oneM2M Showcase demos

Presented by Laurent Velez for ETSI IoT/M2M Workshop 2016

INTRODUCTION

- The ETSI M2M Workshop provides an ideal opportunity to demonstrate the progress in the development of products based on oneM2M standards.
- We are at the point where oneM2M standards are mature.
- Maturity has been proven at 2 interop test events
- The release 2 has been published in August. oneM2M work is progressing well, focusing on the release 3.
- This is an excellent moment to examine where we are with interoperability of products based on oneM2M standards. This workshop provides a state-of-the-art of oneM2M products as well as the level of adoption of agreed specifications and standards.

APPLICATION DOMAINS

- The 10 demos cover a cross section of the application domains such as:
  - Smart City
  - Smart living
  - eHealth
  - Smart Metering
  - Energy Efficiency
  - Home automation

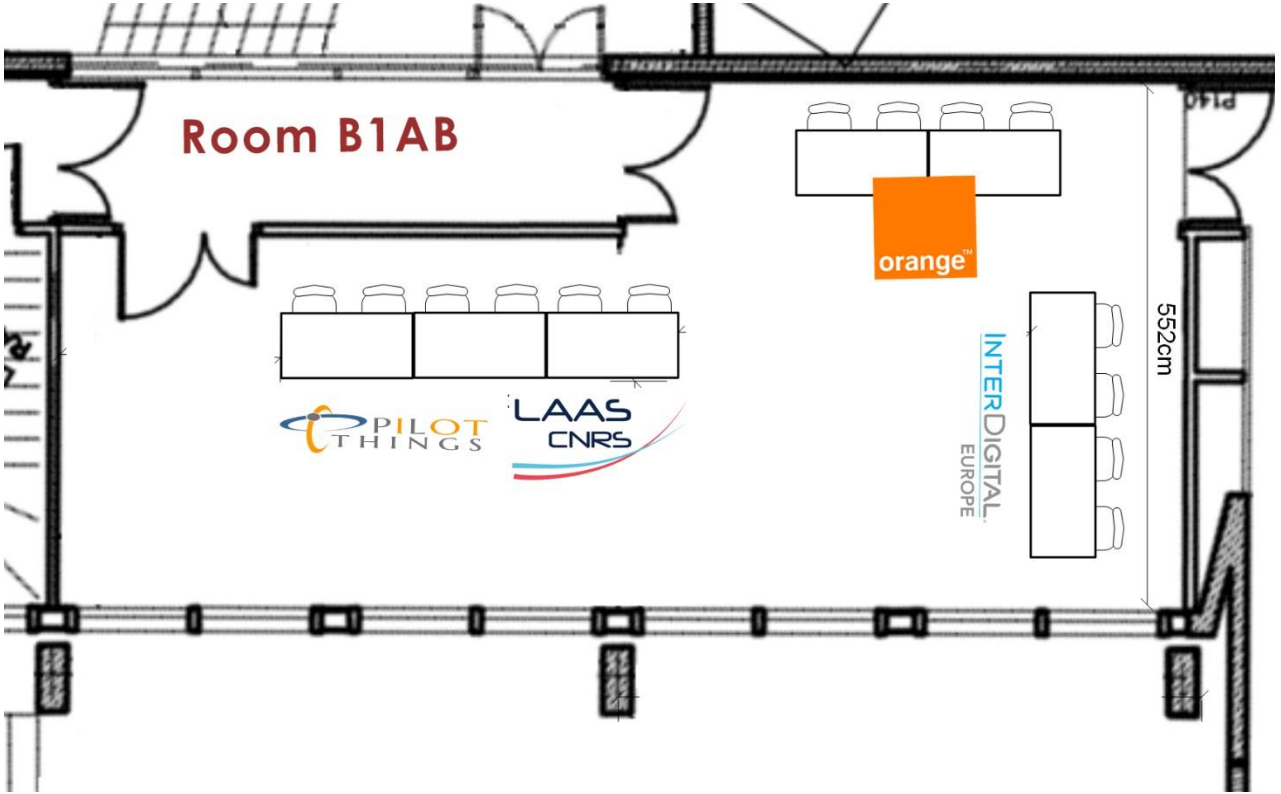
- ETSI has encouraged the candidate demos that show:
  - The release 2 new features: Semantic, Interworking, Security improvements
  - Multi service provider and multi company demos.

