

# Corridor - openHAB

## Corridor

XML

<?xml version="1.0" encoding="UTF-8"?>

<items>

<item>

<type>NumberItem</type>

<name>PresenceSensor</name>

<state>0</state>

<link>/presencesensor1</link>

</item>

<item>

<type>SwitchItem</type>

<name>SmartBulb</name>

<state>Off</state>

<link>/smartbulb1</link>

</item>

</items>

JSON-LD

{

"@context": "http://lab.wot-rdf.org/jsonld/context/building",

"@id": "http://lab.wot-rdf.org/jsonld/corridor1/",

"items": {

"item": [{

"type": "NumberItem",

"name": "PresenceSensor",

"state": "0",

"link": "/presencesensor1"

}, {

"type": "SwitchItem",

"name": "SmartBulb",

"state": "Off",

"link": "/smartbulb1"

}]

}

}

## Presence Sensor

XML

<?xml version="1.0" encoding="UTF-8"?>

<item>

<type>NumberItem</type>

<name>PresenceSensor</name>

<state>0</state>

<link>/</link>

</item>

JSON-LD

{

"@context": "http://lab.wot-rdf.org/jsonld/context/building",

"@id": "http://lab.wot-rdf.org/jsonld/corridor1/presencesensor1/",

"item": {

"type": "NumberItem",

"name": "PresenceSensor",

"state": "0",

"link": "/"

}

}

## Smart Bulb

XML

<?xml version="1.0" encoding="UTF-8"?>

<item>

<type>SwitchItem</type>

<name>SmartBulb</name>

<state>Off</state>

<link>/</link>

</item>

JSON-LD

{

"@context": "http://lab.wot-rdf.org/jsonld/context/building",

"@id": "http://lab.wot-rdf.org/jsonld/corridor1/smartbulb1/",

"item": {

"type": "SwitchItem",

"name": "SmartBulb",

"state": "Off",

"link": "/"

}

}

# Room - FIWARE

## Room

{

"@context": "http://lab.wot-rdf.org/jsonld/context/building",

"@id": "http://lab.wot-rdf.org/jsonld/room1/",

"type": "Room",

"id": "room1",

"location": {

"value": "45.2098, 5.7945",

"type": "Point",

"metadata": {

"accuracy": {

"type": null,

"value": 0.0001

},

"contains": {

"value": "/door1",

"type": "URL"

},

"acutator": {

"value": "/dooractuator1",

"type": "URL"

},

"sensor": {

"value": "/presencesensor1",

"type": "URL"

}

}

}

}

## Door

{

"@context": "http://lab.wot-rdf.org/jsonld/context/building",

"@id": "http://lab.wot-rdf.org/jsonld/room1/door1",

"type": "Door",

"id": "door1",

"state": {

"value": "closed",

"type": null,

"metadata": {

"acutator": {

"value": "../dooractuator1",

"type": "URL"

}

}

}

}

## DoorActuator

{

"@context": "http://lab.wot-rdf.org/jsonld/context/building",

"@id": "http://lab.wot-rdf.org/jsonld/room1/dooractuator1",

"type": "DoorAcutator",

"id": "dooracuator1",

"commmand": {

"value": "open",

"type": "Command"

}

}

## PresenceSensor

URI:

{

"@context": "http://lab.wot-rdf.org/jsonld/context/building",

"@id": "http://lab.wot-rdf.org/jsonld/room1/presencesensor1",

"type": "PresenceSensor",

"id": "presencesensor1",

"state": {

"value": "1",

"type": "State"

}

}

# Thermostat - Netatmo

{

"@context": "http://lab.wot-rdf.org/jsonld/context/ building",

"@id": "http://lab.wot-rdf.org/jsonld/thermostat1",

"status": "ok",

"body": {

"temperature": 21.7,

"unit": "Celsius"

},

"module\_name": "Inside",

"rf\_status": 161

}

# Context

## Composition

URI: http://lab.wot-rdf.org/jsonld/context/ building

{

"@context": [

"http://lab.wot-rdf.org/jsonld/context/GenericIoTContext",

"http://lab.wot-rdf.org/jsonld/context/SmartHomeContext",

"http://lab.wot-rdf.org/jsonld/context/NetatmoContext"

]

}

## Generic IoT

URI: http://lab.wot-rdf.org/jsonld/context/GenericIoTContext

{

"@context": {

"cd": " http://lab.wot-rdf.org/CrossDomain#",

"schema": "https://schema.org/",

"mexperf": "http://mex.aksw.org/mex-perf#",

"item": "cd:hasDevice",

"status": "cd:hasOperationState",

"body": "cd:hasOutput",

"unit": "cd:concerns",

"location": "cd:hasLocation",

"commmand": "cd:hasCommand",

"metadata": "cd:canHaveMetadata",

"accuracy": "mexperf:accuracy",

"contains": "cd:contains",

"sensor": "cd:hasSensor",

"actuator": "cd:hasActuator",

"state": "cd:hasState",

"id": "cd:hasId",

"type": "@type",

"value": "@value",

"URL": "schema:URL"

}

}

## Smart Home

URI: http://lab.wot-rdf.org/jsonld/context/SmartHomeContext

{

"@context": {

"saref": "http://ontology.tno.nl/saref#",

"dogont": "http://ontology.tno.nl/saref#",

"biopax": "http://www.biopax.org/release/biopax-level3.owl#",

"floor": "dogont:hasFloor",

"temperature": {

"@id": " biopax:temperature",

"@type": "saref:Temperature"

}

}

}

## Netatmo Context

URI: " http://lab.wot-rdf.org/jsonld/context/NetatmoContext"

{

"@context": {

"schema": "http://schema.org/",

"m2m": "http://www.onem2m.org/ontology/Base\_Ontology/",

"module\_name": "m2m:isPartOf",

"rf\_status": "netatmo:radioStatus"

}

}

# Documentation for Github

## 1. Introduction

Here we present JSON-LD descriptions of IoT entities from three IoT infrastructures, e.g., FIWARE, openHAB, and Netatmo, as illustrated in Figure 1.

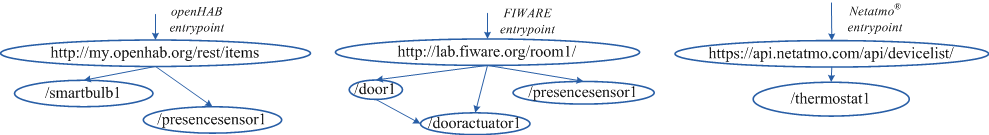


Figure 1. IoT REST Interfaces

We provide native XML/JSON descriptions about entities/devices from three IoT infrastructures. We also provide the semantically enriched descriptions by use of JSON-LD.

Furthermore, we define a Cross Domain Ontology by extending OneM2M base ontology to define common concepts (e.g., thing vs device, location, time, name, attribute) shared by all sub domains of IoT, which is used in our JSON-LD descriptions.

Figure 2 illustrates a RDF graph showing how the entities from the three IoT infrastructures can potentially be linked through semantics.



Figure 2. RDF graph