**3GPP TSG-SA5 Meeting #157 *S5-246125***

**Hyderabad, India, 14 - 18 October 2024**

**Source: Huawei, Ericsson**

**Title: New WID on Intent driven management services for mobile network phase 3**

**Document for: Approval**

**Agenda Item: 6.2.2**

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:

New WID on Intent driven management services for mobile network phase 3

Acronym:

IDMS\_MN\_Ph3

Unique identifier:

{A number to be provided by MCC at the plenary}

Potential target Release: Rel-19

# 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 |  |  | X |
| Don't know |  |  |  |  |  |

# 2 Classification of the Work Item and linked work items

## 2.1 Primary classification

### This work item is a

|  |  |
| --- | --- |
|  | Study  |
| X | Normative – Stage 1 |
| X | 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) |
| FS\_IDMS\_MN\_Ph3 | SA5 | 1020008 | Study on intent driven management services for mobile network phase 3 |

### 2.3 Other related Work Items and dependencies

|  |
| --- |
| Other related Work /Study Items (if any) |
| Unique ID | Title | Nature of relationship |
| 810027 | Intent driven management service for mobile networks | The Rel-17 work item in SA5 on Intent driven Management Service for Mobile Network |
| 990030 | Intent driven Management Service for Mobile Network phase 2 | The Rel-18 work item in SA5 on Intent driven Management Service for Mobile Network |

# 3 Justification

In Rel-18 TS 28.312, the following content is specified for intent driven management service for mobile network:

* The concept for intent and intent driven management service (Intent-driven MnS) in the context of Service based management architecture (SBMA).
* Typical scenarios and corresponding requirements for intent driven management, including radio coverage performance assurance, RAN UE throughput performance assurance, radio network delivering, radio service delivering, RAN energy saving, 5GC network delivering and end-to-end network optimization.
* Intent driven management service definition, including Management operation and Information model definition for intent and intent report, including the generic Information model and several scenario specific intent Expectations: Radio Network Expectation, Edge Service Support Expectation, End-to-end Network Resource Optimization Expectation, 5GC Network Expectation and Radio Service Expectation.

Based on above content specified in Rel-18 TS 28.312, TR 28.914 has studied following aspects and recommended to do the normative work

* Enablers for Intent Fulfilment
* Enhance the IntentExpectations defined in TS 28.312 to support New scenarios for intent driven management for mobile network, including
	+ Enhance the RadioServiceExpectation to support the scenario of delivering a radio service in a scheduled time scenario.
	+ Enhance the RadioNetworkExpectation to support the scenarios of RAN energy saving, Radio network traffic assurance for scheduled events scenario, Network support for UAV pre-flight preparation and Radio Network support MOCN undifferentiated radio service.

- New requirements for additional intent driven management functionalities

* + Intent negotiation functionalities, including Intent negotiation functionalities in Intent pre-evaluation phase (specifically Intent feasibility check and Intent Exploration) and intent negotiation functionalities in Intent fulfilment phase, specially checking for fulfillable outcomes.
	+ Intent handling capability enhancement
	+ Intent handling state management
	+ Implicit intent report subscription with customized requirements
	+ Intent degradation based on expectation preference
	+ Intent lifecycle documentation improvement

- Intent Utility Function

- Intent driven approach for communication service delivering

- Guidelines for using Intent generic information model to support new scenario which is not standardized.

- Intent driven management of network maintenance

Therefore, SA5 should start normative work on Intent driven Management Service for Mobile Network based on conclusions and recommendations documented in TR 28.914.

# 4 Objective

The objective of this work item is to enhance the intent driven management services of mobile networks based on conclusions and recommendations documented in TR 28.914. It includes:

WT-1：Enablers for Intent Fulfilment, the capability to allow MnS consumer to subscribe and obtain the information of enablers for intent fulfilment.

WT-2: Enhance the IntentExpectations defined in TS 28.312 to support New scenarios for intent driven management for mobile network, including:

WT-2.1: Enhance the RadioServiceExpectation to support the scenario of delivering a radio service in a scheduled time scenario.

WT-2.2: Enhance the RadioNetworkExpectation to support following scenarios

 - RAN energy saving scenario

 - Radio network traffic assurance for scheduled events scenario

 - Radio network support for UAV pre-flight preparation

 - Radio Network support MOCN undifferentiated radio service

WT-3：New requirements for additional intent driven management functionalities, including

 WT-3.1 Intent negotiation functionalities, including:

- Intent negotiation functionalities in Intent pre-evaluation phase, specifically Intent feasibility check and Intent exploration.

- Intent negotiation functionalities in Intent fulfilment phase, specially checking for fulfillable outcomes, checking for best possible outcome, recommending fulfillable intent targets and contexts, advises on preferred alternatives.

- Methods by which consumers can express the relative value of an intent's expectations to assist the IDMS producer(s) in fulfilling their intents in the most acceptable manner, including Intent Utility Function and satisfaction index.

 WT-3.2 Intent handling state management, including Intent handling state diagram and corresponding state transition events.

 WT-3.3 Implicit intent report subscription with customized requirements.

 WT-3.4 Intent handling capability enhancement, specifically the capability to provide a description of the supported scenario specific intents.

 WT-3.5 Intent degradation based on expectation preference, specially the capability to allow MnS consumer to express its preference on expectation and target.

WT-4：Intent driven approach for delivering communication service, especially for defining communication service expectation for communication service delivering and assurance.

WT-5: Intent driven management of network maintenance

WT-6: Guidelines for intent driven management, specially includes:

WT-6.1 Guidelines for using intent generic information model to support new scenario which is not standardized

WT-6.2 Intent lifecycle documentation improvement, specially, updating the description for Investigation phase to include functionalities of intent handling capability obtaining and intent pre-evaluation.

## TU estimates and dependencies

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Work Task ID** | **TU Estimate****(Study)** | **TU Estimate****(Normative)** | **RAN Dependency****(Yes/No/Maybe)**  | **SA Dependency****(Yes/No/Maybe)** | **Non-3GPP Dependency** |
| WT-1 | 0 | 0.25 | No | No | No |
| WT-2 | 0 | 1 | No | No | No |
| WT-3 | 0 | 1.5 | No | No | No |
| WT-4 | 0 | 0.5 | No | No | No |
| WT-5 | 0 | 0.5 | No | No | No |
| WT-6 | 0 | 0.25 | No | No | No |
|  |  |  |  |  |  |

# 5 Expected Output and Time scale

|  |
| --- |
| New specifications |
| Type  | TS/TR number | Title | For info at TSG#  | For approval at TSG# | Rapporteur |
|  |  |  |  |  |  |

|  |
| --- |
| Impacted existing TS/TR {One line per specification. Create/delete lines as needed} |
| TS/TR No. | Description of change  | Target completion plenary# | Remarks |
| TS 28.312 | * Add new concept for intent negotiation
* Add new aspects specification Level Requirements and use cases
* Add new aspects for management operation and information model for intent
* Add new aspects for openAPI document for intent NRM and scenario specific IntentExpectation
 |  Jun 2025 (SA#108) |  |

# 6 Work item Rapporteur(s)

# 7 Work item leadership

SA WG5

# 8 Aspects that involve other WGs

None

# 9 Supporting Individual Members

|  |
| --- |
| Supporting IM name |
| Huawei |
| Ericsson |
| Deutsche Telekom |
| NTT DOCOMO |
| Telefónica |
| China Mobile |
| China Telecom |
| China Unicom |
| CATT |
| ZTE |
| AsiaInfo |
| Intel |
| NEC |
| Telecom Italia |
| Verizon |
| Nokia? |
| Samsung |