**3GPP TSG-SA5 Meeting #156S5-243530**

**19 - 23 August 2024, Maastricht, Netherlands**

**Source: Nokia**

**Title: Rel-19 pCR 28.914 Aggregate enhancements to radio network expectation**

**Document for: Approval**

**Agenda Item: 6.19.3**

# 1 Decision/action requested

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

# 2 References

[1] 3GPP TR 28.914: " Study on intent driven management service for mobile network phase 3 v0.3.0"

# 3 Rationale

There are different use cases that have been proposed but all are focussed on enhancement of the RAN scenario specific expectation. Each of them represents scenarios which can be supported by the Radio network intent expectation with enhancements. They should as such be combined into a single use case to ensure a harmonized and consistent solution. This pCR is to aggregate the enhancements in the different use cases on radio network expectation.

# 4 Detailed proposal

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| **First Change** |

## 5.2 Use case #2: Enhancement of radio network expectation

### 5.2.1 Description

Following aspects are proposed to enhance the radio network expectation defined in TS 28.312[2] to support more radio network performance assurance scenarios.

#### 5.2.1.1Scenario 1: RAN energy saving

The RAN energy saving target and service experience target in the existing object context are applied for all selected frequencies (represented by dlFrequencyContext and ulFrequencyContext in the ExpctationObject) and RAT (represented by rATContext in the ExpctationObject). However, in some scenarios, MnS consumer may want to assure different RAN UE throughput performance for different Frequencies or RATs in the same area when perform energy saving activities (same RAN energy saving targets). It is important to the allow the MnS consumer to express different RAN UE throughput targets for different Frequencies or RATs in the specified area in the same intent and receive the target fulfilment result for different RAN UE throughput targets for different Frequencies or RATs.

#### 5.2.1.2Scenario 2: Radio network traffic assurance for scheduled events

The existing radio network expectation (e.g. existing aveULRANUEThptTarget and aveDLRANUEthptTarget) can be used to support MnS consumer to express radio network expectations on radio network traffic assurance in the specified areas for the scheduled events (such as a sports event or concert). However, the solution for user numbers requirement is missing. Besides, the radio network expectation also needs to be enhanced to support schedule times which can be one-time interval, daily periodicity, weekly periodicity or monthly periodicity and coverage area which can be represented by polygon area or a list of Cell (e.g. CGI) to satisfy the radio network traffic assurance scenario.

#### 5.2.1.3Scenario 3: Radio Network support for UAV pre-flight preparation

#### 5.2.1.4 Scenario 4: Radio Network support MOCN undifferentiated radio service in a specified area

The radio network for MOCN needs to carry the service traffic of MOP and POP, which may provide undifferentiated radio service for MOP and POP. However, it is inevitable that there will be differentiated radio service caused by a variety of factors, which will affect the user experience, especially the impact on the POP’s users. The differentiated radio service may cause poorer service quality for POP and results in POP’s user dissatisfaction.

Undifferentiated radio service requires that the wireless parameters of MOP and POP configuration are consistent, and the performance difference for MOP and POP should be within a certain range. MnS consumer expresses its intent expectation for ensuring a radio network for MOCN to MnS producer, which may include equal network performance information for MOP and POP. The In this scenario, MnS consumer expresses its intent expectation for ensuring undifferentiated radio network performance network performance in specified areas for MOP and POPs to MnS producer, which may include coverage area information, radio setting parameter sets, expected average experience requirements (e.g. RAN UE throughput), coverage requirements (e.g. weak coverage ratio) and, available resource related performance (e.g. available PRB) and handover requirements(e.g. 5GS to EPS handover success rate). MnS producer (e.g. RAN management system) accurately prepares network resources (e.g. PRB resources) and configure RF coverage related parameters in advance based on the requirements expressed by operator to ensure radio network for MOCN with undifferentiated radio service for MOP and POP.

### 5.2.2 Potential solutions

Following are the proposed solutions to support above enhancements based on existing RadioNetworkExpectation and TargetFulfilmentResult in TS 28.312 [2].

**Enhancement Aspects to support scenario 1:**

* **Enhancement Aspect 1.1:**  Update existing aveULRANUEThptTarget defined in TS 28.312 [2] by adding “ulFrequencyContext” and “rATContext” as targetContext, and update existing aveDLRANUEThptTarget defined in TS 28.312 [2] by adding “dlFrequencyContext” and “rATContext” as targetContext.
* **Enhancement Aspect 1.2:**  Update existing TargetFulfilmentResult<<dataType>> by adding attribute “targetContext”. The “targetContext” can be “ulFrequencyContext”, “dlFrequencyContext” or “rATContext”, which depends on the concrete target specified in the Intent.

**Enhancement Aspects to support scenario 2:**

* **Enhancement Aspect 2.1:** Add ActiveUEsTarget as ExpectationTarget, it describes the number of Active UEs for the specified areas. This target is related to Mean number of Active UEs in the DL per cell and Mean number of Active UEs in the UL per cell defined in TS 28.552 [8].
* **Enhancement Aspect 2.2:** Replace the targetAssuranceTimeContext with the SchedulingTimeContext. The datatype for SchedulingTime <<choice>> is defined in TS 28.622 [4] which can support one-time interval, daily periodicity, weekly periodicity or monthly periodicity.
* **Enhancement Aspect 2.3:** Add attribute "cellContext" as ObjectContext for RadioNetworkExpectation to describe the coverage areas which represented by a list of cells. The contextValueRange for cellContext can be a list of CGIs (NCGI in case of NR cells and ECGI in case of E-UTRAN cells). This attributes also can be reused for other purpose if needed.

**Enhancement Aspects to support scenario 3:**

* **Enhancement Aspects to support scenario 4:**

### 5.2.3 Evaluation of potential solutions

TBD

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| **Next Change** |

## 5.8 Use case #8: Network support for UAV pre-flight preparation

See clause 5.2

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| **Next Change** |

## 5.9 Use case #9: Enhancement of Radio Network Expectation to support MOCN

See clause 5.9