DEMO LIST

- **Closing the end-user vs city value chain:** InterDigital
- **Co-existence of LoRa Alliance and 3GPP Technologies for IoT/M2M:** Actility
- **C-DOT: Smart Living, Smart Street Light, Carbon footprint Monitoring:** Centre for Development of Telematics (C-DOT)
- **Digital Health and IoT - challenges and opportunities for oneM2M based solutions:** Sierra Wireless, ConneXM
- **Semantic based interworking and self-adaptation in smart cities:** Easy Global Market, NEC Europe, Sejong university, KETI, University of Cantabria, Com4Innov
- **China-Korea international cross domain interworking with oneM2M over NB-IoT:** Huawei Technologies and KETI (Korea Electronics Technology Institute)
- **Power-IoT network H: Vehicle Data Collection Network:** KEPCO (Korea Electric Power Corporation)
- **Abstraction and Identity Management in an open IoT ecosystem – A first implementation of SDT (Smart Device Template) :** Orange
- **oneM2M, IBM Watson IoT and Smart Appliances:** IBM, Sensinov
- **Open platform for semantic management of smart city based on OM2M :**LAAS-CNRS, SRC solution, Objenious, City of Bordeaux

ROOM B2B3

ROOM B1AB

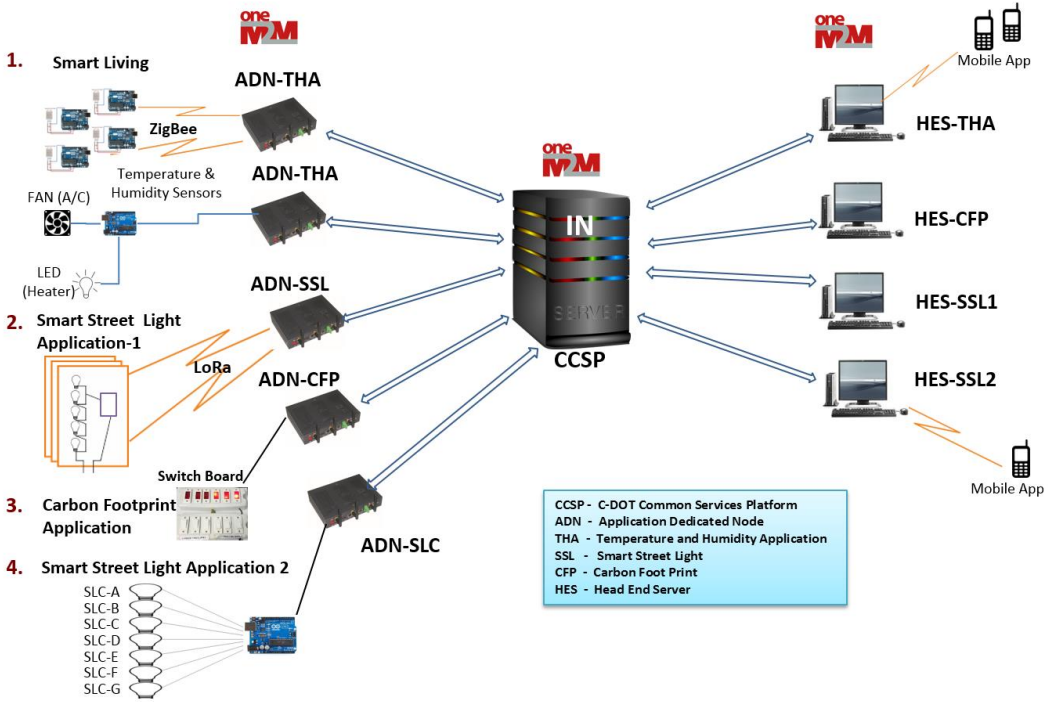


C-DOT: SMART LIVING, SMART STREET LIGHT, CARBON FOOTPRINT MONITORING

- Partner: C-DOT (Centre for Development of Telematics)
- The demonstration is showing Smart Living (Temperature and Humidity sensing, monitoring and controlling), Smart Street Light, Carbon Footprint Monitoring applications in a Smart City, highlighting the benefits of oneM2M standards based CCSP (C-DOT Common Service Platform).
- Also , demonstrated is the M2M Service Provider Portal for Service Subscription Profile and Subscriber creation. Resource Tree Viewer is also available through this portal.

C-DOT: SMART LIVING, SMART STREET LIGHT, CARBON FOOTPRINT MONITORING

Smart Living, Smart Street Light, Carbon footprint Monitoring
using various M2M Area Network Interfaces

