hypertext Transfer Protocol Version 2 (HTTP/2)".

[8] OpenAPI: "OpenAPI 3.0.0 Specification", <https://github.com/OAI/OpenAPI-Specification/blob/master/versions/3.0.0.md>.

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

[10] IETF RFC 7807: "Problem Details for HTTP APIs".

[11] 3GPP TR 21.900: "Technical Specification Group working methods".

[12] 3GPP TS 29.523: "5G System; Policy Control Event Exposure Service; Stage 3".

[13] 3GPP TS 29.571: "5G System; Common Data Types for Service Based Interfaces Stage 3".

[14] 3GPP TS 33.501: "Security architecture and procedures for 5G system".

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

[16] 3GPP TS 29.510: "5G System; Network Function Repository Services; Stage 3".

[17] 3GPP TS 29.122: "T8 reference point for northbound Application Programming Interfaces (APIs)".

[18] 3GPP TS 29.514: "5G System; Policy Authorization Service; Stage 3".

[19] 3GPP TS 29.520: "5G System; Network Data Analytics Services; Stage 3".

[xx] 3GPP TS 29.503: "Unified Data Management Services".

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

## 5.6 Data Model

### 5.6.1 General

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

Table 5.6.1-1 specifies the data types defined for the Naf\_EventExposure service based interface protocol.

Table 5.6.1-1: Naf\_EventExposure specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Section defined | Description | Applicability |
| AfEvent | 5.6.3.3 | Application Events. |  |
| AfEventExposureSubsc | 5.6.2.2 | Represents an Individual Application Event Subscription resource. |  |
| AfEventExposureNotif | 5.6.2.3 | Describes notifications about application event that occurred in an Individual Application Event Subscription resource. |  |
| AfEventNotification | 5.6.2.6 | AfEventNotification |  |
| CommunicationCollection | 5.6.2.13 |  |  |
| EventFilter | 5.6.2.5 | Represents event filter information |  |
| EventsSubs | 5.6.2.4 |  |  |
| ExceptionInfo | 5.6.2.14 | Describes the exceptions information provided by AF. |  |
| SvcExperience | 5.6.2.9 | Mean opinion score with the customized range. |  |
| ServiceExperienceInfoPerApp | 5.6.2.7 | Contains service experience associated with the application |  |
| ServiceExperienceInfoPerFlow | 5.6.2.8 | Contains service experience associated with the service flow |  |
| UeCommunicationCollection | 5.6.2.11 | Contains UE communication information associated with the application. |  |
| UeMobilityCollection | 5.6.2.10 | Contains UE mobility information associated with the application. |  |
| UeTrajectoryCollection | 5.6.2.12 |  |  |

Table 5.6.1-2 specifies data types re-used by the Naf\_EventExposure service based interface protocol from other specifications, including a reference to their respective specifications and when needed, a short description of their use within the Naf\_EventExposure service based interface.

Table 5.6.1-2: Naf\_EventExposure re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| ApplicationId | 3GPP TS 29.571 [13] |  |  |
| DateTime | 3GPP TS 29.571 [13] |  |  |
| Dnai | 3GPP TS 29.571 [13] |  |  |
| EthFlowDescription | 3GPP TS 29.514 [18] |  |  |
| Exception | 3GPP TS 29.520 [19] |  |  |
| Float | 3GPP TS 29.571 [13] |  |  |
| FlowInfo | 3GPP TS 29.122 [17] |  |  |
| Gpsi | 3GPP TS 29.571 [13] |  |  |
| GroupId | 3GPP TS 29.571 [13] |  |  |
| LocationArea5G | 3GPP TS 29.122 [17] |  |  |
| ReportingInformation | 3GPP TS 29.523 [12] |  |  |
| SupportedFeatures | 3GPP TS 29.571 [13] |  |  |
| TimeWindow | 3GPP TS 29.122 [17] |  |  |
| Uri | 3GPP TS 29.571 [13] |  |  |
| Volume | 3GPP TS 29.122 [17] |  |  |
| Supi | 3GPP TS 29.571 [13] |  |  |
| ExtGroupId | 3GPP TS 29.503 [xx] |  |  |

