



oneM2M Testing activities overview

Laurent Velez, ETSI
Laurent.Velez@etsi.org

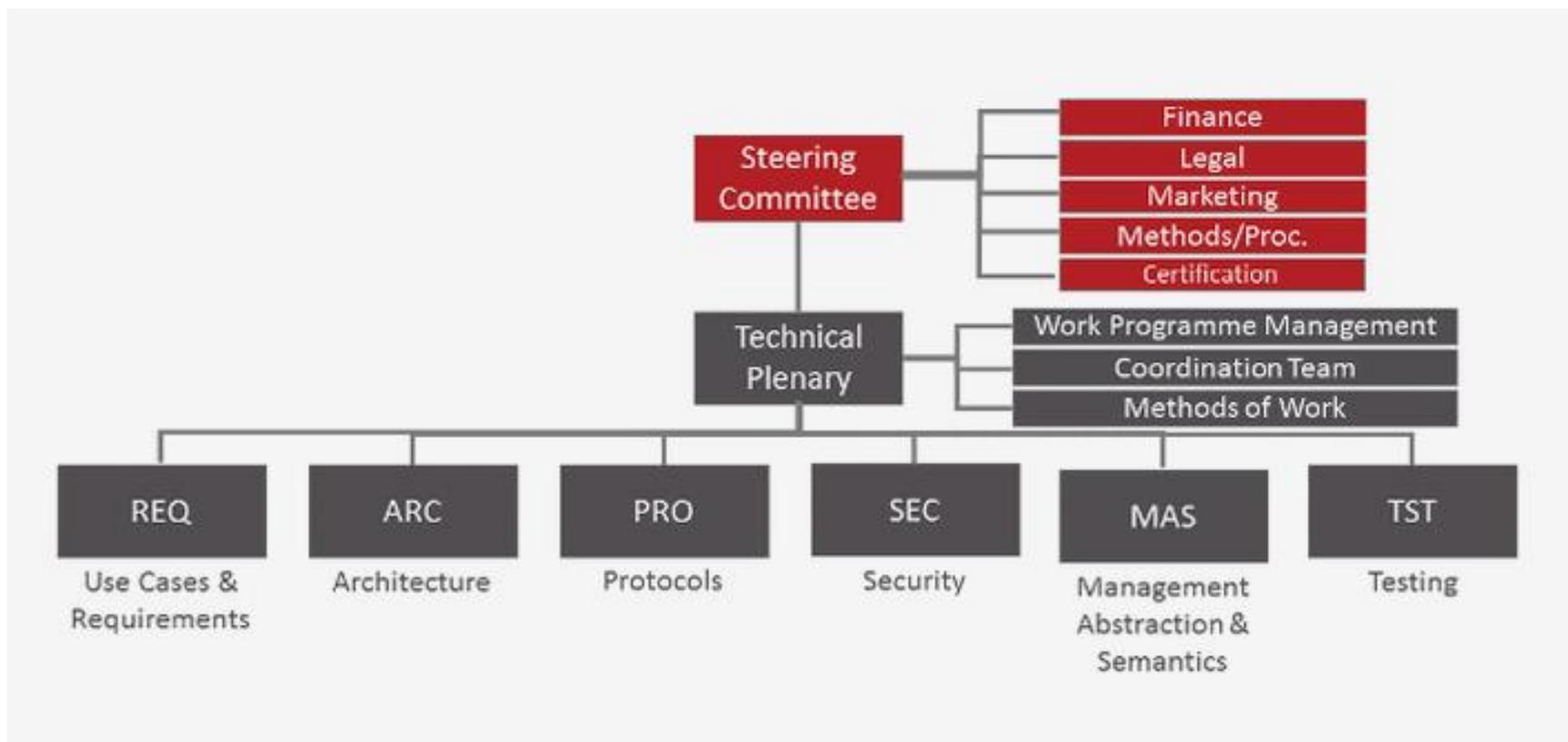
ETSI CTI

ETSI : European Telecommunications Standards Institute

- Non for profit / Member-driven European standards organization setting globally-applicable standards in ICT since 1988
 - From LTE to M2M ...
 - From Radio Regulation to Mobile Edge Computing ...
 - From Digital Broadcasting to Network Functions Virtualisation ...
 - We strive to produce high-quality, relevant and timely standards
 - **CTI Centre for Testing and Interoperability**
 - Dedicated team to support all the ETSI Technical Committees, 3GPP and oneM2M for helping them to develop Test specifications and organizing Interop events (Plugtests)
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Organization