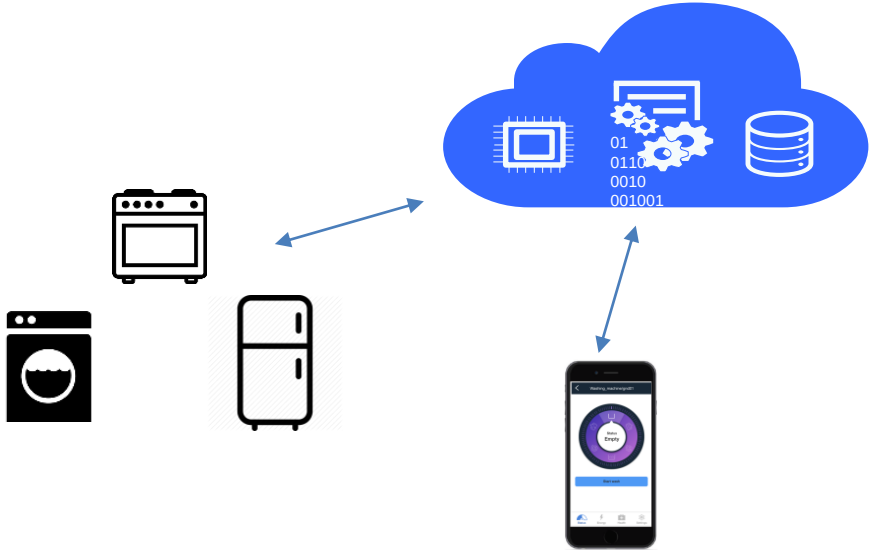


ONEM2M, IBM WATSON IOT AND SMART APPLIANCES

- Partners: IBM, Sensinov
- The demonstration proposes an example of IoT in action, allowing remote control of Smart Appliances and collecting data from then which can be used to generate insight, improve product quality and develop close customer engagement. The demonstration features a oneM2M implementation and show interoperation between IoT platforms from the two exhibitors.
- This demonstration shows how Sensinov's oneM2M implementation can be used in combination with the IBM Watson IoT Platform, to capture and analyze IoT data from smart appliances in real-time to generate insights and recommend actions.

ONEM2M, IBM WATSON IOT AND SMART APPLIANCES

Smart Appliance Scenario



Manufacturer

How can I get a closer relationship with my customers?

What features do they use the most?

How can I reduce my maintenance / warranty costs?

How can I sell additional consumables?

User

I would like to control my appliance remotely

I would like to save energy and running costs

I would like the service engineer to have the right parts

ONEM2M, IBM WATSON IOT AND SMART APPLIANCES

Demonstration components

BLE

Zigbee

Enocean

Zwave

LORA

sensinov
Global IoT Platform

- Device Management & Abstraction
- Device Interworking
- Data Collection & Integration
- Security & Privacy
- Integration & Vertical services
- Administration & Dashboards

IBM Watson

one M2M

IoT Industry Solutions | Third Party Apps

IBM Watson IoT Platform

Analytics
Predictive
Cognitive
Real-time
Edge

Risk Management
Proactive Protection
Anomaly Detection
Blockchain
Firmware Updates

Connect
Attach: MQTT, HTTPS
Collect & Organize
Device Management
Secure Connectivity
Visualization

Information Management
Storage & Archive
Metadata Management
Reporting
Parsing and Transformation
Manage Unstructured Data

Bluemix Open Standards Based Services
Full Development Lifecycle
DevOps Services
IBM Security

openstack docker CLOUD FOUNDRY

Flexible Deployment

Visualize

Store

Control

Alert

Analyze

Develop

CHINA-KOREA INTERNATIONAL CROSS DOMAIN INTERWORKING WITH ONEM2M OVER NB-IOT

- Partners: Huawei Technologies Co., Ltd, KETI (Korea Electronics Technology Institute)
- The demo shows the benefit of a horizontal platform based on standard
- To the south bound:
  - Enhanced interworking to connect as many devices as possible
  - oneM2M devices, but also devices of other protocols even proprietary devices
  - it is demonstrated the technology of agent based interworking , OSGi interworking and NB-IoT interworking
- To the north bound:
  - easy and uniformed ecosystem to attract application developers to use oneM2M defined interfaces.
  - Environment where developers could easily develop and deploy their own customized IoT applications to be used on any oneM2M platform.
  - the technology of service orchestration based on oneM2M.

CHINA-KOREA INTERNATIONAL CROSS DOMAIN INTERWORKING WITH ONEM2M OVER NB-IOT

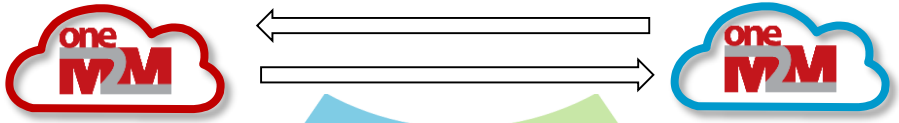
ETSI World Class Standards

HUAWEI

- Drag and drop style IDE for IoT Application based on oneM2M standard
- Lower the barrier for customized IoT application development

