**3GPP TSG-SA5 Meeting #129e *S5-201596***

**e-meeting, 24 February – 4 March 2020** *Revision of S5-201256*

**Source: Telefónica S.A., Huawei, Orange**

**Title: pCR 28.807 Network Slice as a Service in the management of PNI-NPN**

**Document for: Approval**

**Agenda Item: 6.6.2**

# 1 Decision/action requested

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

# 2 References

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 22.261: "Service requirements for next generation new services and markets; Stage 1".

[3] 3GPP TS 23.501: "System Architecture for the 5G System; Stage 2".

[4] 5G-ACIA White paper, 5G Non-Public Networks for Industrial Scenarios, July 31, 2019.

[5] 3GPP TS 23.003: "Numbering, addressing and identification".

[6] 3GPP TS 28.531: "Management and orchestration; Provisioning".

[7] 3GPP TS 28.530: "Concepts, use cases and requirements".

# 3 Rationale

It is proposed to include Network Slice as a Service as a service delivery model in the management of public network integrated NPN (PNI-NPN), when this NPN is supported by a PLMN provided network slice instance.

# 4 Detailed proposal

This document proposes the following changes in TR 28.807.

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| **1st Change** |

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 22.261: "Service requirements for next generation new services and markets; Stage 1".

[3] 3GPP TS 23.501: "System Architecture for the 5G System; Stage 2".

[4] 5G-ACIA White paper, 5G Non-Public Networks for Industrial Scenarios, July 31, 2019.

[5] 3GPP TS 23.003: "Numbering, addressing and identification".

[6] 3GPP TS 28.531: "Management and orchestration; Provisioning".

[7] 3GPP TS 28.530: "Concepts, use cases and requirements".

[X] 3GPP TS 28.541: "Management and Orchestration; 5G Network Resource Model (NRM); Stage 2 and stage 3".

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| **Next Change** |

## 4.3 Management of public network integrated NPN

### 4.3.1 NPN supported by network slice instance of a PLMN

A Public Network Integrated NPN (PNI-NPN) can be made available by PLMNs, e.g. using one (or more) network slice instance(s). The existing network slicing functionalities apply as described in clause 5.15 of TS 23.501 [3].

A Closed Access Group identifies a group of subscribers who are permitted to access one or more CAG cells associated to the CAG. A CAG is identified by a CAG Identifier which is unique within the scope of a PLMN ID, see clause 5.30.3.2 of TS 23.501 [3]. The management system of the PNI-NPN takes charge of the management of CAG Identifiers.

From a management viewpoint, the provision of a network slice instance can follow the Network Slice as a Service (NSaaS) principles as described in clause 4.1.6 of TS 28.530 [7]. Figure 4.3-1, as an example, illustrates how a PLMN operator can rely on NSaaS capabilities (e.g. OAM, exposure) for the provisioning of a PNI-NPN to a Vertical. This PNI-NPN, which is deployed across one PLMN and the Vertical’s premises (e.g. factory), can be seen as an end-to-end network composed of two differentiated segments: one public, consisting of a (R)AN and network functions built upon public 5G network resources; and one private, consisting of network functions deployed using private 5G network resources. Using the NSaaS approach:

* The public segment is made available by the PLMN in the form of a network slice instance, and provisioned by the PLMN operator using NSaaS. In this service provisioning, the PLMN operator and the Vertical play the roles of NSaaS Provider and NSaaS Customer, respectively.
* The PLMN operator can offer possibilities (e.g. exposed MnS to manage the network slice instance) for the Vertical to manage the provided network slice instance according to TS 28.531 [6].
* The Vertical adds the private segment to the network slice instance obtained from the PLMN operator. The resulting combination, i.e. PNI-NPN, is a new network slice instance. Following 3GPP 5G Network Resource Model (NRM) [X], the PNI-NPN’s public segment can be modelled as a network slice subnet.
* The Vertical uses the PNI-NPN to provide non-public communication services to his customer(s). In this case, the vertical plays the role of NPN service provider, and his customer(s) play the role of NPN service customer(s). For more information on these NPN related roles, see clause 4.4.

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**Figure 4.3-1: PNI-NPN provisioning with NSaaS**

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| **End of change** |