oneM2M
Testing and Certification Program

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01 Why is TTA as Certification Body ?

IoT Strategies in Korean Government

Strategy

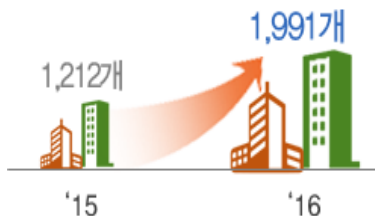| 2014.5	2015.12	2016.12
Promotion of IoT Service Development·Utilization	Increase and Strengthen IoT Demand and Supply	Secure Infrastructure for Intelligent Information Technology integrated IoT Data ·Network
Internet of Things Master Plan	IoT Diffusion Strategy	Mid-to Long term Master Plan in Preparation for Intelligent Information Society

Achievement

Domestic IoT Market Size

4.7 trillion KRW
5.8 trillion KRW
'15   '16(E)

Domestic IoT Companies

1,212개   1,991개
'15   '16

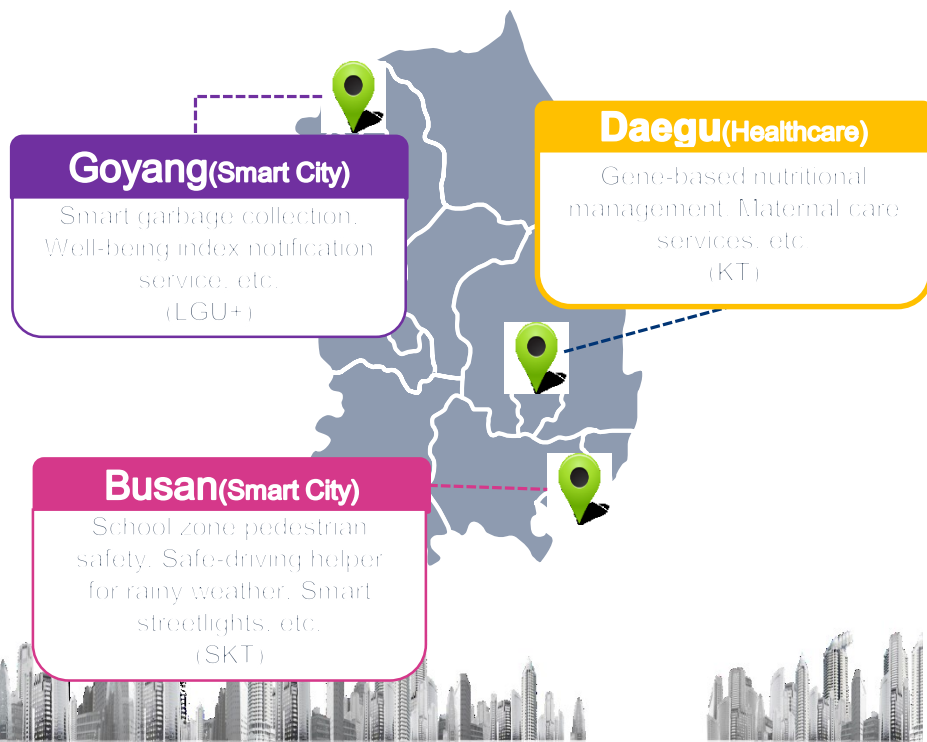### IoT Preparedness among G20 Countries

2nd
in the World

IDC(2016.11.)

Diffusion of IoT Services – Smart City

Smart City Pilot Project

Pilot Location: Busan (2015~2017),
Daegu(2017-2017), Goyang (2016~2017)

Goyang(Smart City)
Smart garbage collection,
Well-being index notification
service, etc.
(LGU+)

Daegu(Healthcare)
Gene-based nutritional
management, Maternal care
services, etc
(KT)

Busan(Smart City)
School zone pedestrian
safety, Safe-driving helper
for rainy weather, Smart
streetlights, etc.
(SKT)

SME Support

○ Supporting SMEs develop
smart city/healthcare services

- prototype production, business consultation,
commercialization support, etc.

