3GPP TSG SA WG5 Meeting 135-e S5-211256

**electronic meeting, online, 25th January – 3rd February 2021**

**Source: Nokia**

**Title: Analytics Feedback Use case and Solution**

**Document for: Approval**

**Agenda Item: 6.5.4**

# 1 Decision/action requested

***Add* *analytics feedback section 6.99.5 related to MDA management aspects***

# 2 References

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

[2] 3GPP TS 28.550: "Management and orchestration; Performance assurance".

[3] 3GPP TS 28.533: "Management and orchestration; Architecture framework".

[4] 3GPP TS 28.530: "Management and orchestration; Concepts, use cases and requirements".

[5] 3GPP TR 28.861: "Study on the Self-Organizing Networks (SON) for 5G networks".

[6] 3GPP TR 28.805: "Study on management aspects of communication services".

[7] 3GPP TS 28.554: "5G end to end Key Performance Indicators (KPI)".

[8] 3GPP TS 28.552: "Management and orchestration; 5G performance measurements".

[9] 3GPP TS 22.101: "service aspects; service principles".

[10] 3GPP TS 32.500: "Telecommunication management; Self-Organizing Networks (SON); Concepts and requirements".

[11] 3GPP TS 37.816: "Study on RAN-centric data collection and utilization for LTE and NR".

[12] 3GPP TS 37.320: "Radio measurement collection for Minimization of Drive Tests (MDT); Overall description".

[13] 3GPP TS 23.501: "System Architecture for the 5G System (5GS); Stage 2".

[14] 3GPP TS 28.310: "Energy efficiency of 5G".

[15] 3GPP TR 21.866: "Study on Energy Efficiency Aspects of 3GPP Standards".

[16] 3GPP TS 26.247: "Transparent end-to-end Packet-switched Streaming Service (PSS); Progressive Download and Dynamic Adaptive Streaming over HTTP (3GP-DASH)".

[17] 3GPP TS 26.114: "IP Multimedia Subsystem (IMS); Multimedia Telephony; Media handling and interaction".

[18] 3GPP TS 23.288: "Architecture enhancements for 5G System (5GS) to support network data analytics services".

[19] 3GPP TS 28.313: "Self-Organizing Networks (SON) for 5G networks".

[20] 3GPP TS 28.541: "Management and orchestration; 5G Network Resource Model (NRM); Stage 2 and stage 3".

[21] 3GPP TS 38.304 NR: "User Equipment (UE) procedures in idle mode and in RRC Inactive state".

[22] 3GPP TS 28.545: " Management and orchestration; Fault Supervision (FS) ".

# 3 Rationale

*Add new MDA management aspect in section 6.99.5 related to analytics feedback.*

# 4 Detailed proposal

**First Change**

### 6.99.5 Analytics Feedback and Validation

#### 6.99.5.1 Use Case

Currently the MDAS producer relies on newly collected data for improving its accuracy, a process that may prove to be slow since (i) the cycles of data collection may take long, (ii) MDAS producer has no indication of the range of data and/or region where consumers experience inaccuracy, and (iii) MDAS producer has no indication with respect to which MDAS consumer the analytics results did not meet the expectation. The feedback can take place after or before the validation, e.g. analytics report error.

To improve the accuracy of the MDAS producer report, the MDAS consumer may provide directly feedback, i.e. after using the analytics report, *a posteriori* data related to the quality of analytics and may also rate the accuracy of the provided statistics or predictions.

Individual MDAS consumers might detect by using its own, private data that the analytics results are not as expected for the specific environment and operation, e.g. a specific private KPI might exceed a threshold which is not according to the analytics result. Private data may not be accessible to the MDAS producer (as a matter of fact an MDAS producer will not be able to evaluate *all* data available in the overall network, there always will remain data that we can regard “private” in this context, i.e. not visible to MDAS producer). Such errors might affect specific predictions related to one or more dimensions of the data analytics, i.e.:

* A future time, e.g. all predictions that refer to timeframes more than 3 days in the future are wrong
* A certain time window, e.g. predictions between 10:00-18:00 on Sunday were inaccurate
* A certain geographical area: Predictions relating to the city center are not usable.
* A target UE or group of UEs or slice
* A certain data range, i.e. statistics or predictions above or below a certain data value or data range are not accurate or have a different accuracy degree.
* A certain MnS, i.e. statistics or prediction may be different if a certain MnS relies on a private feature and consequently private KPI.

In the current architectures the MDAS consumers have no means to inform the MDAS producer that the analytics results are not as expected. In turn the MDAS producer have no chance to take such feedback into account, e.g. to trigger re-training of the internal algorithms.

#### 6.99.5.2 Potential requirements

**REQ-MDA\_AF-1** The MDAS consumer should have a capability to provide feedback to the MDAS producer related to the quality of the analytics report. The feedback shall include measurements that led to the decision.

#### 6.99.5.3 Possible solution

The feedback from the MDAS consumer should allow the MDAS producer to correlate the feedback to specific results regarding a certain MnS, geographical area, UE group, and time (window).

Each MDAS consumer may provide an accuracy rating of the received analytics report after using it and one or more dimentisons of the data analytics as defined in 6.99.5.1. In this way the MDAS producer would be able to receive rapid feedback. Such accuracy rating should be introduced as, e.g. high, medium or low accuracy, or even with more fine granular levels and be related with the:

* Accuracy of the analytic service considering a range of expected or not expected values.
* Range of inaccuracy, e.g. high or lower than expected, and the deviation from the expected value.
* Geographical area of usage and MnS.
* Time frame of statistics or prediction.
* Range of values experienced instead.

Such MDAS consumer feedback may trigger to the MDAS producer to perform e.g. model re-training, model replacement, or the introduction of a new rule

#### 6.99.5.4 Evaluation

The solution described 6.99.5.3 requires the MDAS producer to receive a rating of the accuracy of the analytics reports. In order to correlate the rating to specific problems, such rating must indicate the geographical area, time and MnS usage. This solution requires feasible extensions; hence the solution can be characterized as feasible.

**End of Change**