3GPP TSG SA WG5 Meeting 139e TDoc S5-215153

electronic meeting, online, 11 - 20 October 2021

**Source: China Mobile**

**Title: TD on related concept of intent**

**Document for: Discussion, Endorsement**

**Agenda Item: 6.4.10**

# 1 Decision/action requested

**The group is asked to discuss and Endorse the proposals.**

# 2 References

[1] ETSI GR NFV-IFA 041 “Report on enabling autonomous management in NFV-MANO” V4.1.1 (2021-08)

[2] IG1253 TM Forum Introductory Guide “Intent in Autonomous Networks”

[3] IRTF NMRG “Intent-Based Networking - Concepts and Definitions”

[4] 3GPP TR 28.812 “Intent driven management services for mobile networks” V17.1.0 (2020-12)

[5] 3GPP TS 28.312 “Intent driven management services for mobile networks” V0.5.0 (2021-05)

[6] IRTF NMRG “Intent Classification”

# 3 Rationale

Based on the discussion and progress made at past two meetings, there is a main difference in the group on the understanding of intent, the basic concept, the required life cycle management, and the corresponding management services. Hence, we propose to have a dedicated discussion to keep the basic concepts of intent consistent, like intent definition, intent classification and intent use cases. The purpose of this TD paper is to show the different view and call for the specific definition, which could be the foundation to review the existing use cases and clarify the goals and priority for Rel-17 IDMS\_MN WI.

The difference on intent definition is shown in clause 3.1 and 3.2. Clause 3.3 is used to find the consistent in intent use cases in 3GPP SA5.

## 3.1 Intent definition in SDOs

### 3.1.1 ETSI ISG NFV-IFA [1]

**intent:** formal specification of all expectations including requirements, goals, and constraints given to a system.

### 3.1.2 TM Forum [2]

Intent is the formal specification of all expectations including requirements, goals, and constraints given to a technical system.

### 3.1.3 IRTF NMRG [3]

**Intent:** A set of operational goals (that a network should meet) and outcomes (that a network is supposed to deliver), defined in a declarative manner without specifying how to achieve or implement them.

### 3.1.4 3GPP SA5 [4] [5]

The definition of intent in 3GPP TR 28.812 [4] is “A desire to reach a certain state/position for a specific entity for instance for a service assurance or network deployment task.”

The definition of intent in 3GPP TS 28.312 [5] is “the expectations including requirements, goals and constraints given to a 3GPP system, without specifying how to achieve them.”

As we can see, even in SA5, there are two definitions of intent are shown.

## 3.2 Intent classification in SDOs

In IRTF NMRG [6], the intent is dividied into transient and persistent intents. The transient intent has no life cycle management. As soon as the specified operation is successfully carried out, the intent is finished, and can no longer affect the target object. The persistent intent has life-cycle management. Once the intent is successfully activated and deployed, the system will keep all relevant intents active until they are deactivated or removed.

In 3GPP TR 28.812 [4], the intent is classified by different consumer, such as CSC, CSP, NOP.

## 3.3 Intent use cases

|  |  |  |  |
| --- | --- | --- | --- |
| **Intent creator** | **Use cases from TR 28.812[4]** | **Can the use case be directly triggered by an external Intent? (Y/N)** | **Transient or Persistent** |
| CSC | Service deployment |  |  |
| Intent driven service creation |  |  |
|  Intent driven Communication Service deployment at the edge |  |  |
| CSP | Network provisioning |  |  |
| NSI resource utilization optimization |  |  |
| Intent driven NSI resource capacity planning scenario |  |  |
| Intent driven NSI performance assurance scenario |  |  |
| NOP | Cell Re-home |  |  |
| Area load balance |  |  |
| Instant Cell Updating |  |  |
| Instant Cell Deletion |  |  |
| Intent driven network optimization scenario |  |  |
| Capacity Management |  |  |
| Intent driven NF deployment |  |  |
| Intent driven NF capacity changing |  |  |
| Intent driven management for area based deployment scenario |  |  |
| Intent driven coverage optimization scenario |  |  |
| **Intent creator** | **Use cases from TS 28.312[5]** | **Can the use case be directly triggered by an external Intent? (Y/N)** | **Transient or Persistent** |
| CSP | Intent driven service deployment  |  |  |
| Intent driven radio network provisioning |  |  |
| Intent driven radio service provisioning |  |  |
| NOP | Intent driven management for coverage optimization |  |  |
| Intent driven management for RAN UE throughput optimization |  |  |

## 3.4 Summary

In different SDOs, the definitions of intent tend to be consistent. But the meanings of requirements, goals and constraints are not clarified with specific description, the relationship between those is not clear, like synonymous or different. Do they need to be expressed separately in the intent information model?

About the classification of intent, there are two classification methods at least. The table in clause 3.3 is going to help with investigating the relationship between those two methods.

# 4 Detailed proposal

Based on the survey of SDOs and current status of this group, the suggestions from CMCC is below:

* In Rel-17, it should be prioritized to get a consensus on concept of intent, relevant use-cases and intent types in 3GPP system (RAN, CN, slicing service, etc.), which would be the foundation of further work on intent information model, LCM analysis and definition of management service.
* The definition and relationship of requirements, goals and constraints should be clarified to guide intent modelling.
* Base on the third column of the table, the use case which is directly triggered by an external Intent should be considered for intent modelling. The other use cases needn’t be considered.
* In intent life cycle management, the requirements for different intent types (transient or persistent) should be considered differently. The type description should be added in the use case description and considered in the solution of use case. The description of corresponding use cases could be rewritten.
* In Rel-18, the related work plan should be established based on the work done in Rel-17.