Pilot Services

○ Busan safety/traffic system improvement service
○ Goyang environment mgmt. improvement service
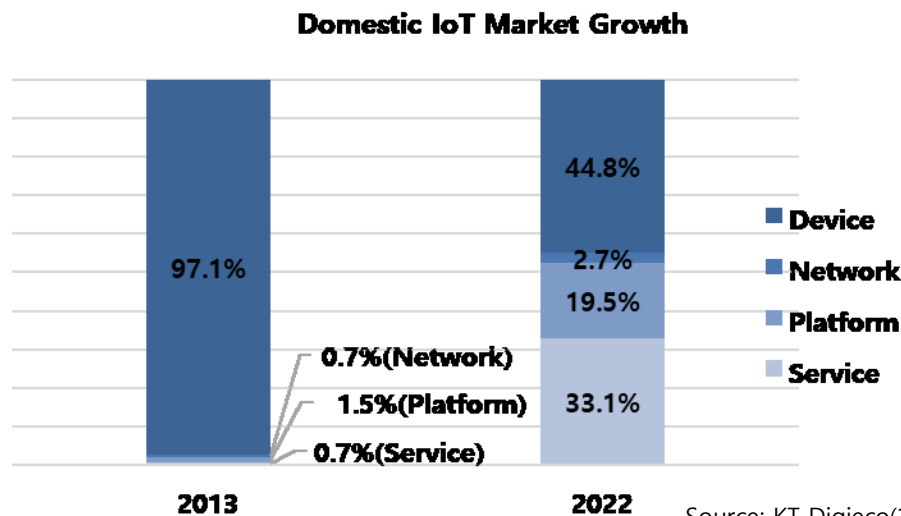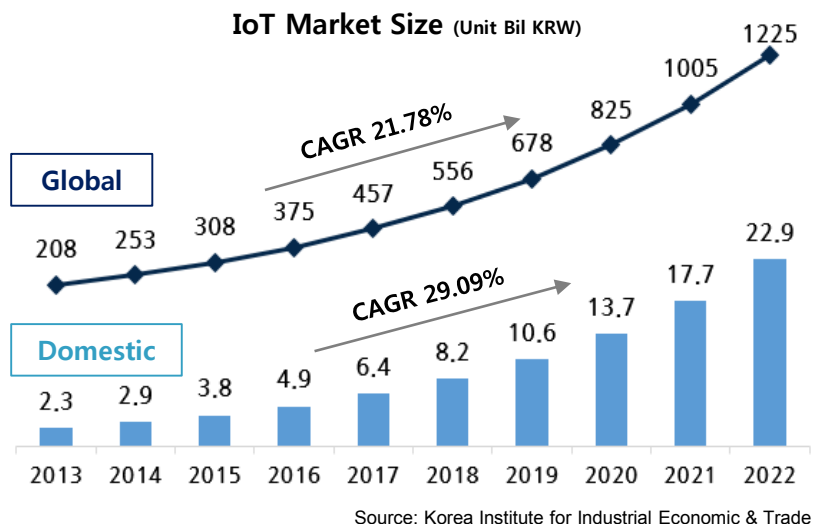○ Daegu healthcare services

Diffusion & Promotion

○ Held ¨Smart city service competition¨ for
citizens/businesses/government workers
○ Developing data-driven smart city models
○ Word Smart City Week
- Date: Sep. 4-8, 2017
- Venue: KINTEX, Goyang City
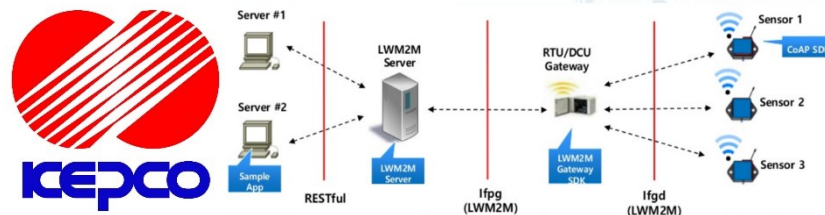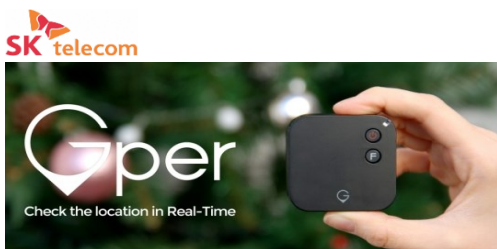
Korean IoT Industry Trend(I)

