**3GPP TSG-SA WG1 Meeting #108 S1-244207**

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Title: New use case on user-centric AI service using direct device connection

Agenda Item: 8.1.7

Source: China Telecom

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*Abstract: This pCR introduces a new use case on user-centric AI service using direct device connection to TR 22.870.*

---------- Use Case template ----------

## x.1 Use case on user-centric AI service using direct device connection

### x.1.1 Description

With the development of digital technologies, there are more and more smart devices. The smart devices could be from different vendors, which could not be connected with each other via the application provided by a specific vendor. With the help of direct device connection, those smart devices could be connected with each other. With the help of artificial intelligence, the information from the smart devices could be utilized for better smart home and personal experience.

In home, there are different smart devices for different family members. In order to provide services and analysis for different family members, information collected from different smart devices for different family members could be analysed separately with user-centric AI model.

### x.1.2 Pre-conditions

Alice’s family has two family members, including Alice, her husband Bod.

They own different smarts watches and there is smart scale to monitor their body composition information, sleep monitoring devices to track their sleep, and smart watches for fitness monitoring, etc. These are smart devices that could monitor and record the health and workout for different family members, and which could support their mental health and vitality.

Application A could provide smart home service including smart workout recommendations using AI models with information collected from the smart devices. The application could be used on their smart watches or their smart TV with video instruction.

The operator authorises these smart devices to transmit data with each other using direct device connection.

Smart TV and the phone are assumed to have high computation capability for AI model training. They are authorised by the operator and their computation capability is registered to the operator.

### x.1.3 Service Flows

1. During the weekend, Alice and Bob decide to do workout, and Alice uses the smart workout recommendations with video instruction on the smart TV. Bob plans to go jogging outdoor with his smart watch and request for jogging route recommendations.

2. Based on the request from the application, the network configures the devices in home for the workout recommendations, which require the physical information (e.g. weight, body fat, etc.), sleeping information and workout history to analyse and suggest a suitable workout for Alice and Bob using the AI model.

3. Since Alice is using the smart TV for workout, the information related to Alice is transmitted to the smart TV for recommendation model training and inference.

4. Since Bob’s smart watch does not have enough computation capability, the recommendation model training is done on his phone with the information related to Bob. The recommendation with the jogging route is transmitted to his smart watch afterwards00.

### x.1.4 Post-conditions

Alice and Bob could enjoy their personalised workout with the smart TV and the smart watch.

### x.1.5 Existing features partly or fully covering the use case functionality

TS 22.278 clause 7A covers requirements on proximity service of direct device connection. It is supported for UEs to establish connection in between without any network entity in the middle.

TS 22.261 clause 6.40.2.2 covers requirements on AI/ML service traffic transmission via direct device connection. Requirements are given for UE to transmit data for a same AI/ML service. The requirements are targeting for the AI/ML service and the involving UEs are not dedicated for the same user.

### x.1.6 Potential New Requirements needed to support the use case

[PR x.1.6-1] The 6G system shall be able to authorise devices to transmit data belonging to the same user using direct device connection.

[PR x.1.6-2] Based on the trusted 3rd party request, the 6G system shall be able to configure and coordinate the devices of the user-centric AI work task (i.e. AI work task for the same user) connected via direct device connection.

[PR x.1.6.3] Based on the trusted 3rd party request, the 6G system shall be able to offload the computation task for AI service via direct device connection.