<http://onem2m.org/about-onem2m/organisation-and-structure>



TST Chair: JaeSeung Song, KETI
 Vice Chair: Jason Yin, Huawei

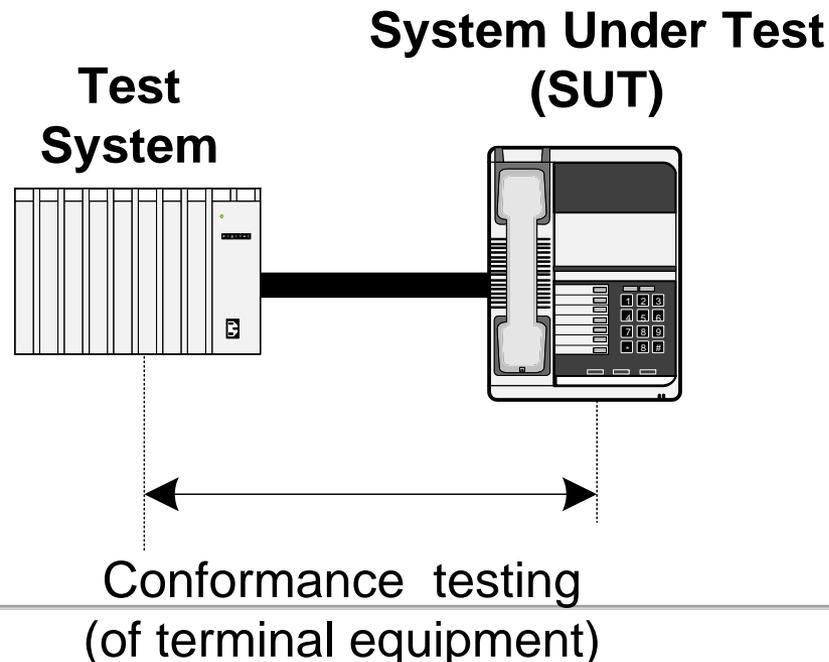
Validation and Testing



- These 2 steps come together with the standard specification: it is about making sure that the standards **do the right thing** (Validation/Interop) and that **they do it** right (Conformance Testing)
 - oneM2M WG TST aims at having set of standardized test specifications associated with the main base standards.
 - Usually Conformance or Interoperability tests are
 - For use by industry development processes
 - For 3rd party certification
 - Scope , development and the review done by the oneM2M WG TST
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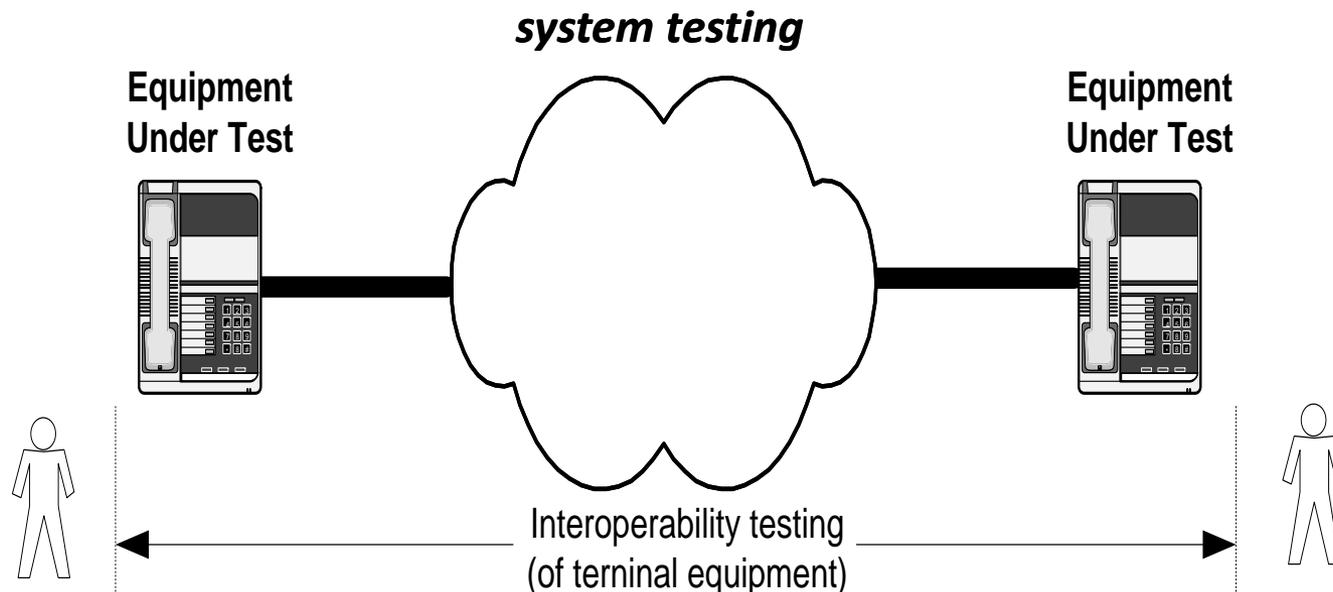
Conformance testing

- Conformance testing concentrates on specific components in a system
- Conformance testing is applied over open interfaces and checks for conformance to the requirements in a base specification.
- Unit testing



Interoperability testing

- Tests (end-to-end) functionality between 2 or more products
- It shows, from the user's viewpoint, that functionality is accomplished (**but not how**).
- System testing



Both are Complementary



- Product could happen to be conformant but not interoperable
 - Interop testing is more appropriate when the standard is in development phase . It helps to validate the standards
 - Conformance testing is more appropriate for testing stable specifications and is for testing product and check if the standard is correctly implemented
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WG TST main specifications

- Methodology:
 - TS-0015 : Testing Framework
- Interoperability Testing
 - TS-0013: Interop Testing
- Conformance Testing
 - Conformance on oneM2M primitives: PICS TS-0017, TSS&TP TS-0018 and ATS TS-0019 (ETSI STF 531)
 - Security conformance: PICS TS-0027, TSS&TP TS-0028 and ATS TS-0029
