**3GPP TSG-SA WG4 Meeting #128S4-241035\_r01**

**Jeju, South Korea, 20 May - 24 April 2024**

**Source: Samsung Electronics Co., Ltd.**

**Title: [FS\_MediaEnergyGREEN] Use case on green profiles for media streaming services**

**Spec: 3GPP TR 26.942 v0.1.1**

**Agenda item: 8.10**

**Document for: Agreement**

**1. Introduction**

The first objective of the FS\_MediaEnergyGREEN study includes the following text:

- Refine relevant SA1 use cases (5.5, 5.8, 5.9, 5.10 and 5.14) in TR 22.882 in the SA4 context.

This contribution presents a use case as a refinement of the SA1 use case in clause 5.15 of TR 22.882.

**2. Discussion**

Clause 5.15 of TR 22.882 describes a “Use case on supporting communication service with carbon-aware service requirements”, where subject to user consent and operator policy, the 5GS is able to provide means to modify a communication service based on energy related information criteria based on subscription policies.

Although not specifically referenced, we believe the use case in clause 5.15 to be of direct relevance to SA4.

In this document we present a refined use case based on the above, in the SA4 context.

**3. Proposal**

It is proposed to agree the following changes to 3GPP TR 26.942 v0.1.1.

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

4.3 Use cases

### 4.3.3 Green profiles for media streaming services

Pre-requisites:

1. An MNO offers a "green media streaming service" subscription option, wherein the service has adaptable QoS (and therefore QoE) levels taking into account the ratio of renewable energy used to deliver the service as well as the subscriber’s preferences.

- User C subscribes to the "green media streaming service" provided by an MNO in order to save our planet.

Details:

1. The MNO monitors the supply of energy for its 5G System, including the energy ratios used by its different entities (e.g., Network Functions). Energy ratios may be classified as the ratio of renewable energy, including the different types of green/renewable energy as well as non-renewable energy which make up the total supply of energy.

2. In addition to the current produced energy status, the MNO also tracks the amount of spare energy stored in its energy supply, by energy type, from previously produced energy. The MNO may also create a forecast of future energy supply.

3. In addition to the status of its supply of energy by type, the MNO also monitors and considers the status of its demand of energy by type (by each of its different entities), by other users and/or other consumers of energy in its 5G System.

4. During the commute between home and the workplace, User C consumes media from an Application Service Provider via the MNO's 5G System.

5. At the beginning of a media delivery session, the energy status of the 5G System is made known to User C’s UE, and a list of energy profiles or possible adaptations for the service is also provided. Such energy profiles may be presented with a timetable noting the profiles’ availability on a daily or weekly basis due to Operator C’s energy supply, where some profiles may be available only at a limited time.

a) Energy profiles or adaptations may be defined by energy type (calculated by the amount of energy required to stream the profile/adaptation), e.g. renewable energy, solar energy, wind energy, nuclear energy, coal energy, natural gas, oil etc), with each profile/adaptation defining a certain Quality of Experience (i.e. video resolution, data bitrate, latency etc.) for the media.

b) The Qualities of Experience defined also depend on the characteristics and nature of the media content (e.g. 2D video, omnidirectional video, 3D video, point clouds, mesh data), including the target consumption device of the media streaming service.

6. User C may reserve a task such as pre-downloading a media asset using the most preferable profile scheduled. The task may start on schedule or be triggered by an event activation from the MNO in the user's subscribed profile.

7. The energy status of the 5G System may be made known to the UE at the start of the media delivery session.

8. The list of profiles or adaptations may be provided to the UE at the start of the media delivery session.

9. The list of profiles or adaptations provided to the UE may be customised and selected by the network according to the current energy status of the 5G System.

12. Depending on User C’s preference, the UE may request one of the energy profiles/adaptations from the list provided by the network.

13. By consuming media via the "green media streaming service", User C is able to decide what kind of energy s/he wants to use in order to acquire the media and consumer it during his/her commute. The user is also is able to know what kind of energy s/he is using for the service based on the selected energy profile/adaptation selected.

Potential requirements include:

Req.1 Energy type based green media profiles and/or adaptations which may be pre-defined by the MNO.

Req.2 Green media profiles and operator energy status are made known to UE at beginning of the media delivery session. A subset of green media profiles may also be selected to be made known to the UE, bespoke to the current operator energy status, user preference, user UE type, and/or media characteristics (e.g., even though the profile is defined, it may be impossible to consume high bandwidth media with minimum green media profile due to insufficient QoS).

Req.3 Each green media profile has different QoS (guaranteed by the MNO if profile is selected) and QoE (e.g. media resolution, codec level, latency etc) characteristics.

Req.4 The user, through the UE, may select a green media profile based on certain preferences, including energy type, QoS, QoE etc.

Req.5 A UE may schedule a non-real-time media delivery task using a green media profile.

Req.6 The MNO’s energy status and schedule may be made known to the UE for green media profile selection purposes by the user (e.g. in case of energy credit charging).

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