**3GPP TSG-SA5 Meeting #154 *S5-242012***

Changsha, China, 15 - 19 April 2024

**Source: Huawei**

**Title: Add disaster planning use case**

**Document for: Approval**

**Agenda Item: 6.19.5**

# 1 Decision/action requested

***For approval.***

# 2 References

[1] 3GPP TR 28.915: “Study on management aspects of Network Digital Twin”.

# 3 Rationale

This contribution proposes to add a use case for disaster planning.

# 4 Detailed proposal

It is proposed to make the following changes to TR 28.915 [1].

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| **1st change** |

# 5 Use cases

## 5.X Use case #n: Disaster readiness

### 5.X.1 Description

A natural disaster (e.g. earthquake, tsunami) can cause major impacts to the services provided by a mobile network. The disaster may directly impact the network by causing loss of connectivity, and can also cause indirect effects such as a flood of calls to emergency services. It is important for a network operator to be able to estimate how the mobile network will be impacted by a natural disaster, and to optimize the network configuration (e.g. redundancy and routing) to reduce the impact to services.

Network Digital Twin allows the possibility to apply the effects of a natural disaster in a replica network without risk of impacts to the mobile network. This allows the network operator to evaluate how the replica network responds to the natural disaster. If the response is not acceptable, the network operator may repeatedly reconfigure the replica network and replay the natural disaster until the response is acceptable. The network operator may then decide to apply the best-performing configuration to the mobile network.

As an example, the impact evaluation of a natural disaster (e.g. earthquake, tsunami) is explored in more detail as follows:

1. The network operator wishes to check how a proposed network configuration will react to a natural disaster.

2. The network operator synchronizes the replica network with the mobile network to ensure that the replica network is up to date.

3. The network operator applies the proposed network configuration to the replica network.

4. The network operator applies the effects of the natural disaster (e.g. loss of connectivity, flood of calls to emergency services) to the replica network.

5. The replica network simulates the behaviour of the mobile network.

6. The network operator measures the reaction of the replica network, by observing performance measurements and alarms from the replica network.

7. The network operator may optionally decide to apply the reconfigured parameters to the mobile network.

By using the replica network as described above, the network operator may proactively check how a proposed network configuration will react to a natural disaster.

### 5.X.2 Potential requirements



### 5.X.3 Potential solutions

### 5.X.4 Evaluation of potential solutions

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| **End of changes** |