- Domestic IoT market size growth is similar to that of global IoT market growth

- **Device centric → System Solution → Service** Industry
  - **Importance of 'platform and service'** emphasized as device market expands

IoT Market Size (Unit Bil KRW)

1225
1005
825
678
556
457
375
308
253
208

CAGR 21.78%

Global

Domestic

22.9
17.7
13.7
10.6
8.2
6.4
4.9
3.8
2.9
2.3

CAGR 29.09%

2013 2014 2015 2016 2017 2018 2019 2020 2021 2022

Source: Korea Institute for Industrial Economic & Trade

Domestic IoT Market Growth

97.1%

0.7%(Network)
1.5%(Platform)
0.7%(Service)

44.8%
2.7%
19.5%
33.1%

- Device
- Network
- Platform
- Service

2013   2022

Source: KT Digieco(15)

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Korean IoT Industry Trend(II)

- Number of domestic IoT service subscribers: 4.4million
  - SKT(1.7mil), KT(1.1mil), LGU+(1mil), MVNO(0.6mil)
- oneM2M Use Cases by Korean Telecom Service Providers
  - SKT Gper: oneM2M-Lora technology for location tracking of Alzheimer patients and children
  - LGU+ IoT @home: Smart home IoT based on oneM2M platform
  - KEPCO e-IoT platform combined with oneM2M

TTA's IoT Activity

TTA IoT Activity

◆ IoT Standardization Development

- TTA STC1, SPG13
- oneM2M, ITU-T SG20, JTC1/SC41

01

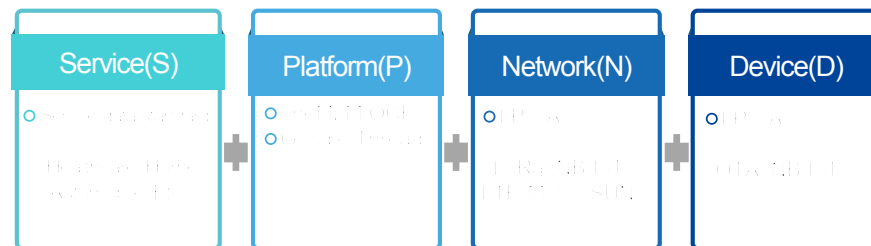### ◆ IoT Test and Certification

- IoT LPWA(LoRa, NB-IoT)
- Platform/Service(oneM2M, OCF, LwM2M)
- IoT Device Assurance (OTA, Performan...

