**3GPP TSG-SA5 Meeting #158 *S5-247315***

Orlando, USA, 18 - 22 November 2024

**Source: Nokia**

**Title: Rel-19 pCR TR 28.858 Add evaluation for remedial action management**

**Document for: Approval**

**Agenda Item: 6.19.1**

# 1 Decision/action requested

***The group is asked to discuss and agree on the proposal.***

# 2 References

[1] 3GPP TR 28.858 “Study on Artificial Intelligence / Machine Learning (AI/ML) management Phase 2”.

# 3 Rationale

This pCR is to add an evaluation for the already agreed use case and solution on remedial action management during previous meetings.

# 4 Detailed proposal

5.5.3 ML remedial action management

5.5.3.1 Description

Trained ML models are deployed in the network where they will perform inference. The MnS Consumer may activate the ML inference by providing the scope (e.g. time window, geographical area) in which the ML inference should be activated or a policy for activation. The assumption is that the activation of ML inference will improve the network performance. However, it is difficult to assess the benefits and to quantify such benefits of applying ML inference in a given context of operational network, before using it.

5.5.3.2 Use cases

5.5.3.2.1 ML remedial actions due to performance degradation and energy consumption

By monitoring the network performance, the AI/ML inference MnS Consumer may identify the degradation of network performance or assess the benefits of employing ML model in the network, e.g. improvements in network performance when activating AI/ML inference. Based on the observations the AI/ML inference MnS Consumer may decide to perform certain remedial actions in order to mitigate undesired effect of the activated AI/ML inference. This may include the request to deactivate the AI/ML inference completely, change/reduce the scope of the AI/ML inference activation (e.g., limiting to only certain cells or geographical areas) or request for retraining the ML model. Additionally, such remedial actions may also be triggered by the AI/ML inference MnS Consumer due to the increased energy consumption for AI/ML inference without achieving significant performance gains.

5.5.3.3 Potential requirements

**REQ-FB-1:** The 3GPP management systemshall have a capability to enable an authorized MnS consumer to request change and reduction of the scope of AI/ML inference activation as a remedial action.

5.5.3.4 Possible solutions

The description for the attributes AIMLManagementPolicy.managedActivationScope, AIMLInferenceFunction.managedActivationScope, ManagedActivationScope.dNList, ManagedActivationScope.timeWindow and ManagedActivationScope.geoPolygon defined in [2] has to be elaborated to enable the MnS Consumer to reduce the scope of AI/ML inference activation as a remedial action in order to counteract observed undesirable effects of AI/ML inference. The scope of AI/ML de-activation may include the following:

* Geographical area
* Time window
* List of DNs of managed elements

The scope of AI/ML de-activation may be given as a part of de-activation policies defined by the MnS Consumer instructing the MnS Producer on how to automatically take remedial actions by changing or reducing the scope of AI/ML inference activation. For complete AI/ML deactivation, the ManagedActivationScope.dNList, ManagedActivationScope.dNList and ManagedActivationScope.geoPolygon should be an empty list.

#### 5.5.3.5 Evaluation

The solution described in clause 5.5.3.5 proposes simple enhancements to information elements and attribute descriptions of AIMLManagementPolicy.managedActivationScope, AIMLInferenceFunction.managedActivationScope, ManagedActivationScope.dNList, ManagedActivationScope.timeWindow and ManagedActivationScope.geoPolygon for AI/ML deactivation as a remedial action. Therefore, the solution described in clause 5.5.3.5 is a feasible solution to be developed further in the normative specifications.