Introduction of IIOT Foundation

International Internet Of Things
International Interoperability Testing

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Global Market Trend and IIOT’s Challenges
Development Eco-System → Testing Eco-System

1990
Windows PC Internet Innovation

2000
Smart Phone Cloud Solution Mobile Internet
iPhone iPad Android

2010
“Smart Device” Innovation
Smart Device 4 billion → 15 billion

2015
“Internet of Things”

2020

Explosion of development volume of mobile handset software
½ of software development cost is testing cost

Huge expansion of requirements of Interoperability of Testing based on “Smart Device” (Smart Phone and Tablet)

- Individual Testing → Interoperability of Testing (IOT)
- Development Eco-System → Testing Eco-System
- Simple outsourcing of Testing → “Positive Testing based on Knowledge DB”
Business Area of IIOT’s “Testing Eco-System”

Huge expansion of requirements of Interoperability Testing based on “Smart Device” (Smart Phone and Tablet)
Service Concept

Vision: Become highly Advanced Testing/Certification Technology Provider through establishment of “One Stop testing service” ecosystem

- Development of “One Stop Testing Service” ecosystem
- Enforcement of Testing Trial using Established Testing infrastructure
- Establishment Activities of International Certification business
- Collaboration with global Testing/Certification activities and Accumulation of advanced Testing/Certification Technologies
IIOT Objectives

Objectives

Through promotion of “Establishment of Mobile device Testing Center Project” initiated by Okinawa Prefecture, Contribute to growth and prosperity of ICT industry in Okinawa.

Activities

(1) Establishment of Android based devices Testing Method and Technology.
(2) Development of Testing Tools and Knowledge Database
(3) Development of Global Testing Tools and International Standardization Work
(4) Training of engineering resources for Android devices Testing business
(5) Creation of New Employment opportunities in Testing/Certification Business

Expansion of Business to Asian Countries and Exchanging Human Resource

-> Establishment of Gateway to Asian Countries in Testing/Certification Business
Global Activities of IIOT

IIOT is leading the activities of IOT (Interoperability of Testing) in the global market
Objectives: Establishment of IOT and Certification Standards

IIOT will contribute to promotion of IOT testing technologies and establishment of IOT testing global standards.

IIOT will aim at:
(1) Enhancement of vendor products interoperability capabilities in global market
(2) Exchanging certification with global organizations
(3) Applying Japanese ICT products in global market

Hong Kong
GIOT Quality Certification Association

Japan
GIOT Quality Certification Association

China
CQC · CMCA · Dalian, Liaoning

Europe
DIMES · CTIF

India
GISFI
Business Relationship

IIOT Foundation

- General Meeting
- Board
- Contract or
- Technical Committee
- Publicity Committee
- International Standardization Council

Special Membership

- GIOT
- YRP-IOT
- CATS

Membership A / B

- eflow
- FSI
- GBA
- Nansei Telework
- Supia
- Plus Knowledge
- U-Mark
- Access
- RCS
- Veriserve
- ISB
- SystemBit
- MDRI

Other Companies located In Okinawa

Other Domestic Companies

Business Membership

- OMRON Software

Business Trial Companies

- Operators
- Handset Vendors
- Companies in Automobile Industry
- Sier / System Integrator

Collaboration Activities (Mutual Membership)

- OESF
- IVIA
- TELEC
- IPA (planned)

Outside Assessment Activities

- Outside Assessment Committee
  - Univ. of Tokyo
  - Univ. of Ryukyus
  - The University of Electro-Communications
  - JAIST
  - Okinawa National College of Technology
  - IPA/SEC
  - Okinawa Industry Promotion Public Corporation

Academic Member

- DWCLA
- Univ. of Ryukyus

Overseas

- China
  - CQC, CMCA, Dalian, Liaoning

- India

- GISFI

- Europe
  - DIMES・CTIF

- Hong Kong
  - GIOT Quality Certification Association
    - Headquarter

- Other Companies located In Okinawa

- Other Domestic Companies

Collaboration Activities

Consult

Collaboration

Testing Business

Collaboration
Activities of IIOT
"Testing Eco-System” Infrastructure

In-Viecle Infortainment (IVI) Testing Environment
Navi, ITS Interoperability
・MirrorLink
・HTML5 App Cooperation

Mobile Device Testing Environment
Smart Phone Testing Tools
・Extended CTS
・Logging Tools
・Remote Operation Tools

M2M System Testing Environment
Sensor Network Testing
・White Space
・Sensor Node Platform
・Cloud Testing

Knowledge Data Base
Common Testing Tool Platform
・Interoperability of Testing Know How
・Automatic Testing Tools/Remote Op Tools

Testing Devices
・Every Android devices
・Smart TV, Blu-Ray, ...

