**3GPP TSG-SA5 Meeting #162 *S5-253878***

Goteborg, Sweden, 25 - 29 August 2025

**Source: Huawei, China Mobile, Ericsson**

**Title: Rel-19 pCR TS 28.561 Update the overview of NDT**

**Document for: Approval**

**Agenda item: 6.19.5.1**

**Spec: 3GPP TS 28.561**

**Version: 1.0.0**

**Work Item: NDT**

**Comments**

This contribution is proposed to update the overview of NDT to add the network visualization capability supported by NDT, which is included in the TR 28.915 Use case 8.

This contribution is the resubmission of S5-252581.

**Proposed Changes**

\* \* \* First Change \* \* \* \*

## 4.1 Introduction and Overview

4.1.1 Digital Twins and Network Digital Twins

**A digital twin** is a representation of an object that models the characteristics and behaviours of a real-world object or system. The digital twin provides support to network management and operations by creating a virtual representation of the corresponding physical network process(es). A digital twin can be created for any physical object, including any objects in communication networks. The digital twin may also be created for a group of objects, e.g. for the sets of network objects that form the RAN segment or the NFs in Core network.

Accordingly, a digital twin modelling of an object of a communication network is called **Network Digital Twin.**

Network Digital Twin (NDT) is 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 mobile network. To provide meaningful results, NDT needs to model the behaviour of the mobile network, so that the result of the operations on the virtual replica are good approximations to similar operations on the actual network. The created NDT can provide the capability of reporting the topology of the network, and the non-topology aspects of the real network which includes both network elements (e.g. 5GC NFs or gNB) information and infrastructure resource information. The implementation of an NDT can rely on simulation, emulation, AI-based modelling, or any other technique that enables the NDT to mimic the behaviour of the network.

Thus, NDT contributes to efficient management of mobile networks, helps building resilient networks, enables the early deployment of new services, and enhances network quality. For example, with NDT, network operators can verify network behaviour before they apply to real network to prevent unintended behaviour, which contributes to resilient networks and enhancement of network quality. Additionally, network automation function can use NDT to analyze network behaviour, which can contribute to reduce operator’s manual operation and improve management efficiency. NDT may also utilize network automation functions to deliver NDT reports.

\* \* \* End of Changes \* \* \* \*