**3GPP TSG-SA5 Meeting #155S5-242340**

**27 - 31 May 2024, Jeju, South Korea**

**Source: Nokia**

**Title: Rel-19 DP 28.915 NDT scope for R19**

**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

None

# 3 Discussion

## 3.1 Relation between NDTs and automation functions

Network automation accomplishes two major activities:

* Analyzing available data to derive insight into what has happened and predicting what is likely to happen in future.
* Making decisions on what need to ne be done in the network to counter negative events that have been observed or that are predicted to improve the state of the network.

Both capabilities require knowledge of how the network behaves given certain configurations or under certain constraints. The automation functions can then use the obtained behavior to decide what has happened, will happen or how to respond to those derived insights.

**Observation 1: Network automation requires information (models or characterization) of how the network behaves which is then used as input to analytics/decision capabilities to derive insight and decisions from the available knowledge of the network’s behavior.**

Network automation is not new to 3GPP or to communication networks. There has been significant prior work that has documented different use cases for network automation, the most significant being SON and MDA. In that respect, NDT scope should not overlap with the existing network automation scope but should complement the network automation functionality.

**Observation 2: There is existing studies and specifications on network automation which should not be overlapped by the work on NDT**

Existing automation capabilities have documented analytic services and decision-making capabilities with the assumption that the knowledge about network behavior is available within the automation functions. Accordingly, the unaddressed gap for network automation is the capabilities for modelling the behavior of the network, i.e. replicating the behavior of network objects and characteristics of their interactions. This knowledge on how the network behaves or will behave can be the new value to be obtained from a digital twin that understands and models the behavior of the network. Otherwise, if digital twins attempt to provide analysis and decision-making capability they would overlap with the existing automation capabilities.

**Observation 3: NDTs should provide modelling capability which can be used by the network automation functions to accomplish their analytics and decision-making responsibilities.**

**OAM Requirement-1: The NDT should support a capabilities to model the behavior of the network and provide the outcomes of such modelling to consumers including network automation functions.**

The NDT may be integrated into a network automation function or it maybe external to the network automation function. In the case where the NDT is external to the network automation function, it should be possible for the network automation function to define and configure into the NDT the scenario that should be modelled and simulated by the NDT. Then the NDT should implement the defined scenario, simulate it, and subsequently provide an output representing the statues of different network metrics for the simulated scenario.

**OAM Requirement-2: The NDT should support a capabilities enabling an Mns consumer to define the network scenario that should be modelled and simulated.**

**OAM Requirement-3: The NDT should support a capabilities to provide an output representing the values of different network metrics for the simulated scenario.**

NDTs may be used to support many automation use cases. It is unrealistic for 3GPP to document all the possible use cases. Accordingly, use case descriptions should justify the special NDT characteristics that are needed to be included into the NDT information models to enable NDTs to accomplish the modelling and simulation capabilities. Details on how the NDTs contribute towards the accomplishment of those use case should be left out.

**Observation 4: NDTs-related uses in 3GPP SA5 should describe NDTs to justify what the NDT information models should include to enable the NDTs to fulfil the requirements 1-3 above and do not describe how the automation functions that use NDTs should accomplish those use cases.**

## 3.2 Proposed way forward for SA5

It is proposed to endorse the observations (from above section 3.2)

It is proposed to capture the OAM requirements (from above section 3.2) in TR 28.915:

# 4 Detailed proposal

It is requested to endorse the following observations and OAM requirements:

* **Observation 1:** Network automation requires models of how the network behaves which are applied as input to analytics/decision capabilities to derive insight and decisions from the available knowledge of the network’s behavior.
* **Observation 2:** There is existing studies and specifications on network automation which should not be overlapped by the work on NDT
* **Observation 3:** NDTs should provide modelling capability which can be used by the network automation functions to accomplish their analytics and decision-making responsibilities.
* **OAM Requirement-1:** The NDT should support a capabilities to model the behavior of the network and provide the outcomes of such modelling to consumers including network automation functions.
* **OAM Requirement-2:** The NDT should support a capabilities enabling an MnS consumer to define the network scenario that should be modelled and simulated.
* **OAM Requirement-3:** The NDT should support a capabilities to provide an output representing the values of different network metrics for the simulated scenario.
* **Observation 4:** NDTs-related uses in 3GPP SA5 should describe NDTs in a way as to justify what the NDT information models should include to enable the NDTs to fulfil the requirements 1-3 above and do not describe how the automation functions that use NDTs should accomplish those use cases.