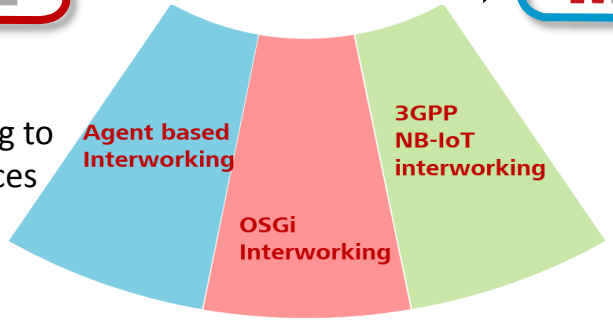
KETI Korea Electronics Technology Institute

Huawei OceanConnect Cloud IoT Platform



KETI Mobius Open Source IoT Platform

Enhanced interworking to connect as many devices as possible

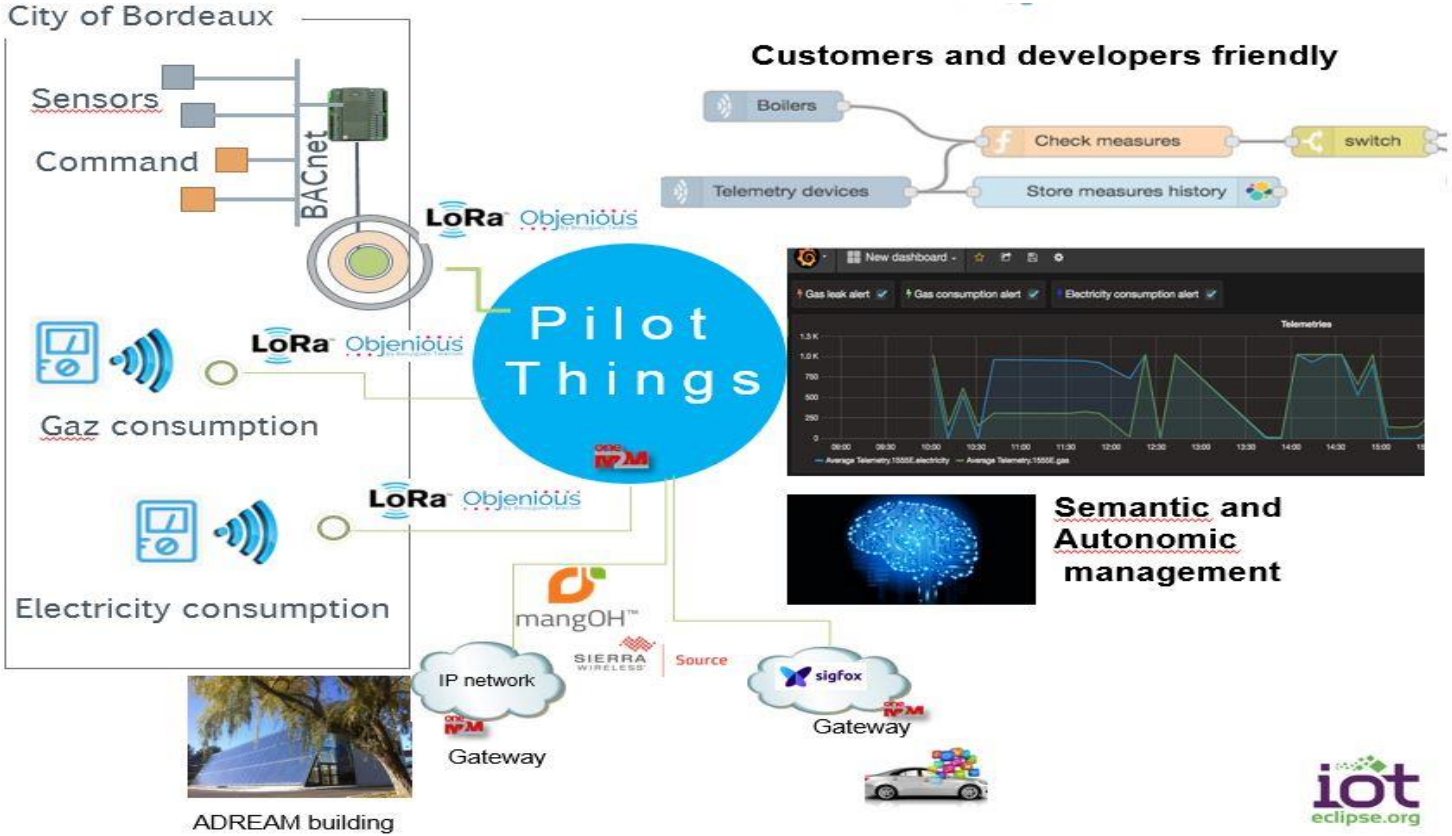


OPEN PLATFORM FOR SEMANTIC MANAGEMENT OF SMART CITY BASED ON ECLIPSE OM2M

- Partners: LAAS-CNRS, SRC solution, Objenious, Bordeaux Métropole
- Demonstration on mockups based on equipments deployed in the city of Bordeaux:
  - *the multi-domains capacity of oneM2M : Dynamic discovery mechanism, dynamic deployment of software services*
  - *control locally or remotely and, sharing sensors and activators for different domains of application in the city will be shown.*
  - *interoperability between several technologies*
  - *Pilot Things a software to centralizes data and manage devices and create a IoT private network*
  - *Intelligent management with autonomic computing service based on semantic capabilities*

