**3GPP TSG CT WG1 Meeting #152 *C1-246839***

**Orlando, US, 18 - 22 November, 2024 (revision of CP-242251)**

**Source: Ericsson, Lenovo, Samsung**

**Title: Revised WID on** **CT aspects of application enablement for AI/ML services**

**Document for: Approval**

**Agenda Item: 19.3**

3GPP™ Work Item Description

Information on Work Items can be found at <http://www.3gpp.org/Work-Items>   
See also the [3GPP Working Procedures](http://www.3gpp.org/specifications-groups/working-procedures), article 39 and the TSG Working Methods in [3GPP TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm)

Title: CT aspects of application enablement for AIML services

Acronym: AIML\_App

Unique identifier: 1050024

Potential target Release: Rel-19

# 1 Impacts

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Affects: | UICC apps | ME | AN | CN | Others (specify) |
| Yes |  | X |  | X |  |
| No |  |  | X |  |  |
| Don't know | X |  |  |  | X |

# 2 Classification of the Work Item and linked work items

## 2.1 Primary classification

### This work item is a …

|  |  |
| --- | --- |
|  | Study |
|  | Normative – Stage 1 |
|  | Normative – Stage 2 |
| X | Normative – Stage 3 |
|  | Normative – Other\* |

## 2.2 Parent Work Item

|  |  |  |  |
| --- | --- | --- | --- |
| Parent Work / Study Items | | | |
| Acronym | Working Group | Unique ID | Title (as in 3GPP Work Plan) |
| AIML\_App | SA6 | 1040075 | Application enablement for AI/ML services |

### 2.3 Other related Work Items and dependencies

|  |  |  |
| --- | --- | --- |
| Other related Work /Study Items (if any) | | |
| Unique ID | Title | Nature of relationship |
|  |  | {optional free text} |

# 3 Justification

The Rel-19 normative work on application enablement for Artificial Intelligence Machine Learning (AIML) services (AIML\_App) is being progressed in SA6 by introducing architecture requirements, functional architecture model, and corresponding solutions that are relevant to the definition of the application layer support for AIML enablement. The conclusions of the study are captured in 3GPP TR 23.700-82. TSG-SA meeting SA#104 approved the "AIML\_App" work item as specified in SP-241008 and normative stage 2 work is currently under development.

This new work item aims to provide stage 3 support for AIML\_App, to cover CT aspects.

# 4 Objective

The objective of this work item is to provide the stage 3 solutions and protocol support for application enablement for AIML services (AIML\_App) based upon the normative technical specification for the functionalities defined in stage 2 requirements under the AIML\_App WID in the TSG SA6 working group.

Stage 3 work shall be started only after the applicable normative stage 2 work is available.

Stage 3 protocols and solutions will be specified in CT1 and CT3 respectively, to support the following stage 2 functionalities.

CT1, the expected work includes:

a) Definition of new APIs between the AIML server and AIML client provided by AIML layer to support the application enablement for AIML services based on normative stage-2 work developed in 3GPP TS 23.482, 3GPP TS 23.434, and 3GPP TS 23.558, to support:

1) ML client configuration provisioning;

2) AIMLE client selection;

3) AIMLE client registration;

4) AIML service lifecycle management;

5) AIML operational splitting and provisioning management;

6) vertical federated learning (VFL) and horizontal federated learning (HFL);

7) AIML data management;

8) AIML edge services; and

9) AIML model distribution.

b) Enhancement the APIs between the ADAE server and ADAE client provided by ADAE layer to support the application enablement for AIML services based on normative stage-2 work developed in 3GPP TS 23.482 and 3GPP TS 23.436, to support:

1) ML-enabled ADAE analytics; and

2) Application layer AIML Member Capability Analytics.

CT3, the expected work includes:

a) Definition of new APIs in network provided by AIML layer to support the application enablement for AIML services based on normative stage-2 work developed in 3GPP TS 23.482, 3GPP TS 23.434, and 3GPP TS 23.558, to support:

1) AIMLE server and client registration;

2) AIMLE client information retrieval;

3) AIML model lifecycle management;

4) AIML model distribution;

5) AIMLE client discovery; and

6) AIMLE client selection and reselection;

7) federated learning (FL) member registration and grouping;

8) vertical federated learning (VFL) and horizontal federated learning (HFL);

9) AIML operational splitting and provisioning management;

10) AIML policy provisioning and management;

11) AIML service lifecycle management;

12) AIML services for edge computing; and

13) AIML information transfer.

b) Enhancement of the APIs provided by ADAE layer to support the application enablement for AIML services based on normative stage-2 work developed in 3GPP TS 23.482 and 3GPP TS 23.436, to support:

1) ML-enabled ADAE analytics;

2) AI-enabled DN Energy Analytics; and

3) Application layer AIML Member Capability Analytics.

# 5 Expected Output and Time scale

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| New specifications {One line per specification. Create/delete lines as needed} | | | | | |
| Type | TS/TR number | Title | For info  at TSG# | For approval at TSG# | Rapporteur |
| TS | 24.560 | Artificial Intelligence Machine Learning (AIML) Services - Service Enabler Architecture Layer for Verticals (SEAL); Protocol Specification; Stage 3 | TSG#108  (June 2025) | TSG#109  (September 2025) | Atarius, Roozbeh, Lenovo, ratarius@motorola.com |
| TS | 29.xxx | Service Enabler Architecture Layer for Verticals (SEAL); Artificial Intelligence Machine Learning Enablement (AIMLE) Services; Stage 3 | TSG#108  (June 2025) | TSG#109  (September 2025) | Pastushok, Igor, Ericsson, igor.pastushok@ericsson.com |

|  |  |  |  |
| --- | --- | --- | --- |
| Impacted existing TS/TR {One line per specification. Create/delete lines as needed} | | | |
| TS/TR No. | Description of change | Target completion plenary# | Remarks |
| *24.559* | - Enhancement of existing APIs provided by ADAE layer. - Enhancement of reference points ADAE-C and ADAE-UU to support:  *1) ML-enabled ADAE analytics; and*  *2) Application layer AIML Member Capability Analytics.* | TSG#109  *(September 2025)* | *CT1 Responsibility* |
| *29.549* | - Updates to the SEAL service(s) for application enablement for AIML services  - Enhancement of existing APIs provided by ADAE layer. - Potential enhancement of reference points ADAE-S to support:  *1) ML-enabled ADAE analytics;*  *2) AI-enabled DN Energy Analytics; and*  *3) Application AIML Member Capability Analytics.* | TSG#109  *(September 2025)* | *CT3 responsibility* |
| *29.558* | - *Potential updates to support AIML services for edge computing.* | TSG#109  (September 2025) | *CT3 responsibility* |

# 6 Work item Rapporteur(s)

Atarius, Roozbeh, Lenovo, ratarius@motorola.com

# 7 Work item leadership

CT1

# 8 Aspects that involve other WGs

Possible charging aspects will be covered by SA5.

Possible security aspects will be covered by SA3.

# 9 Supporting Individual Members

|  |
| --- |
| Supporting IM name |
| Lenovo |
| Ericsson |
| Samsung |
| China Mobile |
| Interdigital |
| ZTE |
| NTT DOCOMO |
| Verizon |
| AT&T |