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# Scope

## Purpose of this Document

This document contains description of the core service TACTICS\_Metadata\_Handling\_Service. It is part of the Deliverable D2.1.3-1, “Core Service Definition” [TACTICS D2.1.3-1].

# Service Data Sheet

Second Iteration

## Interface Model

### Service Name

TACTICS\_Metadata\_Handling\_Service

### C3 Taxonomy Classification

| **Service Area**  **(Level 2)** | **Service Group**  **(Level 3)** | **Service Category**  **(Level 4)** | **Service Class**  **(Level 5)** | **TSI Service** |
| --- | --- | --- | --- | --- |
| Core Services | SOA Platform Services | Information Platform Services | Metadata Repository Services | **TACTICS Metadata Handling Service** |

## Service Description

The main purpose of the Metadata Handling service is to store, share and act on metadata. The former functionality (i.e. Store Metadata) is able to store information about available TSI node components like e.g. user facing services, networks, core services, whole system configuration, deployment details, topics definition, etc. Second functionality (i.e. Share Metadata) is responsible for sharing information about capabilities of services and other TSI node components with respect to current operation mode. Finally, the latter functionality (i.e. Act on Metadata) is able to read metadata in on-demand manner and perform determined decisions basing on them. The whole functionality breakdown of the Metadata Handling service is depicted in Figure 1.

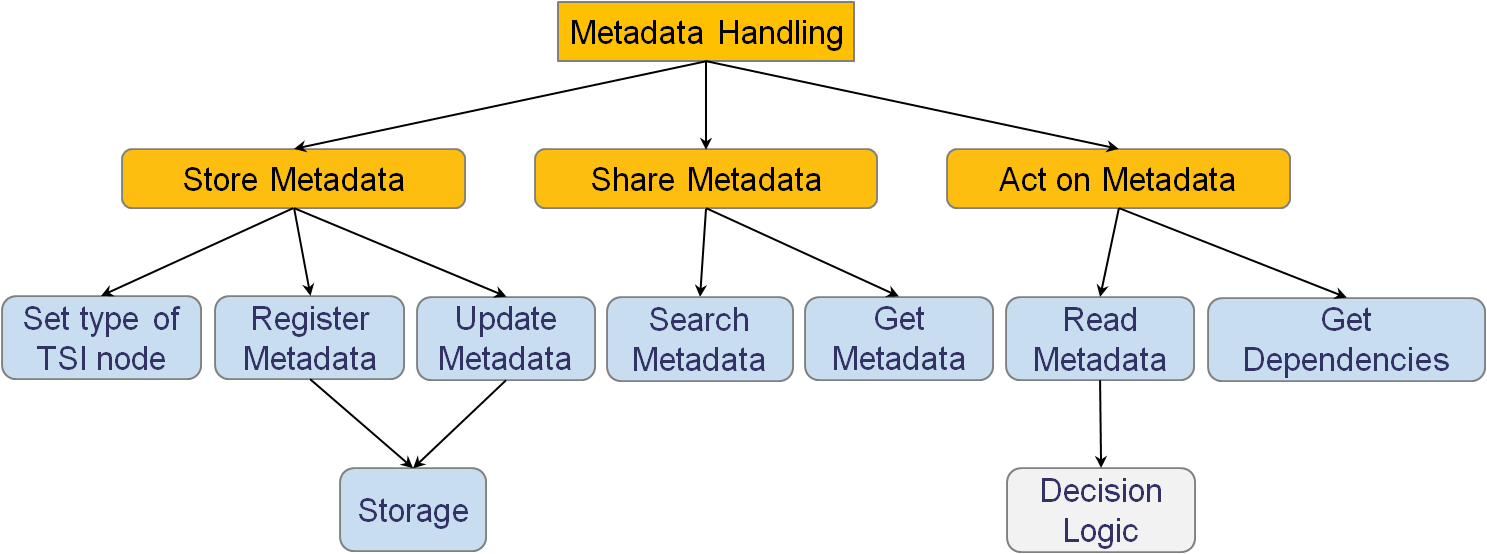


Figure 1: Metadata Handling service functionality breakdown

## Stakeholders

### Consumers

Every TSI participant.

### Responsibility

ITTI is responsible for designing the service interface.