© SRC solution

OPEN PLATFORM FOR SEMANTIC MANAGEMENT OF SMART CITY BASED ON ECLIPSE OM2M



ABSTRACTION AND IDENTITY MANAGEMENT IN AN OPEN IOT ECOSYSTEM

- Partners: ORANGE
- Interoperability and right management for a shared IoT, based on a first implementation of SDT ((Smart Device Template)
  SDT is co-worked by Orange and Deutsch Telekom in standards and open source

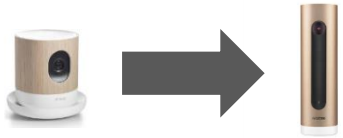
- The demonstration introduces an architecture based on oneM2M standard answering to the IoT challenges:
  - a standardized abstract data model for connected objects based on SDT and TS-0023 specification, plus
  - a homogeneous end-to-end security model and a fine grained access rights' management from the Cloud applications to embedded applications and connected objects.
- The demonstration shows partner applications in Smart Home domain. A user benefits from device abstraction and security model with a simplified experience while substituting two similar connected objects of different technologies with no impact on his applications or while delegating rights to a neighbour who will monitor user's home during his vacation.

ABSTRACTION AND IDENTITY MANAGEMENT IN AN OPEN IOT ECOSYSTEM

Plug&Play of similar objects

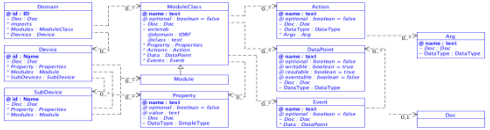
- *Device broken*
- *Device more recent*

I want to change my old one easily whatever the technology



Device Abstraction

- *Modular description of devices (objects) thanks to a common vocabulary*
- *Semantic equivalence*
- *Automatic reconfiguration of applications*



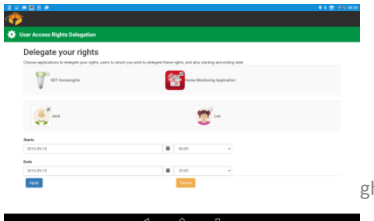
Delegation of (security) rights on objects

- *I leave on vacation and always afraid of burglary*
- *I leave on vacation, who will take care of the garden?*

I can easily be helped by a neighbor by granting rights for a time period

Fine grained right management

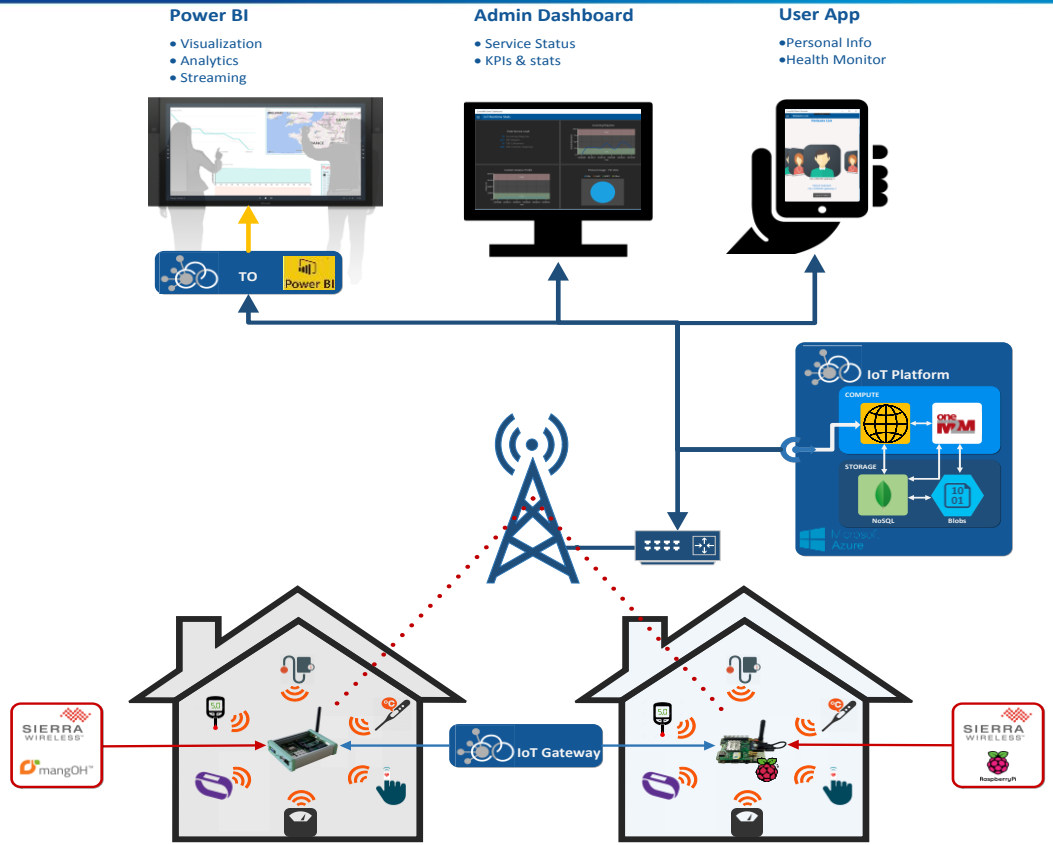
- *Rights on device and application services (e.g. APIs)*
- *Can be scheduled*
- *Granted to users (physical or digital e.g. an application*