03

◆ Industry(SMEs) Support

- Consultation of Standard & Technology
- Development Support Testing

Global IoT Test·Certification Center

Establishment of test·certification infrastructures based on international standard in Pangyo to proliferate IoT services and foster globally competitive companies
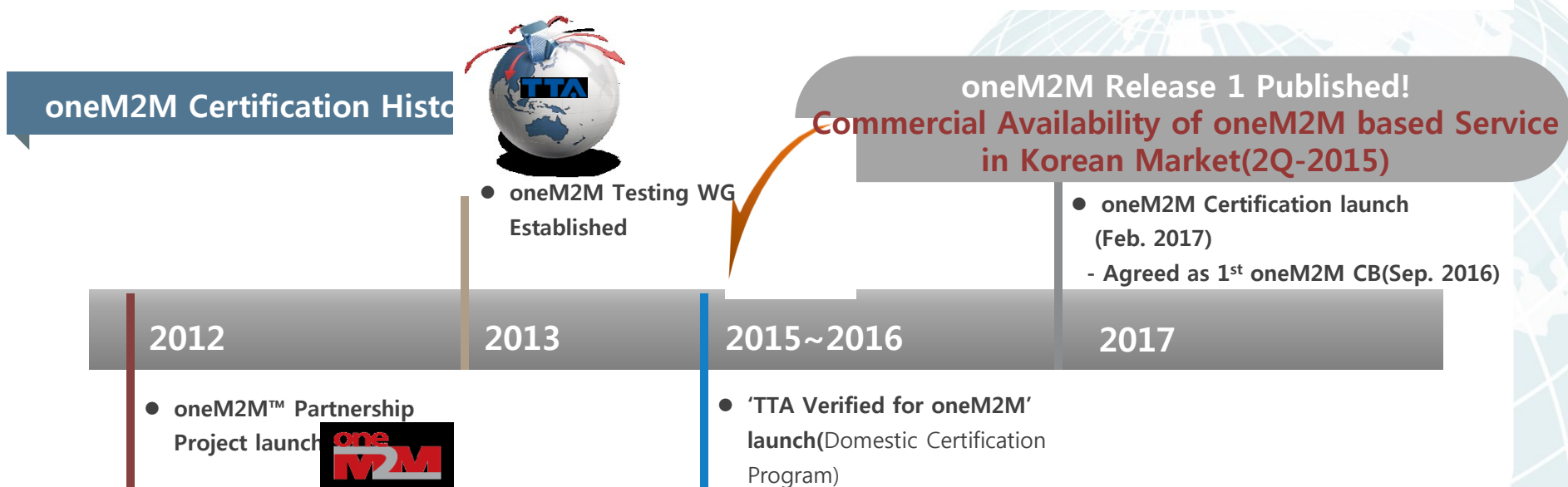
Service(S)	Platform(P)	Network(N)	Device(D)

Reduced certification time and cost

Facilitate global advancement using international standards

World's Best Global IoT Certification Center

TTA's oneM2M Activity

- TTA has participated in oneM2M since 2012.
  - TTA as SDO launched oneM2M Partnership project
  - TTA has contributed to develop test specifications in TST WG
  - TTA co-hosts Interop Event with ETSI two time annually
- Congratulation for the oneM2M technical specification is transposed into ITU-T Y.4500 series of Recommendations.
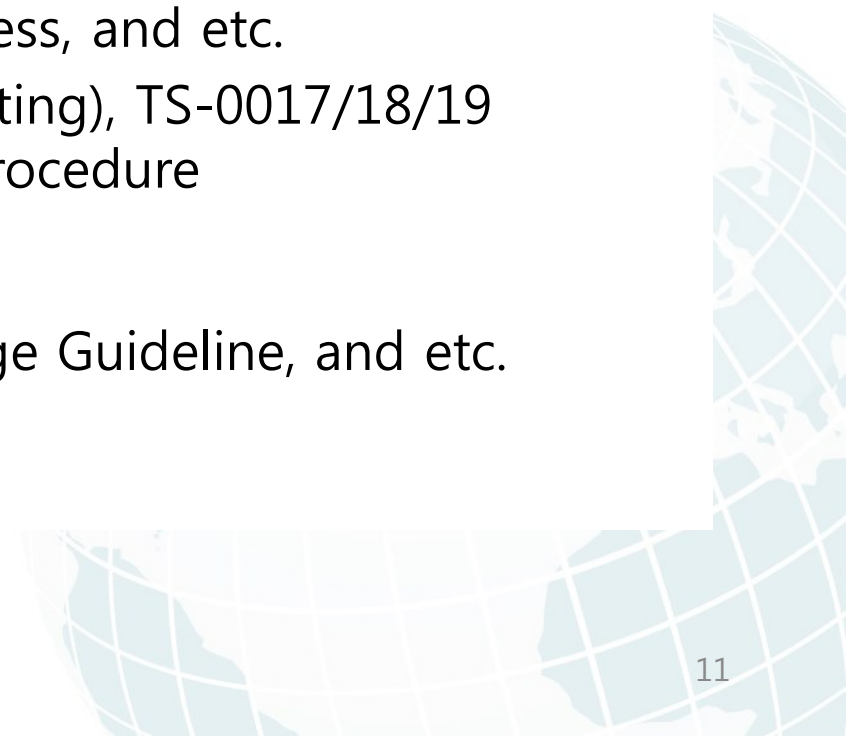
oneM2M Certification History

oneM2M Release 1 Published!
Commercial Availability of oneM2M based Service in Korean Market(2Q-2015)

