**3GPP TSG-SA5 Meeting #157 *S5-245858rev1***

Hyderabad, India, 14 - 18 October 2024

**Source: NEC, Intel, Ericsson, ZTE**

**Title: pCR TR 28.858 add terms and abbreviations**

**Document for: Approval**

**Agenda Item: 6.19.1**

# 1 Decision/action requested

***The group is asked to discuss and approve the attached proposal.***

# 2 References

[1] [SP-240970](https://www.3gpp.org/ftp/TSG_SA/TSG_SA/TSGS_104_Shanghai_2024-06/Docs/SP-240970.zip), Study on 3GPP AI/ML Consistency Alignment

[2] 3GPP TR 22.850; Study on 3GPP AI/ML Consistency Alignment

[3] 3GPP TS 28.105: Artificial Intelligence / Machine Learning (AI/ML) management".

[4] 3GPP TR 28.858 v0.2.0; Study on Artificial Intelligence / Machine Learning (AI/ML) management Phase 2

# 3 Rationale

One of the primary goals of the SA study on AI/ML Consistency Alignment [1-2] is to harmonise or consolidate a common set of terms and definitions across the AI/ML specifications being developed by various 3GPP working groups. The AI/ML management specifications developed by SA5 can potentially serve as a reference for other 3GPP WGs and even for other external SDOs.

SA5 has already developed a good set of terms and definitions in the Release-18 specifications [3]. Therefore, it is essential to further expand these definitions in Release-19 to ensure consistency across 3GPP WGs and to prevent any gaps or inconsistencies in terminologies or understanding among the 3GPP WGs.

# 4 Detailed proposal

*Add the following terms and abbreviations to TR 28.858[4]:*

***1st change***

3 Definitions of terms, symbols and abbreviations

3.1 Terms

For the purposes of the present document, the terms given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].

**Federated Learning**: a distributed machine learning approach where the ML model is trained collaboratively by multiple ML training functions including one acting as an FL server and multiple acting as FL clients iteratively without explicitly exchanging data samples.

**FL clients:**  a training function that trains a ML model on local data and share only the model outcome with the FL server/FL Client, preserving data privacy.

**FL Server:** a training function that aggregates the ML model outcomes from FL clients to create a global ML model. FL server itself may be a FL Client contributing to the training process.

**Horizontal Federated Learning (HFL):** a federated learning technique without exchanging/sharing local data set, wherein the local data set in different FL clients for local model training have the same feature space for different samples.

**Vertical Federated Learning (VFL):** a federated learning technique without exchanging/sharing local data set, wherein the local data set in different VFL participant for local model training have different feature spaces for the same samples.

NOTE 1: The definitions of HFL and VFL referenced above are sourced from TR 23.700-84 [3]. This definition might be updated or modified in normative work.

NOTE 2: The definition of VFL is included for completeness but not covered in this TR. It is FFS in release 20.

**Reinforcement Learning:** a machine learning approach where an RL agent learns to make decisions by interacting with the environment and taking actions to maximize cumulative rewards (see Note 1).

NOTE 1: the examples of rewards could be improved resource allocation, reduced latency, or enhanced user experience.

**Distributed training:** an ML training approach that distributes the training workload across multiple ML training functions.

**ML Knowledge Transfer Learning**: a technique where the knowledge gained from training of one or more ML models is applied or adapted to improve or develop another ML model.

**Pre-training**: the process of training an ML model on a non-domain specific dataset across multiple use cases or inference types.

**Fine-tuning**: the process of training a pre-trained model to a specific task or specific dataset.

***Next change***

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

FL Federated Learning

HFL Horizontal Federated Learning

VFL Vertical Federated Learning

RL Reinforcement Learning

MLKTL ML Knowledge Transfer Learning

***End of changes***