DIGITAL HEALTH ONEM2M BASED REMOTE MONITORING IOT PLATFORM DEMO

- Partners: Sierra Wireless, ConneXM
- This collaborative demonstration is related to eHealth and Smart Living.
- a complete end-to-end system for patient remote monitoring, from connected health devices to user app, analytics and visualization.
- The system shows a sophisticated and robust solution, with the core oneM2M infra-structure internally developed interfacing with of the shelf technology and open source software and components.

DIGITAL HEALTH ONEM2M BASED REMOTE MONITORING IOT PLATFORM DEMO



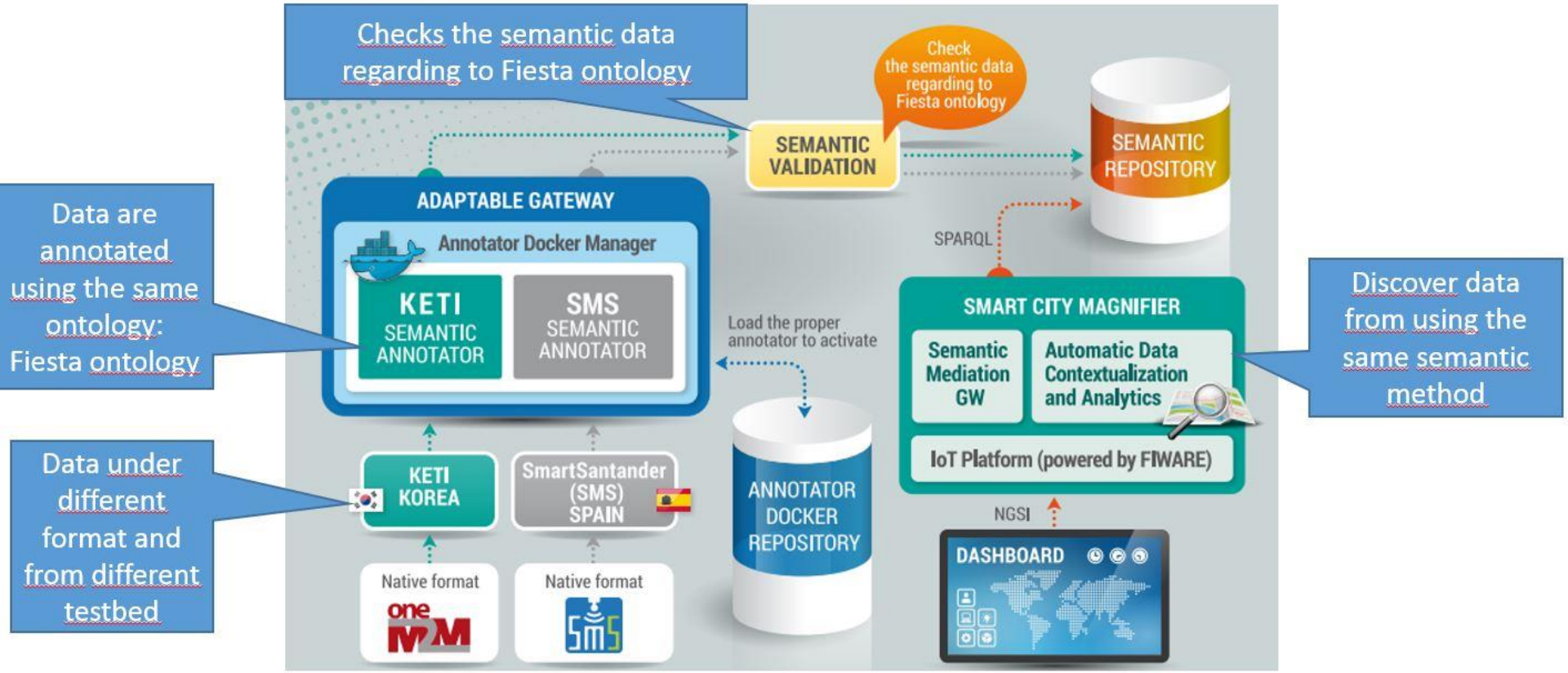
- A oneM2M-compliant Cloud-based Infrastructure Node, provided by ConneXM
- A oneM2M-compliant Middle Nodes, HW provided by Sierra Wireless (MangOH), SW by ConneXM
- A oneM2M-compliant Middle Node, HW provided by Raspberry PI, Cellular connectivity by LinkWave and Sierra Wireless, SW by ConneXM
- A variety of commercial personal health devices, using either the Continua Health framework or Bluetooth Low Energy (BLE)
- A mobile app/Windows app, which is used to monitor/admin the oneM2M infra-structure node
- A mobile app, which implements end user functionality (display and track of vital signs)
- Analytics and visualization framework extracting data from the oneM2M infra-structure based on Microsoft Power-Bi, available both on a PC and mobile