- oneM2M Testing WG Established

- oneM2M Certification launch (Feb. 2017)
  - Agreed as 1st oneM2M CB(Sep. 2016)

2012	2013	2015~2016	2017

- oneM2M™ Partnership Project launch

- 'TTA Verified for oneM2M' launch(Domestic Certification Program)

02 oneM2M Certification Program

Certification Criteria and related documents

- **Certification Criteria**
  - Select features and resources that are necessary through reflecting vendor's requirements
  - Define Product type & Certification type
  - Develop PMD(Program Management Document) that include certification policy, process, and etc.
  - Use TS-0013(Interoperability Testing), TS-0017/18/19 (Conformance Testing) as test procedure

- **Develop related documents**
  - PMD, TRSL, ICS&IXIT, Logo Usage Guideline, and etc.

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Program Management Document

- **Contents**
  - oneM2M Certification Scheme
    - Actors and Roles(Applicant, ATL, CB)
    - Product Type(ADN, MN, IN), Certification Fee
  - Certification Process
    - Apply, Test, Certify
    - Test Requirement Status List
    - Test Case Categories
  - Certification Policy
    - Certification Types(New Product, Change, Rebranding)
  - Testing Requirements
    - Testing Scope(Conformance, IOPT), Test Plan, ICS/IXIT
  - Test Equipment
  - Certification Logo
  - ATL Requirements

oneM2M Certification Logo

- **Shall only be used by products** that have **undergone and completed the oneM2M certification process** conducted by the Certification Body.

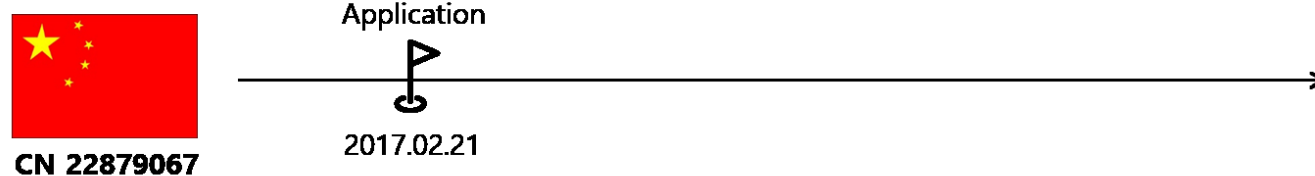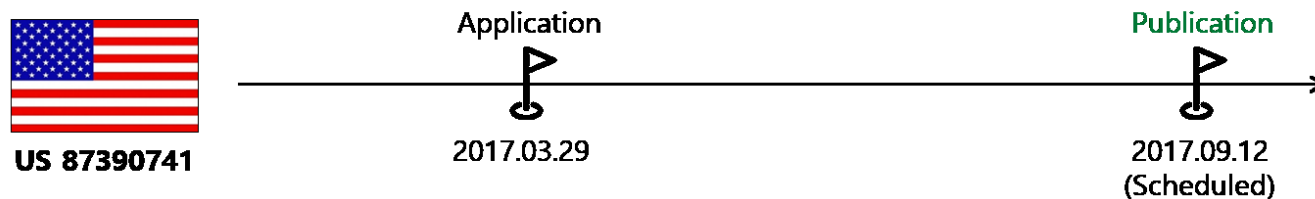- **Shall be applied and maintained in accordance with the **policy of Logo Usage Guidelines**
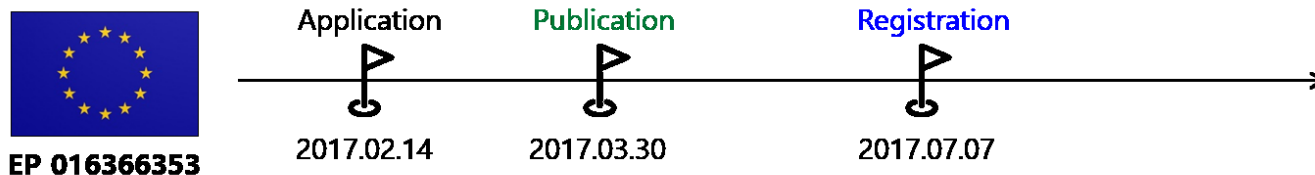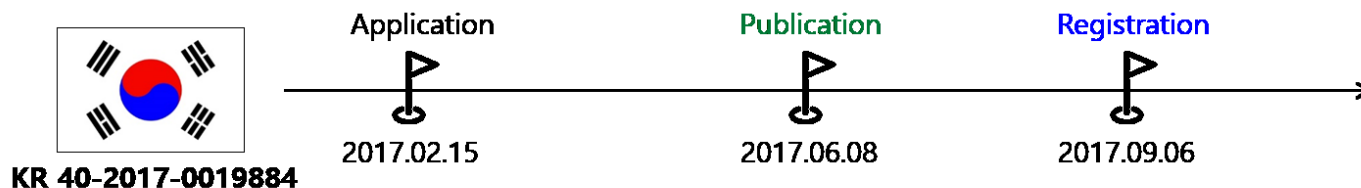
oneM2M Certification Logo