## Requirements & Deployment

Covered requirements [TACTICS D1.1-3]:

* DEV-10 — The TSI is able to run the minimum set of core services on end devices with limited processing and memory capacity with the following minimum configuration: Laptop PCs (CPU: Intel Dual Core SU9303, 1.2GHz, 4GB; HDD: 160GB); Tablet PCs (CPU: ATOM Dual Core, 1.6GHz, 2GB; HDD: 16GB);
* ARC-20 — Local service repositories enable pre-configuration with service types, policies and providers;
* ARC-21 — Requested service descriptions and policies which are unknown by the time the mission starts are added dynamically when bandwidth- and other limitations allow;
* CON-10 — The TSI provides the capability to define / import new services based on their technical description (i.e. at the mission planning phase);
* COR-10 — The TSI provides core services, among them at least service discovery, (local) service registry, messaging, and security services;
* CRO-20 — The adopted cross-layer solutions are adapted according to the capabilities of the tactical devices;
* MET-10 — The TSI provides a service infrastructure layer supporting technical service definition based on standard service definition formats (at minimum XSD and WSDL should be supported);
* MET-50 — Semantic description of services is specified in the form of a common ontology for the TSI;
* QOS-130 — The TSI provides means for (re-)configuring the "service quality" (i.e. the quality of information provided, not the quality of the communication, e.g. the resolution of an image from a sensor) based on certain criteria (e.g. expected bandwidth or a priority of the invoker of the service);
* SEC-010 — A principal does not disclose information to unauthorised entities allowing the deduction of the state of the principal;
* SEC-020 — The principal does not relinquish control (possession) of the protected attribute;
* SEC-030 — Non-existence of information flows that may have been subject to modification by entities at different levels of integrity than the originating principal;
* SEC-060 — The ability of only authorised principals to interpret data;
* SQM-20 — The SOA Service Quality management process captures and delivers a service's key performance indicators (KPI) based on service type, network status and information about the service producer and consumer capabilities;
* SQM-40 — The TSI supports management of SLSs tailored to the TSI capabilities for the set of services offered.

A local Metadata Handling service should be deployed on every TSI node. We do not foresee any limitations for this service in terms of e.g. type of TSI node or device used.

## Information Model

### Standards

The Metadata Handling service will be implemented as a web service. Its interfaces will be described using WSDL.

### Supported metadata types

The Metadata Handling will provide and store the following types of metadata:

* User metadata – information about user of particular tactics node including information about its mission type,
* Device metadata – information about device which is connected using TSI (e.g. handheld, laptop etc) detail according to format described in D2.1.4-1
* Network metadata – information about quality of the network described using model specified in D2.1.4-1
* Service metadata – description of service in WSDL (or other service description language) with additional fields defined in D.2.1.4-1

Furthermore, the Metadata Handling will store the dependencies between services and other metadata structures in the form of ontology which will enable the possibility to provide this information to other components.

### Inputs & Outputs

#### setTSINodeMode(TSINodeType)

|  |  |
| --- | --- |
| Input | Output |
| TSINodeType : enumeration (possible values: TN-D, TN-M, TN-C, TN-H) | boolean |

**setTSINodeMode**(TSINodeType) method sets the mode in which TSI node operates e.g. DeployableHQ, Vehicle or Dismounted. This method should be called by the TSI node when the operation mode is changed.

#### registerMetadataObject(TypeOfObject,MetadataObject)

|  |  |
| --- | --- |
| Input | Output |
| TypeOfObject : enumeration (possible values: Device, UserMission, Service, Network, Topic, Rule)  MetadataObject : MetadataObject (possible subtypes: Device, UserMission, Service, Network, Topic, Rule) | boolean |

**registerMetadataObject**(TypeOfObject,MetadataObject) method stores metadata about some object which type could be: user facing service, network, core service, whole system configuration, deployment details, topic definition etc. This method should be executed when a new object with associated metadata has been discovered. Method could be also represented as the set of methods like:

* registerTopicMetadata(TopicMetadata),
* registerUserFacingServiceMetadata(UserFacingServiceMetadata),
* registerNetworkMetadata(NetworkMetadata),
* etc.

#### updateMetadataObject(TypeOfObject,MetadataObject)

|  |  |
| --- | --- |
| Input | Output |
| TypeOfObject : enumeration (possible values: Device, UserMission, Service, Network, Topic, Rule)  MetadataObject : MetadataObject (possible subtypes: Device, UserMission, Service, Network, Topic, Rule) | boolean |

**updateMetadataObject**(TypeOfObject,MetadataObject) method refreshes the collected metadata object and check whether components represented by them are still available. This method should be called by the TSI node when it could be anticipated that metadata stored in the TSI is no longer current and should be refreshed by calling each element represented by MetadataObject.