SEMANTIC BASED INTERWORKING AND SELF-ADAPTATION IN SMART CITIES

- Partners: Easy Global Market, NEC Europe, Sejong university, KETI, University of Cantabria, Com4Innov
- it is demonstrated the semantic capabilities introduced in oneM2M release 2, in the context of globally deployed smart-cities.
- 2 cities in different regions providing real data are integrated in the demo: City of Santander and city of Busan.

- The interworking operation is made visible through a visually appealing city dashboard. This core part is completed by a demonstration of a semantic validation approach: semantic interworking requires the use of trusted semantically annotated data which have been validated against their reference ontology.

SEMANTIC BASED INTERWORKING AND SELF-ADAPTATION IN SMART CITIES



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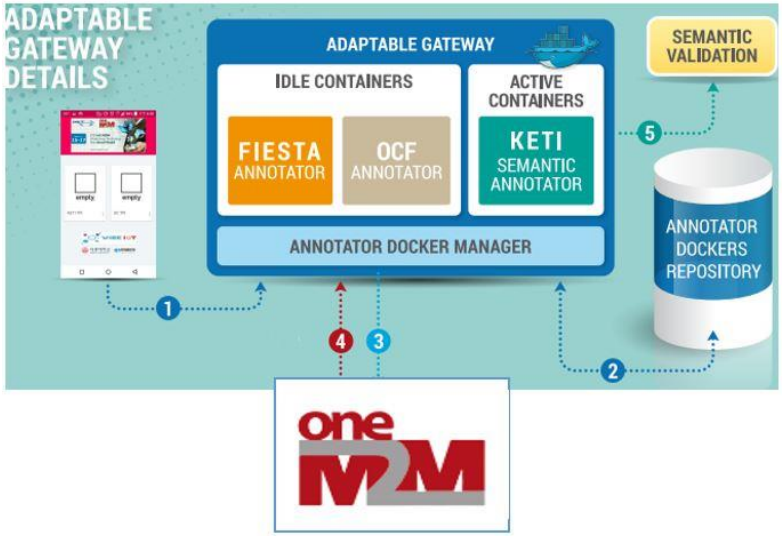
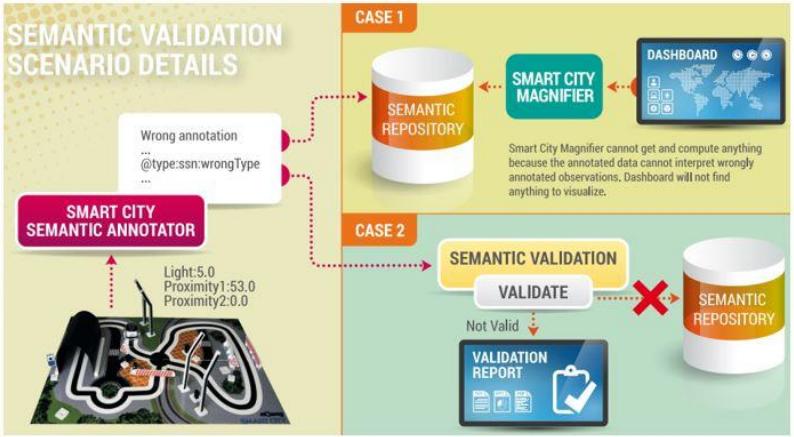


