3GPP TSG SA WG5 Meeting 143-e S5-223346

**e-meeting, 9 -17 May 2022**

**Source: Nokia**

**Title: Adding MDA output IOC**

**Document for: Approval**

**Agenda Item: 6.6.5**

# 1 Decision/action requested

This contribution is for approval.

# 2 References

[x] TR 28.809 Study on enhancement of management data analytics

# 3 Rationale

This contribution introduces the MDA output IOC in order to enable the MDA MnS producer to provide MDA output towards a managed entity that is responsible for holding data, allowing the MDA MnS consumer to obtain it at any point in time. This contribution also introduces a unified way to represent MDA output, which can be used across all use cases in [x] and can be further populated with use case specific MDA output (so this proposal shall not be perceived as completed – it is a draft). The idea is to introduce a way to represent numeric analytics and root cause analysis that would be the same across all use cases, since currently we are facing the problem that many use cases introduce different parameters to represent statistics or predictions, i.e., some of them include duration other not, while none use case introduce confidence degree related to statistics or prediction.

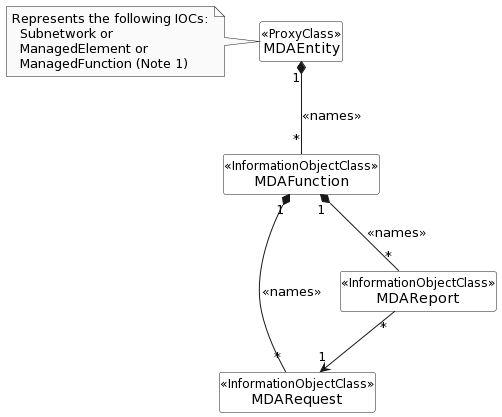
# 4 Detailed proposal

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| **1st Modified Section** |

# 9.2 Class diagram

### 9.2.1 Relationships

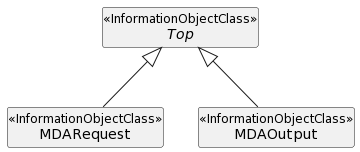
This clause provides the relationships of relevant classes in UML.



NOTE 1: When the MDAEntity represents the ManagedElement or ManagedFunction, it means the MDAF is located in the NE/NF that the ManagedElement or ManagedFunction represents, but it does not mean the MDA is the feature of the NE/NF.

**Figure 9.2.1-1: NRM fragment for MDA request and MDA Report**

### 9.2.2 Inheritance



**Figure 9.2.2-1: Inheritance Hierarchy**

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| **Next Modified Section** |

### 9.3.x MDAReport

#### 9.3.x1 Definition

The IOC MDAReport represents the report containing the outputs for one or more MDA types delivered to the MDA consumer.

#### 9.3.x.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| MDAReportID | M | T | F | T | T |
| mDAOutputs | M | T | F | F | T |
| **Attribute related to role** |  |  |  |  |  |
|  |  |  |  |  |  |

Note: The content represented by this IOC can be reported by notification, file and streaming.”

#### 9.3.x.3 Attribute constraints

None.

#### 9.3.x.4 Notifications

None.

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| **Next Modified Section** |

### 9.4.y MDAOutputs <<dataType>>

#### 9.4.y.1 Definition

The IOC MDAOutputs represents the MDA outputs created by an MDA MnS producer for a specific MDA type.

#### 9.4.y.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| mDAType | M | T | T | F | T |
| mdaOutputList | M | T | T | F | T |
| **Attribute related to role** |  |  |  |  |  |
| mDARequestRef |  |  |  |  |  |

#### 9.4.y.3 Notifications

The common notifications defined in clause 9.6 are valid for this IOC, without exceptions or additions.

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| **Next Modified Section** |

### 9.4.x mdaOutputEntry <<dataType>>

#### 9.4.x.1 Definition

This data type specifies MDA output related to numeric analytics, i.e., statistics or predictions.