#### searchMetadata(TypeOfObject,Query)

|  |  |
| --- | --- |
| Input | Output |
| TypeOfObject : enumeration (possible values: Device, UserMission, Service, Network, Topic, Rule)  Query : string | MetadataObject : MetadataObject (possible subtypes: Device, UserMission, Service, Network, Topic, Rule) |

**searchMetadata**(TypeOfObject,Query) method searches for metadata objects which satisfy the given Query (e.g. search for BFT service having response time less than 500ms). This method should be used to discover metadata that describe components/services/networks etc. that are needed by other TSI node components.

#### getMetadata(ObjectId)

|  |  |
| --- | --- |
| Input | Output |
| ObjectId : uniqueId | MetadataObject : MetadataObject (possible subtypes: Device, UserMission, Service, Network, Topic, Rule) |

**getMetadata**(ObjectId) method gets metadata about particular object specific for the current TSI operation mode. This method should be called to get the configuration and description of particular component on the base of its name.

#### readMetadata(ObjectId)

|  |  |
| --- | --- |
| Input | Output |
| ObjectId : uniqueId | MetadataObject : MetadataObject (possible subtypes: Device, UserMission, Service, Network, Topic, Rule) |

**readMetadata**(ObjectId) method reads metadata in on-demand manner and perform determined decisions basing on them. This method should be called to get the suggestion whether the particular object could be used (fulfill its requirement on the base of knowledge stored by metadata handler or not). Method could be also used to get the appropriate version of particular service by sending the service identifier.

#### getDependencies(ObjectId)

|  |  |
| --- | --- |
| Input | Output |
| ObjectId : uniqueId | DependenciesList : List |

**getDependencies**(ObjectId) method returns a list of services on which the particular service depends and which could use it. This method should be called to establish what kind of services are not used and can be terminated.

## Behaviour Model

### Interaction Patterns

The Metadata Handling service interacts with most of other core services in the TSI. For example it can interact with:

* Service Mediator by providing the information about services and their capabilities;
* QoS Handler by providing the information about services and their degraded version with appropriate QoS parameters;
* Service Registry by getting data from and pushing data to Service Registry;
* Contextual Monitoring by getting general contextual information in order to provide information about suggested version of service;
* Policy Management by providing data to the Policy Management.

## Schedule

Final iteration service description: June 2016

WSDL definition: November 2015

Implementation: May 2016

References

[TACTICS D1.1-3] TACTICS CONSORTIUM, Functional and non-functional requirements and constraints for TSI, Version 1.0, on behalf of the European Defence Agency (EDA), 12th February 2015

[TACTICS D2.1.3-1] TACTICS Consortium, Core service definition, Version 1.0, on behalf of the European Defence Agency (EDA), 9th September 2015

List of Abbreviations

This chapter contains a document-specific list of abbreviations.

| **Abbreviation** | **Explanation** |
| --- | --- |
| A |  |
|  |  |
| BFT | Blue Force Tracking |
|  |  |
| C |  |
|  |  |
| D |  |
|  |  |
| E |  |
|  |  |
| F |  |
|  |  |
| G |  |
|  |  |
| HQ | Headquarters |
|  |  |
| I |  |
|  |  |
| J |  |
|  |  |
| KPI | Key Performance Indicator |
|  |  |
| L |  |
|  |  |
| M |  |
|  |  |
| NATO | North Atlantic Treaty Organization |
| NMRR | NATO Metadata Registry and Repository |
|  |  |
| O |  |
|  |  |
| PC | Personal Computer |
|  |  |
| QoS | Quality of Service |
|  |  |
| R |  |
|  |  |
| SLS | Service Level Specification |
| SOA | Service Oriented Architecture |
|  |  |
| TACTICS | TACTICal Service-oriented architecture |
| TSI | Tactical Service Infrastructure |
|  |  |
| U |  |
|  |  |
| V |  |
|  |  |
| WSDL | Web Service Description Language |
|  |  |
| XSD | XML Schema Definition |
|  |  |
| Y |  |
|  |  |
| Z |  |
|  |  |

Table 1 List of Abbreviations