A container transforming oneM2M semantic data into data annotated with FIESTA ontology will be dynamically loaded in the morphing gateway

Wrongly annotated semantic data are not able to be retrieved from the semantic repository. In order to prevent such “rubbish” in the repository, not validated data are stopped by the semantic validator

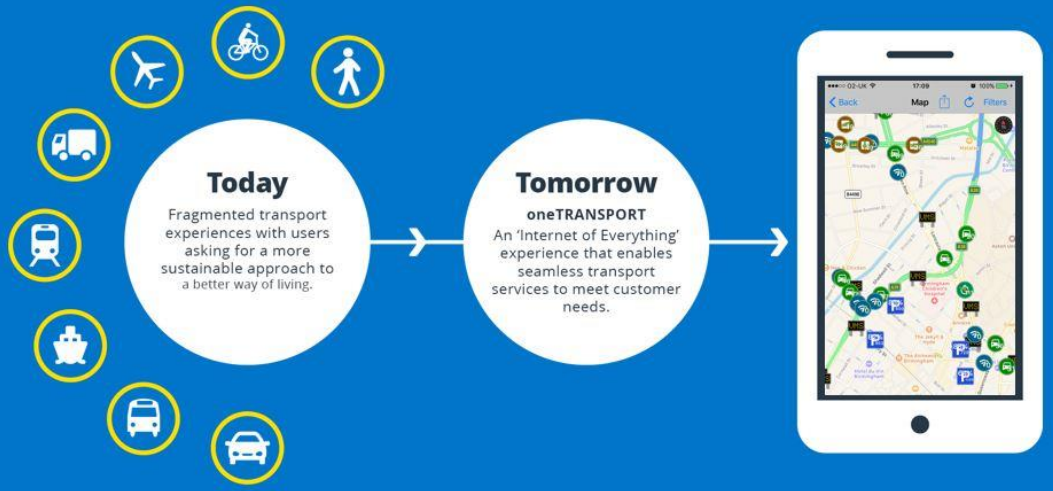


CLOSING THE END-USER VS CITY VALUE CHAIN

- Partners: InterDigital, oneTRANSPORT
- This demo shows how the value chain between the end user and cities can be closed by using oneM2M.
- An open marketplace for data and data services is demonstrated with two connected pre-procurement commercial trials, in which current data and databases are integrated with new sensor deployments to solve transportation problems, enable economies of scale, fast transferability of solutions and better data control by end users in four counties and a large city in the UK.

CLOSING THE END-USER VS CITY VALUE CHAIN

What the user experience looks like now and in the future



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CLOSING THE END-USER VS CITY VALUE CHAIN

What is an Open Marketplace?

- A place to trade data and services
- Combine mature systems with new ideas
- Distributed pipeline of data and revenue – not a monolithic system
- Experiment with new services and new sources of data
- Discover and access data in a controlled way
- Visibility of valuable solutions

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CO-EXISTENCE OF LORA ALLIANCE AND 3GPP TECHNOLOGIES FOR IOT/M2M

- Partners: Actility
- Recent announcements from major Telecom companies have demonstrated the huge interest that Low Power Wide Area networks are currently generating worldwide.
- The demo showcases how one LPWA network can enable dozens of different vertical use cases such as Smart metering, connected buildings, smart parking, asset tracking, real-time customer feedback or even the connected health & wearables. Additional demonstrations include application layer management and how oneM2M is used as a unique tool to enable various use cases.
- In this demo it will be presenting how the LoRa Alliance and 3GPP technologies relate to each other in addressing the needs of IoT/M2M uses cases requiring wide-area coverage, and how they can co-exist for the market and for the operators that would be deploying both types of technologies.

POWER-IOT NETWORK

- Partners: KEPCO (Korea Electric Power Corporation

- KEPCO has established an alliance with electric, electronics and ICT industries and research institutes. This alliance named Smart Power IoT Network (SPIN), aims at creating an open Power-IoT environment to help anyone develop new energy services. It will the open hub for creating a wide range of application services with big data of the electric power industry
- The demo showcases the Energy IoT Platform of the SPIN alliance. The platform consists of three functional areas:
  - As a connectivity platform, it collects data by communicating with various devices and gateways, controls and monitors devices.
  - As a big data platform, it stores, processes, analyzes data collected from devices and provides forecasts. It also uses data from KEPCO's legacy systems (e.g., SCADA, AMI and DAS) and open data from external sources for advanced analysis.
  - As a service development platform, it helps develop services with insight gained through open APIs, LOD, visualization and mash-up functions.

NOW YOUR TURN !!!

- **Opening hours for the oneM2M Showcase exhibition area:**

Tuesday 15 November	09.00 – 18.00
Wednesday 16 November	09.00 – 18:00
Thursday 17 November	09:00 – 16:00

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