3GPP TSG SA WG5 Meeting 136-e S5-212103rev1

**electronic meeting, online, 1st – 9th March 2021**

**Source: Nokia, Ericsson, Intel, China Telecom, HUAWEI**

**Title: Report Validation**

**Document for: Approval**

**Agenda Item: 6.5.4**

# 1 Decision/action requested

***This contribution is for approval.***

# 2 References

[1] 3GPP TS 28.809 Management and orchestration; Study on enhancement of Management Data Analytics (MDA)

# 3 Rationale

The ML/AI is relatively a new concept in telecom industry and number of definitions around MDA and ML training in TR 28.809 [1], should be clarified further

*Validation* is applicable to both to ML Training process as well as to Management Data Analysis and it is not clearly clarified in the current version of the report. It is proposed to modify Figure 5.3-1 to reflect this. Also, it is proposed to create a new chapter 6.99.5 “Validation”. This new chapter provides more details on Validation of Analytics Report and will also include all definitions made regarding validation in ch.6.99.1.

Add new MDA management aspect in section 6.99.5 related to validation of analytics report

Model ID is an important information for the Model Training process e.g. to allow its life-cycle management hence it is clarified in the solution description in ch.6.99.1 of the Report

# 4 Detailed proposal

It is proposed to update the following chapters in TR 28.809 [1].

|  |
| --- |
| **1st Modified Section** |

## 5.3 MDA process

This clause illustrates an example of MDA process scenario where the ML model and the management data analysis module are residing in the MDAS producer, other scenarios have not been addressed by the present document.

The MDA may rely on ML technologies, which may need the consumer to be involved to optimize the accuracy of the MDA results.

The MDA process in terms of the interaction with the consumer, when utilizing ML technologies, is described in the figure below.



Figure 5.3-1: Example of MDA process

There are two kinds of processes for MDA, the process for ML model training and the process for management data analysis. In the process for ML model training, the MDA producer, trains the ML model and provides the ML training report. The process for ML model training may also get the consumer involved, i.e., allowing the consumer to provide input for ML model training. The ML model training may be performed on an un-trained ML model or a trained ML model. In the process for management data analysis, the MDA producer analyses the data by the trained ML model, and provides the analytics report to the consumer. The MDAS consumer may validate the training report and analytics report and provide a report validation feedback to the MDAS producer.

For each received report the MDAS consumer may provide a feedback towards the MDAS producer, which may be used to optimize ML model.

**Data classification**: The data input to the MDA producer could be used for ML model training or for the actual management data analysis. The MDA producer classifies the input data and passes the classified data along to corresponding step for further processing.

**ML model training**: The MDAS producer trains the ML model, i.e., to train the algorithm of the ML model to be able to provide the expected training output by analysis of the training input. The data for ML model training may be the training data (including the training input and the expected output) and/or the report validation feedback provided by the consumer. After the ML model training, the MDAS producer provides an ML model training report.

**Management data analysis**: The trained ML model analyses the classified data and generates the management data analytics report(s). Analytics reports were presented in clause 5.1.

**Report validation**: The consumer may validate the report provided by the MDAS producer. The report to be validated may be the analytics report and/or the ML model training report as described above. The consumer may provide a feedback to the MDAS producer.

As a result of validation, the consumer: (i) may also provide training data and request to train the ML model and/or (ii) provide feedback inidating the scope of inaccuracy, e.g. time, geographical area, etc.

|  |
| --- |
| **End of Modified Sections** |