Reply

Terminal/Application Testing & Certification
2) The Terminal Manufacturer develops the HW and integrates the OS or Middleware performing internal Development and Integration Tests.

3) Multiple testing phases are performed before market launch of the final product.

1) The OS or Middleware is released.

2) The OS or Middleware is released.

4) IOT Testing is performed to check correct inter-operability between applications on the Terminal and Service Provider infrastructure.

2) • Initial Development & Unit Test can be performed on PC-based emulators • Integration & System Tests are performed on the target terminal hardware.

OS/Middleware Vendor

Application Development & Testing

Service Provider
(Telco or Broadcaster)

IOT Testing
on Live Network & Services

SDK, Emulators, Documentation

Application Developer

Terminal Certification Process

Product Releases

Defects, Change Requests

Terminal Development and Testing

The Ecosystem

Legend

Reply Proposition Scope

OS/Middleware Vendor

Application Development & Testing

Service Provider
(Telco or Broadcaster)

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Terminal Certification Process

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Terminal Development and Testing

The Ecosystem
High Level Scenario

E2E Certification Authority

Content Creator → Service Provider → Telco/Broadcaster → Terminal Manufact.  

| Content Certification | Terminal Certification |

**End-to-end certification & test**

Reply is pursuing the role of Certification Authority for the whole E2E chain and as a service provider for the related operational activities.

The overall scope includes certification and management activities related to fixed and mobile terminals, STBs and their evolutions.

**Value Proposition**

- Time to Market reduction (flexibility with resource allocation)
- Cost saving (process engineering, economy of scale)
- Quality improvement (specialized resources)
Offering Components

• **Terminal/Application/Content certification** (in house or on client premises)
  
  – **Terminal Certification**: Verification and validation of terminal behaviour against relevant international standards and client-specific requirements. Support to manufacturers with pre-certification activities, possibly in accordance with operator processes and requirements.
  
  – **Application Certification**: Verification and validation of application behaviour in terms of UE functionalities and interactions with the underlying platform and services, in both cases of native applications and third-party applications (either embedded or downloadable)
  
  – **Content Support Certification**: Verification of correct support by the terminal of specific content types and formats, with reference to both multimedia (audio/video) contents and interactive contents (SVG, Java ME, …)

• **In-house Laboratories** (Offering support on the whole electronic, RF, Antenna, Audio, Imager and mechanical development cycle of small electronic devices)

• **Device Competence Centre** (Offering support on the whole E2E chain and possibly developing applications, contents or other components)

• **R&D on new devices/capabilities/architectures** (Technological leadership position by the means of development projects on innovative technologies and service paradigms)
Certification - Reply’s Offering Positioning

Service/Consultancy

Product & Project Management

Test Engineering

Test Tool Deployment & Execution

Application Development

Business Processes

Technology

Turn-key Projects

Reply Coverage
Certification - Process Flows

- Program Management/Planning & Control
- Test Specification Definition
- Terminal Certification & Capability Profilation
- Fault Analysis & Troubleshooting
- Test Support Systems & Laboratories Setup/Integration
- Terminal Manufacturer Relationship Management
- Terminal Logistics Management (location, fw update...)

6
Technological skills

Skills

• Bearer Tests over 2.5G, 3G, 3.5G, WLAN (Access, Mobility, Data, MultiRAB CS-PS, HSxPA, Lab & Drive Tests, RF Tests)
• GCF Field Trials
• Basic Services IOT & Manual Configuration (CRM support)
• OTA Configuration & Device Management (OMA CP/DM/FOTA)
• Browsing & Content Downloading (HTTP/TCP/IP, WSP/WTP, Wap push, WML/XHTML-MP, OMA-DRMv1 FL/SD/CD, OMA-DRMv2 CMLA/PKI certificates)
• Multimedia (Protocols: RTSP, RTP, RTCP, SDP, DVBH - Codecs: H.263, MPEG4, ARM-NB, AMR-WB, RealAudio, RealVideo, AAC, AAC+, AAC+E - Multimedia Formats: SVG, JPEG, GIF, PNG, SVG, SP-MIDI, SMAF, AMR, WAV, MP3)
• Java ME (CLDC1.x, MIDP1/2, MSA+JTWI JSRs, OTAP/Security, Sun JDTS)
• Messaging (SMS, OMA MMS, OMA IMPS/WV, SIMPLE IM/Presence, Email protocols)
• SAT/USAT (SIM/USIM IOT, JavaCard Applets)
• Mobile Office (Datacards/Dashboards)
• Batteries, Bluetooth, (Assisted-)GPS/Navigation Systems, …
HW Laboratory Capabilities

Electronic Lab
- Radiated Performances (small electronic devices)
- Specific Absorption Rate measurement
- Electro-magnetic Immunity measurement (small electronic devices)
- Bluetooth compliance verification
- WLAN compliance verification
- ESD self-certification capability.
- Compliance to GSM-UMTS standards verification (protocol stack excluded)

Mechanical Lab
- Thermal Cycle with shock and humidity (according to ASTN & DIN standards)
- Dust Test
- Shaker Test
- BGA red-dye analysis
- Thermal evaluation with infrared camera
- Crash test on small devices, with high speed video camera
- Complete Cycle of Mechanical Evaluation for mobile devices

Audio Lab
- Loudspeaker system design test and verification with anechoic chamber (for small electronic devices)
- Microphone system design test and verification with sound-proof chamber (for small electronic devices)
- Thermal evaluation with infrared camera
- Design verification thru simulation capability
- Transducer evaluation
- Compliance to GSM-UMTS standards verification (protocol stack excluded)

Imager Lab
- ISO standard testing for digital cameras
- Colorimetric testing
- Optimization and test of lighting and Flash-light
- General purpose-display test
- CMOS imager modules definition, test and optimization
Summary: Proposition Added Values

• Customer maintains full control on overall process and masterplan with clear and optimized interfaces
• Process simplification and efficiency improvement:
  – Detailed planning in charge of the Supplier
  – Communication flow between outsourced functions are all in charge of the Supplier. Intermediate relevant outputs will be provided as deliverable as well
• Cost savings
• Guaranteed commitment by the Supplier on the SLA and agreed milestones
• Safe roadmap to reach the final service configuration without discontinuity risks
• Workload peaks management