**3GPP TSG-SA5 Meeting #139e *S5-*** ***215285***

**e-meeting 11th - 20st October 2021**

**Source: Nokia, Nokia Shanghai Bell**

**Title: Description of Information Elements of an Intent**

**Document for: Approval**

**Agenda Item: 6.4.10**

# 1 Decision/action requested

***The group is asked to discuss and approve.***

# 2 References

[1] 3GPP draft TS 28.312: “Management and orchestration; Intent driven management services for mobile networks v0.5.0”.

# 3 Rationale

This contribution proposes to Describe Information Elements of an Intent

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# 4 Detailed proposal

It proposes to make the following changes to TS 28.312[1].

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| **1st Change** |

## 4.n Components of an Intent

### 4.n.1 Intent Expectation

In the most basic form, a consumer may use an intent to express to the producer to:

"ensure that a Managed Object O is in a specific state S".

The consumer may desire the same requirements for multiple objects of the same type, in which case the intent may be stated for a list of objects as

"ensure that Managed Objects {O1,O2, …ON} are in a specific state S"

However, the consumer may wish to state different requirements for different types of Managed objects. It is in that case necessary to distinguish the requirements to be achieved for each type of Object. Correspondingly, the combination of requirements, goals and constraints for each type of object may be termed as the Intentexpectation

### 4.n.2 Desired outcomes as Intent Targets

For a given intent expectation, the state may be expressed in terms of state attributes of the Managed Object(s), which include the parameters of the Managed object(s), the measurable counters and KPIs that characterize the performance of the Managed object(s) or some abstract index that expresses the behavior of the object(s). A given intent expectation may state multiple requirements on the same object or object type. A consumer may for example require for the cell object(s) that HandoverFailureRate < 2% and RACHFailureRate < 1%.The state may also be context specific, i.e. the intent my require a specific state given a specific context. As such with the state as a combination of parameters, KPIs and context, the intent expectation may be stated as

"ensure that for

Object O,

parameter\_1 is P\_1, …., Parameter\_n is P\_n;

KPI\_1 is K\_1, …., KPI\_m is K\_m;

context\_1 is C\_1, …., context\_k is C\_k;

"

Each of the Object State Attributes (parameters, KPIs and context) may be set to be equivalent to a specific value or constrained to a value or a range of values, e.g. as listed in Table 1. The combination of state attribute, the condition constraining the attribute and the value or value range for the attribute is the target, i.e. the target is the tuple

target = [ attribute, condition, value range]

Table 1: Example intent targets for different Managed Objects

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| **Type of target** | **Object** | **Object State attribute** | **Condition** | **Value range** |
| Parameter target | Slice | Coverage area | Is at least | 40km radius |
| KPI Target | Communication Service | User throughput | Is greater than | 2Mbps |
| Context Target | Communication Service | Time of day | Is within | 6:00 - 22:00 hrs |

### 4.n.3 Intents and Managed Objects

The Managed object(s) for which a given expectation is addressed may listed using their identifier. This may, however, not always be adequate or may be cumbersome for some intents. For example, it may be easier to state "all cells in city ABC" as opposed to listing the individual cells. As such it may be easier to identify the Managed objects by stating the "type of object" together with the Managed-Object context information that filters and identifies the desired objects. The Managed-Object context is in form of a context list whose entries are each a tuple (attribute, condition, value range). For example, in the case of "all cells in a city" there is a single Managed-Object context, which is the tuple "location, =, city\_ABC" to be applied to "objectType=cell".

### 4.n.4 Context and filter information

Each target may be constrained to only be achieved for a very specific set of constraints. For example, the consumer may state that: *"ensure that handoverFailureRate < 2% if Load > 80%"*, where the target *"HandoverFailureRate < 2%"* is only to be achieved only in the context *"Load > 80%"*.

Similar to the target, the context is also a tuple of < attribute, condition, value range > but which the values having a different semantics.

Although contexts and targets have the same structure, to distinguish between what must be achieved and the context which is only to be considered as required conditions, the Context has to be explicitly stated separate from the target. For example, if the consumer may wish that the Radio Link Failure rate (RLF) is less than 2% when the load is more than 50%. If the context (i.e. load > 50%) is not explicitly stated/modelled as context, the producer could interpret the request to mean (RLF<2% and load > 50%).

For a given expectation, the specific list of targets may be desired to be achieved for given combined contexts, i.e., besides the Target, an expectation may state a list of contexts which apply to all targets within the intent expectation. Similarly, there may be contexts that apply to all expectations within a given intent. Correspondingly, both Intent expectations and intents should be modelled to contain aggregate contexts that apply to all the contained sub elements.

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| **End of changes** |