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

#### 5.6.2.5 Type EventFilter

Table 5.6.2.5-1: Definition of type EventFilter

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| gpsis | array(Gpsi) | O | 1..N | Each element represents external UE identifier.(NOTE 1, NOTE 2) | UeMobilityUeCommunicationServiceExperience |
| supis | array(Supi) | O | 1..N | Each element represents a SUPI identifiying a UE (NOTE 1, NOTE 2) | UeMobilityUeCommunicationServiceExperience |
| exterGroupIds | array(ExtGroupId) | O | 1..N | Each element represents a group of UEs identified by an External Group Identifier.(NOTE 1, NOTE 2) | UeMobilityUeCommunicationServiceExperience |
| intGroupIds | array(GroupId) | O | 1..N | Each element represents a group of UEs identified by an Internal Group Identifier (NOTE 1, NOTE 2) | UeMobilityUeCommunicationServiceExperience |
| anyUeInd | boolean | O | 0..1 | Identifies whether the AF request applies to any UE. This attribute shall set to "true" if applicable for any UE, otherwise, set to "false".May only be present and sets to "true" if "AfEvent" sets to "SVC\_EXPERIENCE".(NOTE 1, NOTE 2) | ServiceExperience |
| appIds | array(string) | C | 1..N | Each element indicates an application identifier.Shall be present if "AfEvent" sets to "SVC\_EXPERIENCE" or "EXCEPTIONS".(NOTE 3) | ServiceExperienceExceptions |
| locArea | LocationArea5G | O | 0..1 | Represents area of interest.May only be present if "AfEvent" sets to "SVC\_EXPERIENCE". | ServiceExperience |
| NOTE 1: For untrusted AF, only gpsis and exterGroupIds are applicable.NOTE 2: For an applicable feature, only one attribute identifying the target UE shall be provided.NOTE 3: For event "UE\_COMM" and "EXCEPTIONS", the "appIds" attribute, if present, shall include only one element. |

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

#### 5.6.2.7 Type ServiceExperienceInfoPerApp

Table 5.6.2.7-1: Definition of type ServiceExperienceInfoPerApp

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| appId | ApplicationId | C | 0..1 | Indicates an application identifier.Shall be present if the AF event exposure service request applies to more than one application. |  |
| svcExpPerFlows | array(ServiceExperienceInfoPerFlow) | M | 1..N | Each element represents service experience for each service flow. |  |
| gpsi | Gpsi | O | 0..1 | Each element represents external UE identifier. (NOTE) |  |
| supi | Supi | O | 0..1 | SUPI identifying a UE. (NOTE) |  |
| NOTE: Either gpsi or supi shall be present. For untrusted AF, only gpsi is applicable. |

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

#### 5.6.2.10 Type UeMobilityCollection

Table 5.6.2.10-1: Definition of type UeMobilityInfo

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| gpsi | Gpsi | O | 0..1 | Identifies a UE. (NOTE)  |  |
| supi | Supi | O | 0..1 | SUPI identifying a UE. (NOTE) |  |
| appId | ApplicationId | M | 1 | Identifies an application identifier. |  |
| ueTrajs | array(UeTrajectoryCollection) | M | 1..N | Identifies a list of UE moving trajectories. |  |
| NOTE: Either gpsi or supi shall be present. For untrusted AF, only gpsi is applicable. |

#### 5.6.2.11 Type UeCommunicationCollection

Table 5.6.2.11-1: Definition of type UeCommunicationCollection

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| gpsi | Gpsi | O | 0..1 | Identifies a UE. (NOTE)  |  |
| supi | Supi | O | 0..1 | SUPI identifying a UE. (NOTE) |  |
| appId | ApplicationId | M | 1 | Identifies an application identifier. |  |
| comms | array(CommunicationCollection) | M | 1..N | This attribute contains a list of communication information. |  |
| NOTE: Either gpsi or supi shall be present. For untrusted AF, only gpsi is applicable. |  |

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

#### 5.6.2.12 Type UeTrajectoryCollection

Table 5.6.2.12-1: Definition of type UeTrajectoryCollection

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| ts | DateTime | M | 1 | This attribute identifies the timestamp when the UE enters the location. |  |
| locArea | LocationArea5G | M | 1 | This attribute includes the location information of the UE. |  |

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

# A.2 Naf\_EventExposure API

openapi: 3.0.0

info:

 version: 1.0.0.alpha-1

 title: Naf\_EventExposure

 description: |

 AF Event Exposure Service.

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externalDocs:

 description: 3GPP TS 29.517 V0.5.0; 5G System; Application Function Event Exposure Service; Stage 3.

 url: http://www.3gpp.org/ftp/Specs/archive/29\_series/29.517/

servers:

 - url: '{apiRoot}/naf-eventexposure/v1'

 variables:

 apiRoot:

 default: https://example.com

 description: apiRoot as defined in subclause 4.4 of 3GPP TS 29.501

security:

 - {}

 - oAuth2ClientCredentials:

 - naf-eventexposure

paths:

 /subscriptions:

 post:

 summary: Creates a new Individual Application Event Exposure Subscription resource

 operationId: PostAfEventExposureSubsc

 tags:

 - Application Event Subscription (Collection)

 requestBody:

 required: true

 content:

 application/json:

 schema:

