**3GPP TSG-SA5 Meeting #148-e *S5-233242rev1***

e-meeting, 17-25 April 2023

**Source: Huawei, Deutsche Telekom**

**Title: Conclusion for KI#5 Customer acceptance for QoS degradation to save energy**

**Document for: Approval**

**Agenda Item: 6.9.1.2**

# 1 Decision/action requested

**Include the proposed changes in TR 28.913**

# 2 References

[1] 3GPP TR 28.913: "Study on new aspects of EE for 5G networks phase 2"

# 3 Rationale

This pCR proposes to introduce a conclusion to Key Issue #5 into TR 28.913 [1].

# 4 Detailed proposal

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| **First change** |

## 4.5 Key Issue #5: Customer accepts QoS degradation to save energy

### 4.5.1 Description

Nowadays, most companies are expecting to reduce their Greenhouse Gas (GHG) emissions. GHG emissions are categorized into Scope 1, Scope 2 and Scope 3 emissions (see [9]). In a nutshell:

# Scope 1 - Direct GHG emissions, i.e. direct GHG emissions occurring from sources that are owned or controlled by the company; for example, emissions produced by the company’s own facilities and vehicles

# Scope 2 - Electricity indirect GHG emissions, i.e. GHG emissions from the generation of purchased electricity consumed by the company

# Scope 3 - Other indirect GHG emissions, i.e. emissions which are a consequence of the activities of the company, but occur from sources not owned or controlled by the company.

Some companies, like e.g. large IT or consulting companies, have relatively little Scope 1 and Scope 2 emissions. Most of their emissions would come from Scope 3. Part of their Scope 3 emissions could come from the telecommunication services they use.

Sometimes, under the pressure of their stakeholders, these companies (playing, in the context of this key issue, the role of NSC) may be willing to cooperate with their providers (in general) to reduce their Scope 3 emissions. In the context of the network slice(s) they get from their Network Slice Provider(s) (NSP), they could decide to accept some limited QoS degradation from their NSP(s), provided:

1. they can specify which QoS limitation they are ready to accept
2. related energy savings can be measured and reported to them.

Optionally, price reductions may also be negotiated between NSCs and NSPs, corresponding to the commonly agreed limited QoS degradation. This is out of scope of SA5.

In TS 28.541, the ServiceProfile data type contains the attribute ‘energyEfficiency’, enabling the NSC to express his requirement with respect to the energy efficiency level of the network slice being ordered. However, there is no means for the NSC to mention that he would accept some limited QoS degradation. Limited QoS degradation could be expressed according to various dimensions:

# The ‘what’: the NSC may be capable and willing to express that he accepts e.g. degraded bandwidth and/or latency and/or number of simultaneously connected UEs, etc.;

# The ‘how much’: the NSC may be capable and willing to express that he accepts e.g. a 10% QoS degradation, a 50% QoS degradation, etc;

# The ‘when’: the NSC may be willing to express when he accepts some time-limited QoS degradation, e.g. dates, time slots, punctual (e.g. on identified labour days) / recurrent (e.g. all Saturdays and Sundays of the year), etc.

# The ‘where’: the NSC may be willing to express where he accepts some space-limited QoS degradation, e.g. in country X, in city Y, etc.

This key issue aims at investigating how NSCs could express their requirements for acceptable QoS degradation, for sake of reduction of their Scope 3 emissions via network energy savings.

In return, such NSCs should be able to receive, from their NSPs, information about actual Energy Consumption (EC) savings attributable to their decision to accept limited QoS degradation.

### 4.5.2 Conclusion and recommendation

There is no potential solution to the key issue #5 in this version of the document. It is proposed to continue this work in the context of the normative phase.

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| **End of changes** |