- Definition of product profiles : TS-0025
- Developer Guides : Series of 8 Technical Reports

What is TTCN-3?

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- Testing and Test Control Notation Version 3
 - Internationally standardized language developed specifically for executable test specification
 - Specified by ETSI MTS Technical Committee
 - Is independent of a specific IUT or IUT interfaces
 - Is independent of a test execution environment
 - Standard available at portal.etsi.org via ETSI programme
 - Allows unambiguous implementation of tests
 - Look and feel of a regular programming language
 - Good tool support (many commercial tools available)
 - Successfully deployed in different organizations and industry in a variety of application domains
 - e.g., telecom, automotive, software, etc.
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Why Validate Standards?

- Validation reveals problems/errors in
 - Standards and Products
- Validated standards give a higher chance of interoperable products
 - - For standardisers gives assurance that they provide right functionality
 - - For manufacturers and operators gives confidence to implement and go to market
- Provides an opportunity to correct errors in a controlled manner
 - Late fixes in the product cycle are more expensive than early ones
 - Decreases time to market

Standards can be validated by several means but one of the most practical and cost effective is by **interop events**

oneM2M Interop Events



- Co-organized and funded by TTA and ETSI
 - Twice a year
 - Sept 2015 Sophia-Antipolis (France)
 - May 2016 Seoul (South Korea)
 - Dec 2016 Kobe (Japan)
 - May 2017 Taipei (Taiwan)
 - Free of charge
 - Open to all companies with oneM2M implementations (members and non-members)
 - Covered by NDA. No companies results are published
 - Important technical feedback provided to oneM2M
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Interop#1 Sophia-Antipolis(2015)



