**3GPP TSG-SA5 Meeting #157S5-246269**

**14 - 18 October 2024, Hyderabad, India**

**Source: Nokia**

**Title: Rel-19 pCR 28.915 basic concepts**

**Document for: Approval**

**Agenda Item: 6.19.5**

# 1 Decision/action requested

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

# 2 References

[1] 3GPP TR 28.915: " Study on management aspects of Network Digital Twin (Release 19)"

# 3 Rationale

This CR contains some clarifications on some basic concepts and provides conclusions.

# 4 Detailed proposal

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| **1st Change** |

# 4 Concept and background

## 4.1 General description

Digital twin technology provides robust support for emerging technologies by creating a comprehensive virtual mapping of the corresponding physical network process, utilizing models, operational history, and additional data.

3GPP already uses the Network Resource Model (NRM) to model the attributes of a mobile network. The concept of Network Digital Twin also adds the ability to model the behavior of a mobile network. This behavior is modelled by emulating or simulating a complete mobile network or limited aspects of a mobile network.

Network Digital Twin(NDT) may be used as a replica of a mobile network, in order to learn how an actual mobile network would behave in certain scenarios, without causing any changes to the actual 3GPP network. To provide meaningful results, the Network digital twin needs to emulate (or simulate) the behavior of the 3GPP network, so that the result of the operations on the virtual replica are a good approximation to similar operations on the actual network. The standardization for an NDT focuses on the implementation of independent aspects of a network.

Digital twin technology has potential scenarios in enhancing the 3GPP management system. For example, the NDT can help for efficient simulation of the network operation, the configuration and policy decided by the 3GPP management system can be verified before the deployment. By using this Network Digital Twin, the 3GPP management system can obtain verification results and optimize configurations, thereby avoiding failures in the actual network. This approach benefits the optimization of network management in the telecommunications industry, reduces the cost of study and development of new technologies, and shortens the study and development cycle of new technologies.

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| **2nd Change** |

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## 4.4 Illustrate the life-cycle management of an NDT

When the MnS consumer submits a request to create an NDT, the MnS producer who provides the NDT may create an instance to fulfil or satisfy the specific scenarios. An NDT instance may include the following capabilities:

- Creation

- Configuration

- Activation

- Deactivation

- Re-configuration

- Deletion

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| **End Change** |