**SA WG2 Meeting #150E (e-meeting) S2-2202737r08**

**April 6-12, 2022, Elbonia (revision of S2-220992)**

**Source: Nokia, Nokia Shanghai Bell, Ericsson, Samsung, Verizon UK Ltd**

**Title: New key issue: KI for objective #4 –Improved Network control of the UE behaviour**

**Document for: Approval**

**Agenda Item: 9.14 Study on Network Slicing Phase 3**

**Work Item / Release: FS\_eNS\_Ph3 / Rel-18**

*Abstract of the contribution: This paper proposes KI for objective #4*

# Discussion

This paper proposes Key Issue for FS\_eNS\_Ph3 objective #4.

4. Study whether and how to enhance the system to ensure network-controlled behaviour of network slice usage including UE registration and PDU Session establishment (e.g. so that when performing NSAC the network slice can serve UEs/PDU Sessions with actual activity).

# Proposal

It is proposed to agree the following changes into TR 23.700-41 on FS\_eNS\_Ph3.

\* \* \* \* Start of 1st Change (All new text) \* \* \* \*

## 5.X Key Issue #X: Improved network control of the UE behaviour

### 5.X.1 Description

In the 5GS specifications up to rel-17, a UE Registers/Deregisters with a Network Slice and establishes/tears down PDU sessions based on own policy taking into account network provided information such as the URSPs. However, this does not allow an operator e.g. to enforce that the UE only registers with a S-NSSAI when it is actually needed to have connectivity in the related network slice. A UE may in fact choose to register with all the Configured NSSAIs and then use the URSP just to decide which DNNs to connect to at run time. Also, it is not clear whether a UE can be requested by the operator to establish connectivity with a DNN based on own logic and URSPs at any time e.g. based on the UE configuration alone..

Operators currently do not have the ability to enforce when the UE can register with network slices based on e.g only on actual need of connectivity in a network slice, or by configuration independent of detected need of connectivity, etc. depending on e.g what is best for the domain of application (e.g. to save battery usage one may just register based on configuration despite the URSPs are provisioned, or, when NSAC is applied on the number of UEs, the operators may want the UE to deregister from the slice subject to NSAC and register with it based on actual usage.)Operators also cannot provide to the UE a policy for deregistration of a network slice or tear down of a PDU session (e.g. the operator cannot control the time when a PDU session is released after it is last needed by any application running in the UE, nor can the operator define the earliest time a UE is allowed to deregister from a network slice after there are no more PDU sessions established over it).

There is also no way for the serving PLMN to steer a UE to a preferred slice of the serving PLMN (i.e. the HPLMN or VPLMN) even if the UE may have the related HPLMN slice included in the possible connectivity options (URSP) for one application.

NOTE: for the purpose of this Key Issue, usage of a PDU session means there is at least one application actually uses the connectivity of the PDU session.

This Key Issue will study how to enable network controlled behaviour and ensure the proper utilization of Slices in the system (e.g what the network can request to the UE, and how, and what additional policies the network can provide to the UE) taking into account the above aspects (e.g. actual slice usage, UE activity, etc.).

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