Interop#2 Seoul (2016)



Interop#3 Kobe (2016)



Interop#4 Taipei (2017)



Upcoming Interop#5

- Co-organized by TTA and ETSI.
- 4-8 December 2017, in Pangyo (South Korea)
- Details and Registration : <http://www.etsi.org/news-events/events/1211-onem2m-interop-5>
- Free of charge
- Open to all with oneM2M implementations (members and non-members)
- Sessions of Conformance + Interoperability testing

Developer Guides

| | |
|---------|---|
| TR-0025 | Application developer guide: Light control example using HTTP binding |
| TR-0034 | Developer Guide: CoAP binding and long polling for temperature monitoring |
| TR-0038 | Developer guide: Implementing security example |
| TR-0045 | Developer guide: Implementing Semantics |
| TR-0039 | Developer guide: Interworking Proxy using SDT |
| TR-0035 | Developer guide: Device Management use case |
| TR-0037 | Developer guide: smart farm example using MQTT binding |
| TR-00xx | Developer guide: 3GPP interworking example |

Developer Events 1/2

- 2 days event held in June 2017
- Location : C-DOT campus, in New Delhi
- Co-organized by EU-India Project, ETSI, TSDSI and C-DOT
- Agenda
 - Day 1 : Tutorial
 - Day 2 : Hands on exercices



Developer Events 2/2

- Next one in ETSI first day of the IoT week workshop at ETSI
- Details: <http://www.etsi.org/etsi-iot-week-2017>
- Discussions to get more developer events in 2018 in India, Europe and US
- Tutorial, Hackathons, Hackfests, etc ...

oneM2M Certification & Certified Products

oneM2M Certification Background



- TTA was agreed as the **first oneM2M Certification Body** at the 33rd Steering Committee meeting (Sep. 2016).
- **oneM2M Certification Program** was officially **launched on Feb. 9, 2017.**
 - Provide global confidence of oneM2M standard



