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| Input contributionUse case |
| Use Case Title:\* | Use cases for semantic control based on automatic ontology mapping  |
| Group Name:\* | TP#36 |
| Source:\* | Huawei, China Mobile |
| Contact: | Feng ZHANG (zhangfeng49@huawei.com)Yongjing Zhang (zhangyongjing@huawei.com)  |
| Date:\* | 2018-07-04 |
| Abstract:\* | Propose to add the use case illustrates that oneM2M system can support effective and precise command control in multi-ontologies scenarios based on automatic ontology mapping. |
| Agenda Item:\* |  |
| Work item(s): | WI 0015 - oneM2M Use Case Continuation |
| Document(s) Impacted\* | Technical Specification TR 0001 - oneM2M Use Case Technical Report |
| Intended purpose ofdocument:\* | [x]  Decision[ ]  Discussion[ ]  Information[ ]  Other <specify> |
| Decision requested or recommendation:\* | Approval of the Use Case |

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* 1. **Title**

Use cases for semantic control based on automatic ontology mapping.

* 1. **Description**

Semantic descriptions in the oneM2M system can be annotated in heterogeneous ontologies given the data and knowledge can be generated from different domains and stakeholders. In many cases, heterogeneous ontologies may have common/similar concepts that are mappable (linked) between each other. Such mapping relationship is useful to get a more effective and precise command of semantic control

Automatic ontology mapping (described in clause xxx) is to find the mapping relationships between different ontologies to reuse ontologies.

After completing the automatic ontology mapping, the semantic control process can leverage the mapping knowledge to generate a more complete and effective command to perform a more precise control

* 1. **Source**

Huawei

* 1. **Actors**
* Application: the user who wants to realize semantic control in heterogeneous ontologies.
* oneM2M Platform: an oneM2M CSE that supports semantic control based on ontology mapping.
	1. **Pre-conditions**
* The oneM2M System stores semantic description of resources annotated in different ontologies (e.g. A & B).
* The ontology mapping results are saved and managed in the oneM2M System as a resource.
	1. **Triggers**
* The application issues a semantic control request to the oneM2M platform indicating the use of automatic ontology mapping.
	1. **Normal Flow**

 The normal message flow is described as follows:

Application

Platform

1. request semantic control using ontology B

3. determine equivalent control command in ontology A

2 retrieve mapping results of ontology A and ontology B

Device A based on ontology A

Device B based on ontology B

4. send an equivalent control command in ontology A

5. send a control command in ontology B

6. return successful response

**Figure 1: Message flow for semantic control based on automatic ontology mapping operation**

1. An application sends a semantic control request to the oneM2M platform for controlling different devices (device A and device B) that are described based on different ontologies (ontology A and ontology B respectively), while the semantic control request contains a control command based on ontology B.
2. After receiving the semantic control request, the platform (e.g. IN-CSE) first retrieves the mapping results of ontology A and ontology B.
3. The oneM2M platform then can determine an equivalent control command described in ontology A for device A according to the ontology mapping results;

4. The platform sends the equivalent control command in ontology A to device A;

5. The platform sends the original control command in ontology B to device B;

6. The platform returns a successful response to the application.

* 1. **Post-conditions** (if any)
* NONE.
	1. **High Level Illustration (**as applicable)
* NONE.
	1. **Potential requirements (as applicable)**

The oneM2M system shall support semantic control of devices described in heterogeneous ontologies based on automatic ontology mapping.