**3GPP TSG-SA3 Meeting #106-e *S3-22xxxx***

e-meeting, 14 - 25 February 2022 (revision of S3-yyxxxx)

**Source: Nokia**

**Title: New SID on RAN Security impacts related to AI/ML based network optimizations**

**Document for: Approval**

**Agenda Item:**

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: Study on RAN Security impacts related to AI/ML based network optimizations

## Acronym: FS\_Sec\_AIML\_RAN

## Unique identifier: *TBA*

## Potential target Release: Rel-18

# 1 Impacts

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

# 2 Classification of the Work Item and linked work items

## 2.1 Primary classification

### This work item is a …

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

## 2.2 Parent Work Item

|  |  |  |  |
| --- | --- | --- | --- |
| Parent Work / Study Items | | | |
| Acronym | Working Group | Unique ID | Title (as in 3GPP Work Plan) |
| N/A | N/A | N/A | N/A |

### 2.3 Other related Work Items and dependencies

|  |  |  |
| --- | --- | --- |
| Other related Work /Study Items (if any) | | |
| Unique ID | Title | Nature of relationship |
| RP-213602 | New WI: Artificial Intelligence (AI)/Machine Learning (ML) for NG-RAN | Note: On security impacts, coordination with SA3 when needed. |
| RP-212708 | New SID on AI/ML for NR Air Interface |  |

Dependency on non-3GPP (draft) specification: N/A

# 3 Justification

RP-213602 (revision of RP-212719) is a new WI proposed in RAN3, and is aimed at specifying data collection enhancements and signalling support within existing NG-RAN interfaces and architecture (including non-split architecture and split architecture) for AI/ML-based Network Energy Saving, Load Balancing and Mobility Optimization.

RP-212708 is another new Study item aimed at exploring the benefits of augmenting the air-interface with features enabling improved support of AI/ML based algorithms for enhanced performance and/or reduced complexity/overhead. This study item focusses on specifically selected use-cases.

Considering the above mentioned WIs and Study items in various working groups of 3GPP, it is important to study the security impacts of adopting AI/ML based techniques for the network optimizations in SA WG3, the potential security impacts of AI/ML based network optimization requirements in 5G.

# 4 Objective

The objectives of this study are to:

1. Identify key issues and develop solutions to address the security aspects while employing AI/ML techniques in RAN segment of 5G networks. In particular:
   1. Specify secure and privacy protected data collection enhancements and signalling support within existing NG-RAN interfaces and architecture (including non-split architecture and split architecture) for AI/ML-based Network Energy Saving, Load Balancing and Mobility Optimization.
   2. Specify solutions to protect the security and integrity of the UE AI/ML optimization model components for the RAN, shared between the UE and the RAN.
2. Conclude on selected solutions for potential normative work.

# 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 |
| Internal TR | 33.xxx | Study on RAN security impacts related to AI/ML based network optimizations | TSG#98 | TSG#99 | Rakshesh P Bhatt, Nokia, rakshesh.p\_bhatt@nokia.com |

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

# 6 Work item Rapporteur(s)

Rakshesh P Bhatt, Nokia, rakshesh.p\_bhatt@nokia.com

# 7 Work item leadership

SA3

# 8 Aspects that involve other WGs

Potential interactions with SA2 for the system architectural aspects.

RAN 1/2/3 for the RAN parameters, procedures and architectural aspects.

# 9 Supporting Individual Members

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| --- |
| Supporting IM name |
| Nokia |
| Nokia Shanghai Bell |
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