**3GPP TSG-SA5 Meeting #140-eS5-216175**

**e-meeting, 15 - 24 November 2021**

**Source: Huawei**

**Title: 28.104 Alignment of terminology**

**Document for: Approval**

**Agenda Item: 6.4.18**

# 1 Decision/action requested

***For approval***

# 2 References

[1] 3GPP TR 28.104 V0.2.0 Management and orchestration; Management Data Analytics (MDA)

# 3 Rationale

TS 28.104 [1] contains some inconsistent terminology that should be improved:

* “Prediction” versus “Projection”
* “Network slice” versus “Slice”

The sub-clause “Description” for use cases contains inconsistent text.

Also, some minor editorial improvements are proposed.

# 4 Detailed proposal

This contribution proposes to make the following changes in [1].

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| **1st change** |

##### 7.2.2.1.3 Requirements

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| **Requirement label** | **Description** | **Related use case(s)** |
| **REQ-Ser\_Exp\_MDA\_CON-1** | 3GPP management system should have the capability to identify the type of the service experience issue, e.g., RAN issue, CN issue, TN issue, UE issue, service provider issue. | (UC-Ser\_Exp\_MDA) Service experience analysis |
| **REQ-Ser\_Exp\_MDA\_CON-2** | 3GPP management system should have the capability to provide the analytics output with following information describing the current service experience aspects and potentially future prediction:  - The predicted service experience or observed service experience statistics, may split into subcounters in different levels, e.g., per S-NSSAI, per 5QI, per UE, etc.  - Service experience root cause analysis. | (UC-Ser\_Exp\_MDA) Service experience analysis |
| **REQ-Ser\_Exp\_MDA\_CON-3** | 3GPP management system should have the capability to provide the level of service experience | (UC-Ser\_Exp\_MDA) Service experience analysis |

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| **2nd change** |

#### 7.2.2.3 Network slice traffic prediction

##### 7.2.2.3.1 Description

This MDA capability is to predict network slice traffic patterns.

##### 7.2.2.3.2 Use case

It is desirable to use MDAS to get the network slice traffic predictions including individual traffic predictions on each of the constituent network functions instances present in the network slice. The individual traffic predictions can be used for better resource management of the network slice. For example, resources can be pre-configured considering the predicted traffic on the network slice.

##### 7.2.2.3.3 Requirements

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| **Requirement label** | **Description** | **Related use case(s)** |
| **REQ-TRA\_MDA-CON-x** | The MDAS producer should have a capability allowing the authorized consumer to request the network slice traffic analytics report describing traffic prediction of the network slice including its constituent network functions. | Network slice traffic prediction |
| **REQ-TRA\_MDA-CON-x** | The MDAS producer should have a capability to provide the network slice traffic analytics report describing the traffic predictions for each constituent network function instance in the network slice. | Network slice traffic prediction |
| **REQ-TRA\_MDA-CON-x** | The network slice traffic analytics report providing traffic prediction for the network slice may include the following information:  - Predicted uplink and downlink throughput on each User Plane Function instance (UPF) present in the network slice.  - Predicted number of Packet Data Unit (PDU) session for each Session Management Function (SMF) instance present in the network slice.  - Predicted number of UE or Registered subscriptions for each AMF instance present in the network slice.  - Predicted maximum packet size for each UPF instance present in the network slice.  - Predicted UE uplink and downlink throughput on each gNodeB (gNB) instance present in the network slice.  - Predicted number of UE for each gNB/NR cell instance present in the network slice. | Network slice traffic prediction |

### 7.2.3 MDA assisted fault management

#### 7.2.3.1 Fault prediction

##### 7.2.3.1.1 Description

This MDA capability is to provide fault prediction analysis.

##### 7.2.3.1.2 Use case

There are multiple types of faults in the 5G system and it needs extensive troubleshooting. In order to reduce network and service failure time and performance degradation by faults, it is necessary to supervise the status of various network functions and resources, and predict the running trend of network and potential faults to intervene in advance.

