**3GPP TSG-SA5 Meeting #146Bis-e *S5-231089***

Electronic meeting, 16 - 19 January 2023

**Source: China Mobile, Huawei, AsiaInfo, CATT, ZTE, China Unicom, Intel**

**Title: New WID on autonomous network levels phase 2**

**Document for: Approval**

**Agenda Item: 6.2.1**

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: Enhancement of autonomous network levels

Acronym: ANL\_Ph2

Unique identifier:

Potential target Release: Rel-18

# 1 Impacts

{For Normative work, identify the anticipated impacts. For a Study, identify the scope of the study}

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

# 2 Classification of the Work Item and linked work items

## 2.1 Primary classification

### This work item is a …

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

## 2.2 Parent Work Item

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

### 2.3 Other related Work Items and dependencies

|  |  |  |
| --- | --- | --- |
| Other related Work /Study Items (if any) | | |
| Unique ID | Title | Nature of relationship |
| 880027 | Autonomous network levels | Work Item in Rel-17 |
| 940042 | Study on enhancement of autonomous network levels | Preceding Study Item |
| 940041 | Study on evaluation of autonomous network levels | Preceding Study Item |
| 970031 | Enhancement of Management Data Analytics phase 2 | Management data analytics service related features |
| 940046 | Study on intent-driven management for network slicing | Intent-driven management service related features |
| 940039 | Study on AI/ML management | AI/ML management service related features |

# 3 Justification

Autonomous network levels (ANL) is being addressed in normative work (Ref. WID on autonomous network levels, UID 880027) in SA5 in Rel-17. The concepts, framework, use cases, requirements and generic autonomous network levels are defined in TS 28.100.

In Rel-17 work, generic MnS requirements and corresponding solutions for network optimization, RAN NE deployment and fault management are specified mainly for lower levels of autonomous network, e.g. level 1 to level 3. Enhanced generic requirements and solutions for higher autonomous network levels, e.g. those requirements for supporting the autonomy capabilities corresponding to MDA, IDMS are not specified.

The specification in Rel-17 identifies typical scenarios related to network and service deployment, maintenance and optimization, including RAN NE deployment, fault management, radio network coverage optimization and RAN UE throughput optimization. The generic autonomous network levels for RAN energy saving and 5GC NF deployment are introduced and studied in Rel-18, however, the generic solutions and requirements for supporting the autonomy capabilities corresponding to different autonomous network levels for RAN energy saving and 5GC NF deployment are not specified.

Current autonomous network levels definition in Rel-17 provides framework approach for ANL and generic autonomous network levels with description of the autonomy capability (participation of the human and telecommunication system) of each task in the workflows. It provides a methodology for the telecom industry to evaluate the levels of autonomous networks in the scope of 3GPP system. However, to support ANL evaluation, in 3GPP management system, there are still some issues are under study and need to be addressed with necessary normative work. For example,

- How to describe and specify the evaluation objects?

- How to interact the information of ANL evaluation results in 3GPP management system?

Existing KPIs could be used to evaluate the performance of the autonomous network, but it is not sufficient to reflect the effect from autonomous management perspective. Key effectiveness indicators could be used to help the NOPs to understand what benefits from autonomous management perspective they could get from upgrading their network systems to the corresponding levels and how to evaluate the gains by doing so. However, existing 3GPP TSs have not defined any KEIs for evaluating the effects of achieving specific autonomous network level for any scenarios.

# 4 Objective

The objectives are to:

1) Specify enhanced MnS requirements and corresponding solution support autonomy capabilities for each autonomous network levels for the use case of RAN NE deployment, fault management, radio network coverage optimization RAN UE throughput optimization defined in Rel-17.

2) Specify related workflows, management requirements and MnS requirements to support autonomy capabilities for each autonomous network levels for RAN energy saving and 5GC NF deployment.

This work will take into account of the study in 3GPP TR 28.910, TR 28.909 and related work in progress which are related to network autonomy. Any existing standard deliverables shall be reused as much as possible when applicable. In which work item to define the new solution depends on the concrete MnS requirements, for example, MDA related solution can be defined in eMDAS work, intent related solution can be defined in eIDMS work. Coordination with 3GPP working groups (e.g. SA WG2, RAN WG3) and other groups (e.g. ETSI ISG ZSM) to achieve coordinated view on autonomous network are needed.

# 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 |
|  |  |  |  |  | Cao, Xi, China Mobile, [caoxi@chinamobile.com](mailto:caoxi@chinamobile.com)  Xu Ruiyue, Huawei, [xuruiyue@huawei.com](mailto:xuruiyue@huawei.com) |
|  |  |  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Impacted existing TS/TR {One line per specification. Create/delete lines as needed} | | | |
| TS/TR No. | Description of change | Target completion plenary# | Remarks |
| 28.100 | Add new use cases, enhanced requirements, and solutions for autonomous network levels | SA#102 (Dec 2023) |  |
| 28.312 | Update requirements and enhancements on intent driven management | SA#102 (Dec 2023) |  |
| 28.104 | Update enhancements on management data analytics | SA#102 (Dec 2023) |  |
| 28.105 | Update enhancements on AI/ML management | SA#102 (Dec 2023) |  |
| 28.535 | Update requirements and enhancements on service assurance | SA#102 (Dec 2023) |  |
| 28.313 | Update requirements and enhancements on management of SON | SA#102 (Dec 2023) |  |

# 6 Work item Rapporteur(s)

Cao Xi, China Mobile, [caoxi@chinamobile.com](mailto:caoxi@chinamobile.com), primary rapporteur, responsible for objective 1).

Xu Ruiyue, Huawei, [xuruiyue@huawei.com](mailto:xuruiyue@huawei.com), secondary rapporteur, responsible for objective 2).

# 7 Work item leadership

SA WG5.

# 8 Aspects that involve other WGs

Co-ordination with SA2, RAN3 and ETSI ZSM where appropriate.

# 9 Supporting Individual Members

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| --- |
| Supporting IM name |
| China Mobile |
| Huawei |
| Asiainfo |
| ZTE |
| CATT |
| China Unicom |
| Intel |
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