Training Program
・Mutual Resource Exchange
・OJT
Mobile Devices, Mobile Network for Testing

- Every Android devices sold in Japanese Market from 2012 Summer (129 models, 358 sets)
- 189 Networks for Test

<table>
<thead>
<tr>
<th>Mobile Devices</th>
<th>Android devices</th>
<th>Mobile Networks</th>
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<tbody>
<tr>
<td></td>
<td>Every Android devices sold in Japanese Market from 2012 Summer (Smart Phone 105 models, Tablet 24 models)</td>
<td>docomo(65), au(64), SoftBank(48), Wilcom(6), Emobile(6)</td>
</tr>
<tr>
<td></td>
<td>3 sets per each model</td>
<td></td>
</tr>
</tbody>
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- 129 models, 358 sets
- 189 Networks for Test

- Every Android devices sold in Japanese Market from 2012 Summer

- docomo(65), au(64), SoftBank(48), Wilcom(6), Emobile(6)

- Fujitsu, Toshiba, NEC, Panasonic, LG, Samsung, SHARP, SONY, Huawei, HTC, Kyocera, Apple, Pantech, CASIO, Disney, Motorola

Tablet 105 models, Tablet 24 models

Android devices 3 sets per each model

Mobile Networks
### Smart TV, Blu-Ray, WiFi Router, Bluetooth devices, etc.

- Smart TVs, Blu-ray Recorder, etc. Supporting DLNA feature
- Focused in WiFi / Bluetooth devices because of many troubles in IOT viewpoint

<table>
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<th>Smart TV, Blu-Ray, WiFi Router, Bluetooth devices, etc.</th>
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</table>
| Smart TV, Blu-Ray, etc. | - Smart TVs, Blu-ray Recorder,.. Supporting DLNA feature  
                        |   (TV 55 models, Recorder 34 models, BD Player 11 models) |
| WiFi/Bluetooth devices | Focused in WiFi / Bluetooth devices because of many troubles in IOT viewpoint  
                        |   (WiFi router 67 models, Bluetooth headset 30 models) |

#### Number of Products registered in DLNA guidelines

- Rapid increase in TV and Recorder

#### Devices Support

- DLNA Support
- WiFi devices
- Bluetooth devices
• Testing Center Facility in “Okinawa IT Shinryyo Park” (177㎡) → 1,300㎡ (Sep. 2013)
• All of Android Handset in Japanese Market, SmartTV, Blu-ray, Testing Tools,...
Testing Eco-System

Tool Architecture

- Quality Commander6
  - Automatic Testing Robo
- QCWing Quality
  - Automatic App Testing Tool for Android
- M-eux Test for Android
  - Automatic App Testing Tools for Android comparing with iOS
- Testing Tool (Wifi)
- Testing Tool (Exteded CTS+)
- Android Device
  - Smartphone
- Android Testing Tools
- Extended CTS
- LOG
- Automatic Testing Tool for Android
- Testing Support Knowledge input support
- Knowledge Database
- Device Information Data
- Remote Smartphone Sharing
  - Server
  - Android Device
- Customer
  - Server

Shield Room

Bluetooth (Frontline)
- Bluetooth Protocol Analyzer
- QXDM (Qualcomm) Protocol Analyzer
- Smartphone App Testing Tool
- Customer Testing Tool (Wifi)
- Debugging Android devices located far area

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## Actual business cases

- Successfully completed business deals with Mobile carrier, Automobile navigation Co., Sler and Home electronics Co. in last fiscal-year

<table>
<thead>
<tr>
<th>Outline</th>
<th>Test</th>
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</table>
| Android device credit payment system test | ・Tested and analyzed 7 types of Android devices  
 ・Operation test with printer by Bluetooth connection  
 ・Total system usability test |
| Automobile navigation system test | ・Japan specification verification test on foreign vehicles  
 ・Response test  
 ・Domestic map delivery test  
 ・Audio related device test |
| Smart TV dongle test | ・TV connection (4 makers, 8 models), Android device (7 makers, 19 models)  
 ・WiFi connection test (4 makers, 5 models), Bluetooth pairing test  
 ・Remote controller application test  
 ・HDMI connection test (29 models) |
| eMail application test | ・Development of test specification and execution of the test  
 ・Development of usability test specification |
New Smart TV service appeared in The Nikkei paper was tested at IIOT Testing Center Facility
# Availabilities of IIOT membership

Special Member and Membership-A companies can use all of IIOT’s Testing Eco-System.