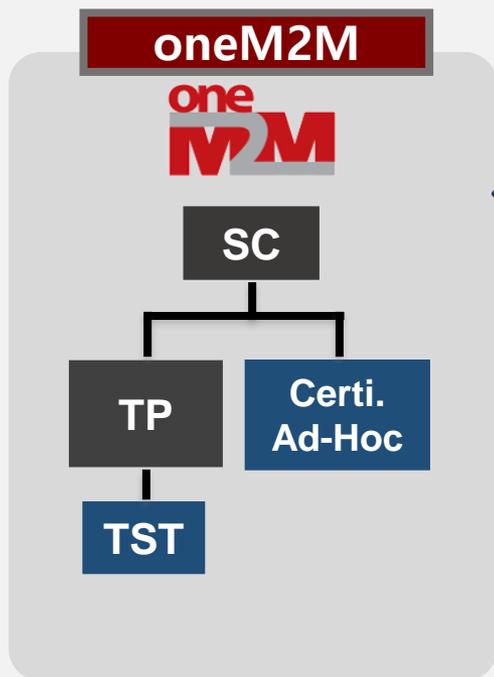
oneM2M Certification Goal



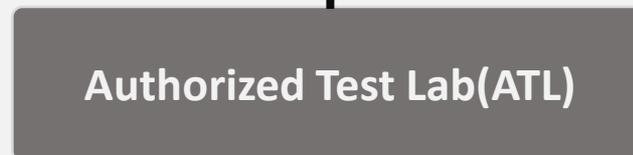
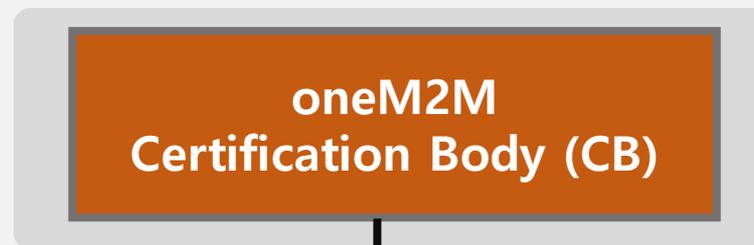
- **oneM2M Certification** is intended to **create an ecosystem of certified products** that **ensures interoperability** among oneM2M certified products
- **oneM2M Certification** is LOGO program, NOT an compulsory program.
 - Representation that oneM2M products and services **meet oneM2M Specification and Test requirements** that ensure interoperability.

oneM2M Certification Organization

oneM2M - oneM2M CB



1st oneM2M Certification Body!



oneM2M Certification Website

www.onem2mcert.com



one Certification for oneM2M Standard

HOME | LOG IN | JOIN

- Introduction
- Certification Guide
- Facilities
- Certified Products
- Downloads
- Reference



oneM2M Certification logo is intended to represent to consumers that oneM2M products and services meet oneM2M standard testing requirements that ensure interoperability.

When your product is oneM2M Certified, it becomes a part of integral ecosystem of oneM2M enabled products, services and applications in the market.

[START CERTIFICATION](#)



CERTIFICATION GUIDE

The purpose of the certification program is to certify that products conform to and are in compliance with the requirements of the oneM2M standards.

IoT Standards

oneM2M is the global standards initiative for Machine to Machine Communications and the Internet of Things



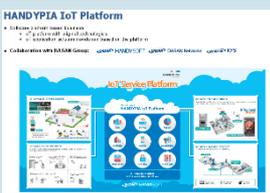
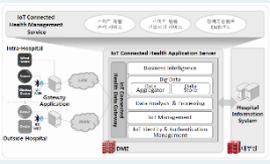
oneM2M Standards

Standards for M2M and the Internet of Things

Certified Products(I)

| Product Vendor | Product Name | Product Website | Product Information | |
|----------------|-----------------------|---|---------------------|---|
| SK Telecom | ThingPlug | http://Thingplug.skiot.com | | ThingPlug® is an open IoT platform of SK Telecom. |
| nTels | N-MAS | http://www.ntels.com | | N-MAS is an open IoT platform that provides connectivity functions used in various service areas such as smart city, industry, healthcare, sports, and agriculture. |
| KT | IoTmakers Middleware | http://iotmakers.olleh.com | | IoTmakers Middleware provides interface to communicate with KT Platform via oneM2M standard protocol.. |
| | IoTmakers | http://iotmakers.olleh.com | | IoTmakers is the OPEN IoT platform which can support IoT players to realize their idea and lead to success.. |
| KEPCO | e-IoT Energy Gateway | https://spin.kepco.co.kr | | e-IoT Energy Gateway provides interface to communicate between sensors and the e-IoT Energy Platform via oneM2M standard protocol. |
| | e-IoT Energy Platform | https://spin.kepco.co.kr | | e-IoT Energy Platform is the OPEN IoT platform for a electrical power system and industry. |

Certified Products(II)

| Product Vendor | Product Name | Product Website | Product Information |
|-------------------------------|-------------------------|---|--|
| HANDYSOFT, Inc. | HANDYPIA IoT Platform | http://www.handypia.co.kr/homepage_eng/ |  <p>HANDYPIA IoT Platform</p> <p>ThingPlug® is an open IoT platform of SK Telecom.</p> |
| HealthConnect Co., Ltd | IoT Healthcare Platform | http://110.93.135.108/ |  <p>IoT Connected Health Management Service</p> <p>IoT Healthcare Platform is an IoT platform for connected healthcare management service such as rehabilitative management and nursing support service.</p> |
| Samsung SDS | Insator™ | https://iot.insator.io |  <p>Insator™</p> <p>Cloud based Enterprise IoT platform that supports the development of numerous smart solutions and intelligence services through data collection and analytics</p> |

Q&A