 $ref: '#/components/schemas/AfEventExposureSubsc'

 responses:

 '201':

 description: Success

 content:

 application/json:

 schema:

 $ref: '#/components/schemas/AfEventExposureSubsc'

 headers:

 Location:

 description: 'Contains the URI of the created individual application event subscription resource'

 required: true

 schema:

 type: string

 '400':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/400'

 '401':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/401'

 '403':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/403'

 '404':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/404'

 '411':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/411'

 '413':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/413'

 '415':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/415'

 '429':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/429'

 '500':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/500'

 '503':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/503'

 default:

 $ref: 'TS29571\_CommonData.yaml#/components/responses/default'

 callbacks:

 AfEventExposureNotif:

 '{$request.body#/notifUri}':

 post:

 requestBody:

 required: true

 content:

 application/json:

 schema:

 $ref: '#/components/schemas/AfEventExposureNotif'

 responses:

 '204':

 description: No Content, Notification was succesfull

 '400':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/400'

 '401':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/401'

 '403':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/403'

 '404':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/404'

 '411':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/411'

 '413':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/413'

 '415':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/415'

 '429':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/429'

 '500':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/500'

 '503':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/503'

 default:

 $ref: 'TS29571\_CommonData.yaml#/components/responses/default'

 /subscriptions/{subscriptionId}:

 get:

 summary: "Reads an existing Individual Application Event Subscription"

 operationId: GetAfEventExposureSubsc

 tags:

 - Individual Application Event Subscription (Document)

 parameters:

 - name: subscriptionId

 in: path

 description: Application Event Subscription ID

 required: true

 schema:

 type: string

 responses:

 '200':

 description: OK. Resource representation is returned

 content:

 application/json:

 schema:

 $ref: '#/components/schemas/AfEventExposureSubsc'

 '400':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/400'

 '401':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/401'

 '403':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/403'

 '404':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/404'

 '406':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/406'

 '429':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/429'

 '500':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/500'

 '503':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/503'

 default:

 $ref: 'TS29571\_CommonData.yaml#/components/responses/default'

 put:

 summary: "Modifies an existing Individual Application Event Subscription "

 operationId: PutAfEventExposureSubsc

 tags:

 - Individual Application Event Subscription (Document)

 requestBody:

 required: true

 content:

 application/json:

 schema:

 $ref: '#/components/schemas/AfEventExposureSubsc'

 parameters:

 - name: subscriptionId

 in: path

 description: Application Event Subscription ID

 required: true

 schema:

 type: string

 responses:

 '200':

 description: OK. Resource was succesfully modified and representation is returned

 content:

 application/json:

 schema:

 $ref: '#/components/schemas/AfEventExposureSubsc'

 '204':

 description: No Content. Resource was succesfully modified

 '400':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/400'

 '401':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/401'

 '403':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/403'

 '404':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/404'

 '411':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/411'

 '413':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/413'

 '415':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/415'

 '429':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/429'

 '500':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/500'

 '503':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/503'

 default:

 $ref: 'TS29571\_CommonData.yaml#/components/responses/default'

 delete:

 summary: "Cancels an existing Individual Application Event Subscription "

 operationId: DeleteAfEventExposureSubsc

 tags:

 - Individual Application Event Subscription (Document)

 parameters:

 - name: subscriptionId

 in: path

 description: Application Event Subscription ID

 required: true

 schema:

 type: string

 responses:

 '204':

 description: No Content. Resource was succesfully deleted

 '400':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/400'

 '401':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/401'

 '403':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/403'

 '404':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/404'

 '429':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/429'

 '500':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/500'

 '503':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/503'

 default:

 $ref: 'TS29571\_CommonData.yaml#/components/responses/default'

components:

 securitySchemes:

 oAuth2ClientCredentials:

 type: oauth2

 flows:

 clientCredentials:

 tokenUrl: '{nrfApiRoot}/oauth2/token'

 scopes:

 naf-eventexposure: Access to the Naf\_EventExposure API.

 schemas:

 AfEventExposureNotif:

 type: object

 properties:

 notifId:

 type: string

 eventNotifs:

 type: array

 items:

 $ref: '#/components/schemas/AfEventNotification'

 minItems: 1

 required:

 - notifId

 - eventNotifs

 AfEventExposureSubsc:

 type: object

 properties:

 eventSubs:

 type: array

 items:

 $ref: '#/components/schemas/EventsSubs'

 minItems: 1

 eventsRepInfo:

 $ref: 'TS29523\_Npcf\_EventExposure.yaml#/components/schemas/ReportingInformation'

 notifUri:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri'

 notifId:

 type: string

 suppFeat:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/SupportedFeatures'

 required:

 - eventSubs

 - eventsRepInfo

 - notifId

 - notifUri

 - suppFeat

 AfEventNotification:

 type: object

 properties:

 event:

 $ref: '#/components/schemas/AfEvent'

 timeStamp:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

 svcExprcInfos:

 type: array

 items:

 $ref: '#/components/schemas/ServiceExperienceInfoPerApp'

 minItems: 1

 ueMobilityInfos:

 type: array

 items:

 $ref: '#/components/schemas/UeMobilityCollection'

 minItems: 1

 ueCommInfos:

 type: array

 items:

 $ref: '#/components/schemas/UeCommunicationCollection'

 minItems: 1

 excepInfos:

 type: array

 items:

 $ref: '#/components/schemas/ExceptionInfo'

 minItems: 1

 required:

 - event

 - timeStamp

 EventsSubs:

 type: object

 properties:

 event:

 $ref: '#/components/schemas/AfEvent'

 eventFilter:

 $ref: '#/components/schemas/EventFilter'

 required:

 - event

 - eventFilter

 EventFilter:

 type: object

 properties:

 gpsis:

 type: array

 items:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/Gpsi'

 minItems: 1

 supis:

 type: array

 items:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/Supi'

 minItems: 1

 exterGroupIds:

 type: array

 items:

 $ref: 'TS29503\_Nudm\_SDM.yaml#/components/schemas/ExtGroupId'

 minItems: 1

 intGroupIds:

 type: array

 items:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/GroupId'

 anyUeInd:

 type: string

 appIds:

 type: array

 items:

 type: string

 locArea:

 $ref: 'TS29122\_CommonData.yaml#/components/schemas/LocationArea5G'

 ServiceExperienceInfoPerApp:

 type: object

 properties:

 appId:

 type: string

 svcExpPerFlows:

 type: array

 items:

 $ref: '#/components/schemas/ServiceExperienceInfoPerFlow'

 minItems: 1

 gpsi:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/Gpsi'

 supi:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/Supi'

 required:

 - svcExpPerFlows

 ServiceExperienceInfoPerFlow:

 type: object

 properties:

 svcExprc:

 $ref: '#/components/schemas/SvcExperience'

 timeIntev:

 $ref: 'TS29122\_CommonData.yaml#/components/schemas/TimeWindow'

 dnai:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/Dnai'

 ipTrafficFilter:

 $ref: 'TS29122\_CommonData.yaml#/components/schemas/FlowInfo'

 ethTrafficFilter:

 $ref: 'TS29122\_CommonData.yaml#/components/schemas/EthFlowDescription'

 SvcExperience:

 type: object

 properties:

 mos:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/Float'

 upperRange:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/Float'

 lowerRange:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/Float'

 UeMobilityCollection:

 type: object

 properties:

 gpsi:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/Gpsi'

 supi:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/Supi'

 appId:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/ApplicationId'

 ueTrajs:

 type: array

 items:

 $ref: '#/components/schemas/UeTrajectoryCollection'

 minItems: 1

 required:

 - appId

 - ueTrajs

 UeCommunicationCollection:

 type: object

 properties:

 gpsi:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/Gpsi'

 supi:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/Supi'

 appId:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/ApplicationId'

 comms:

 type: array

 items:

 $ref: '#/components/schemas/CommunicationCollection'

 minItems: 1

 required:

 - appId

 - comms

 UeTrajectoryCollection:

 type: object

 properties:

 ts:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

 locArea:

 $ref: 'TS29122\_CommonData.yaml#/components/schemas/LocationArea5G'

 required:

 - ts

 - locArea

 CommunicationCollection:

 type: object

 properties:

 startTime:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

 endTime:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

 ulVol:

 $ref: 'TS29122\_CommonData.yaml#/components/schemas/Volume'

 dlVol:

 $ref: 'TS29122\_CommonData.yaml#/components/schemas/Volume'

 required:

 - startTime

 - endTime

 - ulVol

 - dlVol

 ExceptionInfo:

 type: object

 properties:

 ipTrafficFilter:

 $ref: 'TS29122\_CommonData.yaml#/components/schemas/FlowInfo'

 ethTrafficFilter:

 $ref: 'TS29122\_CommonData.yaml#/components/schemas/EthFlowDescription'

 exceps:

 type: array

 items:

 $ref: 'TS29520\_Nnwdaf\_EventsSubscription.yaml#/components/schemas/Exception'

 minItems: 1

# Simple data types and Enumerations

 AfEvent:

 anyOf:

 - type: string

 enum:

 - SVC\_EXPERIENCE

 - UE\_MOBILITY

 - UE\_COMM

 - EXCEPTIONS

 - type: string

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