Due to the fact that fault prediction could depend on the existing alarm incidents and relevant historical and real-time data (performance measurement information, configuration data, network topology information, etc.), there is a possibility for MDA to be used in conjunction with AI/ML technologies for model training and potential faults prediction.

In order to avoid the occurrence of faults and abnormal network states, it is necessary for users to obtain the required details of potential fault and the corresponding degradation trend (abnormal KPI, performance measurement information, possible alarm type, fault root cause, etc,). Therefore, MDA, may in conjunction with AI/ML technology, be required to obtain basic health maintenance knowledge (e.g., the relationship between the faults or potential faults and the related maintenance actions) through predefined expertise or model training, so as to effectively predict potential faults. The basic health maintenance knowledge could be updated with feedback.

If necessary, MDA could provide corresponding recommended actions for fault prevention.

##### 7.2.3.1.3 Requirements

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| **Requirement label** | **Description** | **Related use case(s)** |
| **REQ-FAULT\_PRED\_MDA-01** | MDA for fault prediction shall be able to collect, correlate, filter and analyse the required data (alarm incidents, historical and real-time data, etc.) as inputs for analytics and provide the analytics output. | Fault prediction |
| **REQ-FAULT\_PRED\_MDA-02** | MDA for fault prediction shall be able to obtain basic health maintenance knowledge (e.g., the relationship between the faults or potential faults and the related maintenance actions) through predefined expertise or model training. | Fault prediction |
| **REQ-FAULT\_PRED\_MDA-03** | MDA for fault prediction shall be able to provide the analytics output including predictions of potential faults, as well as the possible recommendation options. | Fault Prediction |

### 7.2.4 MDA assisted Energy Saving

### 7.2.5 MDA assisted mobility management

#### 7.2.5.1 Mobility Performance analysis (UC-MRO\_MDA)

##### 7.2.5.1.1 Description

3GPP management system shall be able to provide the mobility performance analysis.

##### 7.2.5.1.2 Use case

The mobility performance related problems may result from too-early/too-late/ping-pong handovers due to inappropriate handover parameters. MDAS can be used to analyse service experience and network performance during handover period in different mobility scenarios. It may also be able to provide the recommendations of optimal handover parameters to MDAS consumer.

In different NSA and SA deployment architecture scenarios, handover mechanisms (e.g., DAPS, CHO or RACH-less handover) will have different impacts on the mobility performance. The analytics report to identify the most optimal handover mechanism may be provided by MDAS producer.

##### 7.2.5.1.3 Requirements

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| **Requirement label** | **Description** | **Related use case(s)** |
| **REQ-MRO\_MDA-CON-1** | 3GPP management system shall be able to provide the mobility performance in NSA and SA deployment architectures. | (UC-MRO\_MDA) mobility performance issue analysis |
| **REQ-MRO\_MDA-CON-2** | 3GPP management system shall be able to provide the mobility issue analysis including too-early handovers, too-late handovers and ping-pong handovers. | (UC-MRO\_MDA) mobility performance issue analysis |
| **REQ-MRO\_MDA-CON-3** | 3GPP management system shall be able to identify the most optimal handover mechanism including DAPS, CHO or RACH-less handover. | (UC-MRO\_MDA) mobility performance issue analysis |
| **REQ-MRO\_MDA-CON-4** | 3GPP management system shall be able to provide the area specific mobility performance analysis. | (UC-MRO\_MDA) mobility performance issue analysis |

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| **3rd change** |

##### 7.4.1.1.2 ML model training

In operational environment before the ML model is deployed to conduct the inference, it needs to be trained (e,g., by an external entity).

The ML model is trained by the ML Model Training (MLMT) MnS producer, and the training can be triggered by the request(s) from one or more MLMT MnS consumer(s), or initiated by the MLMT MnS producer (e.g., as result of model evaluation).

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| **End of changes** |