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Certification Logo Status

- **oneM2M Certification Logo** registration : Korea & Europe(completed), U.S.A & China(In progress)

KR 40-2017-0019884

Application — 2017.02.15
Publication — 2017.06.08
Registration — 2017.09.06

EP 016366353

Application — 2017.02.14
Publication — 2017.03.30
Registration — 2017.07.07

US 87390741

Application — 2017.03.29
Publication — 2017.09.12 (Scheduled)

CN 22879067

Application — 2017.02.21

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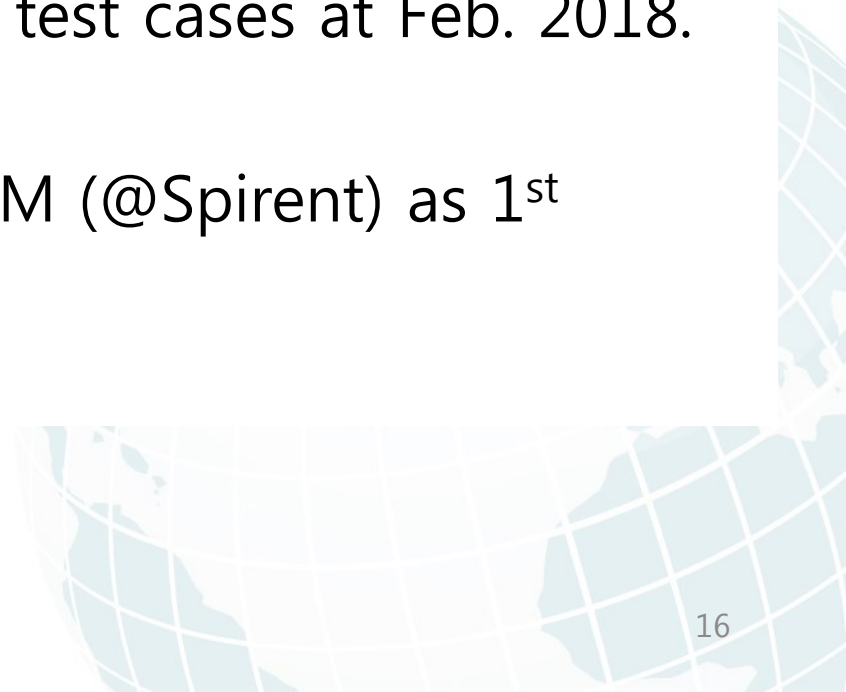
New ATL(Authorized Test Lab)- DEKRA Japan

- **TTA as oneM2M Certification Body** designated DEKRA Certification Japan K.K as 2nd ATL at 2nd Feb. 2018

Test Scope updated(Conformance Test included)

- oneM2M Test WG completed to develop the conformance test specification with ATS at Jan. 2018.
  - oneM2M ATS (Commit ID : 6bf63abb81ad8e9fbb04cc177a4b9f98689d3425), there are 258 test cases for IN profile.