#### 9.4.x.1 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| mdaOutputIEName | M | T | T | F | T |
| mdaOutputIEValue | M | T | T | F | T |
| analyticsWindow | M | T | T | F | T |
| confidenceDegree | M | T | T | F | T |
| **Attribute related to role** |  |  |  |  |  |
|  |  |  |  |  |  |

#### 9.4.x.3 Notifications

The <<IOC>> using this <<dataType>> all of its attributes, shall be applicable.

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| **Next Modified Section** |

### 9.4.z TimeWindow <<dataType>>

#### 9.4.z.1 Definition

The <<dataType>> represents the time duration related to the MDA output towards the MDA MnS consumer.

#### 9.4.z.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| startTime | M | T | T | F | T |
| endTime | M | T | T | F | T |
| **Attribute related to role** |  |  |  |  |  |
|  |  |  |  |  |  |

#### 9.4.z.3 Notifications

The <<IOC>> using this <<dataType>> both of its attributes, shall be applicable.

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## 9.5 Attribute definitions

### 9.5.1 Attribute properties

| Attribute Name | Documentation and Allowed Values | Properties |
| --- | --- | --- |
| mDAType | It indicates the type of MDA type (corresponding to the MDA capability).  AllowedValues: the value of MDA type defined for each MDA capability in clause 8. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| requestedMDAOutputs | It indicates the requested analytics outputs for an MDA request | type: RequestedMDAOutputPerMDAType  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| mDAOutputIEFilters | It provides the filters for the analytics output information elements of an MDA type for an MDA request. | type: MDAOutputIEFilter  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| mDAOutputIEName | It indicates the analytics output information element name of an MDA type for an MDA request.  AllowedValues: the analytics output information element names for each MDA type as specified in clause 8. | type: string  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| mDAOutputIEFilterValue | It indicates the filter value for analytics output information element for an MDA request.  The MDA output information element is only requested and reported when its value equals to the value of this attribute.  allowedValues: depends on the definitions of the analytics output information element (see clause 8) indicated by mDAOutputIEName attribute. | type: string  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| mDAOutputIEThreshold | It indicates the threshold for analytics output information element for an MDA request. | type: TBD  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True  Editor’s note: it is TBD to whether reuse the ThresholdInfo data type defined in 28.622. |
| reportingMethod | It indicates the reporting method of the analytics output selected by the MnS consumer.  allowedValues: File, Streaming, Notification.  Editor’s note: the detailed solution for Notification based solution is FFS. | type: Enum  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| analyticsScope | It indicates the scope of the analytics requested by the MnS consumer. | type: AnalyticsScopeType  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| managedEntitiesScope | It indicates the scope of the analytics by the DNs of the managed entities.  It carries the DN(s) of SubNetwork MOI(s), ManagedElement MOI(s), and/or the MOI(s) of the derivative IOCs of ManagedFunction (see TS 28.622 [19]).  For each MOI provided by this attribute, the MOI itself and all of its subordinated MOIs are in the scope of analytics. | type: DN  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| areaScope | It indicates the scope of the analytics by the geographical area information. | type: GeoArea (see TS 28.622)  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| startTime | It indicates the start time of the analytics requested by the MnS consumer. | type: DateTime (see TS 32.156 [18])  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| stopTime | It indicates the stop time of the analytics requested by the MnS consumer. | type: DateTime (see TS 32.156 [18])  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| MDAReportID | It indicates the identifier for the MDAReport | type: string  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| mdaOutputList | It indicates a list of output results related to particular MDA type. | type: mdaOutputEntry  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| analyticsWindow | It indicates the time duration related to MDA output. It can be in the past, when the analytics is statistics, or in the future for a prediction. | type: TimeWindow  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
|  |  |  |
|  |  |  |
| mdaOutputIEValue | It indicates the MDA output result that can be numeric or non-numeric | The type for the corresponding mdaOutputIEName as defined in clause 8 |
| confidenceDegree | A probability range that contains the degree of accuracy of the analytics output statistics or prediction. | type:Real  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |

### 9.5.2 Constraints

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| --- | --- | --- |
| Name | Affected attribute(s) | Definition |
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| **End of Modified Section** |