<table>
<thead>
<tr>
<th>Membership Level</th>
<th>Membership Fee (1 year)</th>
<th>Availability</th>
<th>Recommendation</th>
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</table>
| Special Member   | Over $100k USD           | • Participation of Board Meeting (voting rights, opportunity of contract development)  
• Participation of Executive Committee  
• Participation of Technical Committee / Working Group   | Testing Business Leading Company |
| Official Member  |                          |              |                |
| Membership A     | Over $10k USD            | • the rights to use of Testing facilities, Equipment (according to the agreement to use)  
• Participation of Working Group  
• Prioritized participation to development of Testing base development and Testing Business   | Handset Vendor,  
Independent Software Vendor,  
Testing Tool Vendor,  
Testing Technologies Provider, etc. |
| Membership B     | Over $3k USD             | • Participation of Working Group  
• Prioritized participation to development of Testing base development and Testing Business   | Testing Tool Vendor,  
Testing Technologies Provider, etc. |
| Business Member  | Over $5k USD             | • Individual Business operation by using Testing business scheme operated by IIOT  
• Operation of New Research and Business activities by the collaboration with IIOT   | System Solution Vendor, etc. |
| Associate Member | $500 USD                 | • Sharing information with IIOT about activities   | Companies who would like to share most advanced Testing activities |
| Academic Member  | Free                     | - Eligible to participate Technical Committee, Outside Assessment Committee, Standardization Committee etc. | Opinion Leader of Testing Technologies, Business, Global Trends, etc. |

Notes: All Membership without Academic Member should pay the membership fee.
Concept of “Global Testing Center” based on Okinawa’s competence
Why is it Okinawa?

① Domestic only special economic zone (special international physical distribution area Okinawa)
② The merit as "Okinawa hub" which connects Asia and domestic each city
③ Business support which a country and a prefecture

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Based Okinawa promotion Special measures Law
Investment to IT Shinryo-Park under resort&IT strategy

- IT Industrial test bed
- Hi level Software development
- Hi level test engineer
- Asia IT bridge

Investment for IT 2013 2,840 million Yen
→ 1,190 million Yen (verification base formation promotion enterprises, such as mobile computing devices)
**Business Concept  For use Okinawa Testing Center  Sec.2**

**Image of Business**

Practical use of Testing Center in Okinawa

1. For Asian Company (Samsung・HTC・ASUS・etc)
2. Japanese company of expand to over seas
3. Near shore testing companies

**: overseas :

Develop and Test

Export and Import

Product movement

Technology Transfer

Exchange

** Japan Domestic **

** Okinawa Testing Center **

International logistic base (Free trade zone)

1. Interoperability test Center
2. Test equipment

** Knowledge DB **

International IOT alliance

** Call Center **

Claim Inf DB

** Usability **

** Predominancy of Okinawa **

1. ** Formation of International distribution Center **
   ① Mobile test bet in Testing Park (Offer of the test place and equipment for Interoperability test)
   ② International IOT QAC Japan branch (promotion of Quality Standard)
   ③ Tax Free trade and logistic

2. ** Quick distribute by ANA between Asian major cities **
   ① Super speed transport by YAMATO and ANA team
   ② Shortest distribution between Asia major cities to Japan
   ③ Cost cut of Tranceport (Use subsidy)

3. ** Support of talented people(engineer)exchange **
   ① Asia IT people to people exchange
   ② Near shore base products
   ③ Construction of the Asia IT Testing Center (Apr, 2013)
   ④ Visa needlessness during three years by a special visa area

4. ** Developing of Top runner mobile products test **
   ① Newest Embedded products test (TIDA)
   ② Base of Mobile products test (IIOT)
   ③ Construction new mobile products test center (Aug, 2013)

5. ** Substantial test bet (provide) **
   ① Provide Japanese products based Android OS and smart Home electronics
   ② An overseas Android products arranged in the future
Business Trial using IIOT Testing Eco-System in Okinawa

1. Distribution in Overseas
   - Customer → Repair Request → Agency → Repair Shop
   - Current Business

2. Distribution in Overseas PLUS repair shop
   - Customer → Repair Request → Agency → Repair Shop
   - Quality → Cost

3. Distribution in Overseas PLUS repair shop in Japan
   - Customer → Repair Request → Agency → Repair Shop
   - Duty

One Stop Supporting from simple testing to complicated Interoperability of Testing

- Customer → Interoperability Testing
- Interoperability Troubles
- Debug
- Japanese Quality
- Free Duty
- Fastest Distribution
- Quality

Additional Service Proposal

- Distribution in Overseas PLUS repair shop in Japan
- Proposal
- Call Center in Okinawa

Current Business

- Repair Request
- Agency
- Repair Shop

Japanese Quality

- Distribution in Overseas
- FREE DUTY
- Fastest Distribution

Asia

- Customer
- Agency
- Repair Shop

Okinawa

- Customer
- Agency
- Repair Shop

DB

Testing Eco-System

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Thank You!
TcpBlutooth connection to HTML5 application

Blutooth connection is unstable

Apple dock connection

WiFi

Bluetooth

MirrorLink

HTML5 application