- TRSL(Test Requirements Status List) updated from V1.0 to V1.1 including conformance test cases at Feb. 2018.

- TTA designated TTsuite-oneM2M (@Spirent) as 1st Authorized Test System

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oneM2M Certification Website

www.onem2mcert.com

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Certified Products(I)

Certified Product: 15 products from 12 manufacturers

Product Vendor	Product Name	Product Website
SK Telecom	ThingPlug	http://Thingplug.sktiot.com
nTels	N-MAS	http://www.ntels.com
KT	IoTMakers Middleware	http://iotmakers.olleh.com
KT	IoTMakers	http://iotmakers.olleh.com
KEPCO	e-IoT Energy Gateway	https://spin.kepco.co.kr
KEPCO	e-IoT Energy Platform	https://spin.kepco.co.kr
HANDYSOFT, Inc.	HANDYPIA IoT Platform	http://www.handypia.co.kr/homepage_eng/
HealthConnect Co., Ltd	IoT Healthcare Platform	http://110.93.135.108/
Samsung SDS	InsatorTM	https://iot.insator.io
IREXNET	AiSOP(iThings)	http://www.irexnet.co.kr
IREXNET	GWP(Global Water Platform)	http://www.irexnet.co.kr
HERIT	HuRa IoT Platform	https://www.chordant.io/
Moda Inc.	Universal IoT Gateway	http://www.c3systems.com/
C3SYSTEMS	SysOne	http://www.c3systems.com/
Chordant™, an InterDigital business	Chordant™ Platform	https://www.chordant.io/

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Certified Products(II)

- ntels and iREXNET have certified product with appliance H/W and S/W package
  - These products are easily installed and adopted to IoT service

N-MAS from ntels

iThing(AiSOP) from iREXNET

- **Open IoT Platform**
- **Service Use Case**
  - ➤ Smart City(Parking, Safety, Lighting)
  - ➤ Power and Energy IoT

- **IoT Gateway supporting IoT connectivity**
- **Service Use Case**
  - ➤ Power field IoT service
  - ➤ Water Resource IoT service(e.g. Water Distance Internet Service)

03   What's Next for Globalization

Enhancement of oneM2M certification program

- Updating oneM2M certification program
  - Extend testing scope including conformance testing and update certification version to Rel-2
  - For the first step, validation of ATS and test system has been finished targeting IN profile. Other profiles (ADN, MN) are expected to be finishing the validation and applying to the certification program until 2Q. 2018.

- Need to develop new testing scope and method with oneM2M TST
  - Interworking between oneM2M and non-oneM2M tech.
  - Data modeling(e.g. home domain)

- TTA and GCF collaborate to disseminate oneM2M tech.
  - TTA is working with GCF to migrate the current oneM2M certification program to GCF certification scope.

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04 Lesson Learned

Lesson Learned

- Market needs **compliance and assurance** of their oneM2M-based products!
  - oneM2M certification is prerequisite to ensure interoperability
  - Most IoT Forum/Consortium(e.g. OCF) have their own certification program to guarantee and proliferate their technology and services

- oneM2M Certification could be a means to get feedback from manufacturers in the market
  - Manufacturers : "Not easy to find out mandatory/optional features to implement basic services"
  - TTA : Developed "Product Profile" defining the features role, and contributed for oneM2M specification

- Need to cooperate with professional certification organization to develop cutting-edge test and certification technology

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THANK YOU!