**3GPP TSG RAN Meeting #94e RP-213283**

**Electronic Meeting, December 6-17, 2021**

**Source: Lenovo, Motorola Mobility, Deutsche Telekom, Qualcomm Incorporated, NEC**

**Title: New SID: Further Study on NG-RAN AI/ML**

**Agenda Item: 8A.3**

3GPP™ Work Item Description

For guidance, see [3GPP Working Procedures](http://www.3gpp.org/About/WP.htm), article 39; and [3GPP TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm).
Comprehensive instructions can be found at <http://www.3gpp.org/Work-Items>

# Title: Study on NG-RAN Evolution for AI/ML

## Acronym:

## Unique identifier:

NOTE: For new WIs/SIs leave the Unique identifier empty but you may make a proposal for an Acronym.

 If this is a RAN WID including Core and Perf. part, then Title, Acronym and Unique identifier refer to the feature WI.

 Please tick (X) the applicable box(es) in the table below:

 Either:

|  |  |
| --- | --- |
| **This WID includes a Core part** |  |
| **This WID includes a Performance part** |  |

 or:

|  |  |
| --- | --- |
| **This WID includes a Testing part** |  |
| **and it addresses the following 3GPP work area:** | **Radio Access** |  |
| **Core Network** |  |
| **Services** |  |

## 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

|  |  |
| --- | --- |
|  | Feature |
|  | Building Block |
|  | *Work Task* |
| X | Study Item |

NOTE: Normally, Core/Perf./Testing parts in RAN WIDs are Building Blocks. Only if they are under an SA or CT umbrella, we define them as work tasks. If you are in doubt, please contact MCC.

### 2.2 Parent and child Work Items

|  |
| --- |
| Parent and child Work Items  |
| Unique ID | Title | Nature of relationship |
|  |  |  |

NOTE: RAN agreed some time ago, that it describes the feature WI + Core/Perf. part WI or Testing part WI in one WID. Therefore the table above should just include the feature WI Unique ID and title and Nature of relationship is "parent WID".

### 2.3 Other related Work Items and dependencies

|  |
| --- |
| Other related Work Items (if any) |
| Unique ID | Title | Nature of relationship |
|  |  |  |

NOTE: Classical examples: List a preceding SI or a preceding WI (e.g. if you further enhance a topic). Also related or dependent WIs in other TSGs should be indicated.

**Dependency on non-3GPP (draft) specification**:

## 3 Justification

In Release 17, the study item of study on enhancement for data collection for NR and ENDC are mainly focusing on using AI technology to improve 5G network performance for some certain use cases, e.g., energy saving, load balancing, traffic steering/mobility optimization. In the meanwhile, there are other high-layer use cases that are deprioritized or not included in Release 17 study due to time limit, e.g., AI/ML for network slicing, etc. It is considered beneficial to further study those new high-layer use cases in Release 18 that are not included in Release 17.

Besides, Release 17 study item does not address the multi-vendor interoperability, which is considered fundamental in future RAN evolution to fully utilize AI technology. In order to support multi-vendor interoperability, it’s necessary to study basic procedures such as model management procedures, e.g., model configuration, model update and etc, and data management related procedures, e.g., data request/subscription.

5GC architecture have been already updated to support NWDAF services, and OAM update to support MDA services has been studied. There is interest to facilitate closer integration and collaboration of OAM AI/ML, 5GC AI/ML and NG-RAN AI/ML. Therefore, it is proposed to study on integration and collaboration of OAM AI/ML, 5GC AI/ML and NG-RAN AI/ML.

## 4 Objective

### 4.1 Objective of SI or Core part WI or Testing part WI

This study item aims to further study the new use cases, network functionality and signalling to support the agreed use cases enabled by AI/ML, and identify the potential standardization impacts on current NG-RAN nodes and interfaces.

The detailed objectives of the SI are listed as follows:

- Study new use cases for NG-RAN (e.g., AI/ML for slicing, and other potential use cases).

Editor’ Note: The SID will be revised with the clarification and details on new use cases after the completion of AI/ML NG-RAN rel-18 Work Item

Note: Integration and collaboration with air interface AI/ML to be considered based on progress of air interface AI/ML SI. And the integration and collaboration with OAM and 5GC AI/ML may need coordination with SA5 and SA2.

### 4.2 Objective of Performance part WI

NOTE: Leave empty if the WI proposal does not contain a RAN performance part.

### 4.3 RAN time budget request (not applicable to RAN5 WIs/SIs)

NOTE: For all RAN related WIs/SIs which are not led by RAN WG5 the WI/SI rapporteur has to fill out the attached Excel table to request time budgets for corresponding RAN WG meetings.
The Excel table has to be filled out for all affected RAN WGs and up to the target date of the WI/SI.
One time unit (TU) corresponds to ~ 2 hours in the meeting.
If no TU is needed leave the field empty otherwise enter a number in the field.

 For revisions of already approved WI/SI descriptions: Please remove the Excel table from the WID/SID's zip file. The time budgets are already recorded. If you want to modify them, then this has to be done via the status report and not via a revised WID/SID.

 If this WID is covering Core and Performance part, then please fill out one line for each of them in the attached Excel table.

**additional comments to the time budget request in the attached Excel table:**

## 5 Expected Output and Time scale

|  |
| --- |
| **New specifications** *{One line per specification. Create/delete lines as needed}* |
| Proposed Spec no. or series | Type (see note 1)  | Title | For info at TSG#  | For approval at TSG# | Remarks |
| ab.xyz | Internal TR | Further Study on NG-RAN AI/ML | *TBD* | *TBD* |  |

Note 1: Only TSs may contain normative provisions. Study Items shall create or impact only TRs.
"Internal TR" is intended for 3GPP internal use only whereas "External TR" may be transposed by OPs.

NOTE: If this is a RAN WID including Core and Perf. part, then all new Core part specs have to be listed first and then all new Perf. part specs. Indicate "Core part" or "Perf. part" under Remarks for each spec.
By default a new specs can only be new for one of both parts.

|  |
| --- |
| **Impacted existing TS/TR** *{One line per specification. Create/delete lines as needed}* |
| TS/TR No. | Description of change  | Target completion plenary# | Remarks |
|  |  |  |  |

NOTE: If this is a RAN WID including Core and Perf. part, then all new Core part specs have to be listed first and then all new Perf. part specs. Indicate "Core part" or "Perf. part" under Remarks for each spec.
If an existing spec is affected by both (Core part and Perf. part), then it has to be listed twice with appropriate approval dates.

## 6 Work item Rapporteur(s)

## 7 Work item leadership

**Responsible RAN WG: RAN3**

## 8 Aspects that involve other WGs

NOTE: For RAN WIDs: Section 8 applies only toWGs outside of TSG RAN because RAN WG aspects have to be covered in section 4.

## 9 Supporting Individual Members

|  |
| --- |
| Supporting IM name |
| Lenovo |
| Deutsche Telekom |
| InterDigital |
| Motorola Mobility |
| NEC |
| Qualcomm Incorporated |
|  |