

CERTIFICATION AS A SERVICE

Certification and Testing Services for Terminals

Keeping terminal quality under control is an increasingly difficult yet imperative task, and the combination of many critical factors dictates the adoption of the best solutions available in the market in order to deliver proper quality to the end user without bloating costs related to quality assurance processes. Reply has a sound competence on processes and technologies related to terminal testing, certification and profiling, achieved in more than five years of best practice partnering with world-class wired and wireless network operators, broadcasters and terminal manufacturers. *Certification As A Service* is a proposition that allows the Client to outsource terminal certification and testing activities, featuring a complete set of functions, from process and project management down to the deeper technological facets related to terminal certification.

NEW CHALLENGES IN TERMINAL TESTING

End-user terminal, or customer-premises equipment, is a strategic asset for network and broadcasting operators as well as content/service providers. It represents the single access point to the whole set of provided products, with a major impact on the user experience. Be it a smart-phone, a set-top-box or an UMPC, terminal reliability, security, ease of use and interoperability are all keys to the quality perceived by customers, not only of the terminal itself but also of contents and services provided by operators and service/content providers.

Since the beginning of the new millennium the complexity of terminals has started to increase with an exponential growth due to competitive edge gradually shifting from basic services proposition (e.g. voice and data connection for network operators, or traditional media channels for broadcasters) to providing a rich set of personalized value added services, which bring into play a variety of bearers, network protocols, media contents, services and applications, all having different navigation and interaction paradigms. The complexity growth is more than linear as the various terminal applications and features have to interoperate in either a competitive or cooperative fashion, and be accessed in different contexts.

Another source of complexity is given by the necessity to keep up with fast market and technology developments, which leads to new applications and services being launched within the life cycle of already deployed terminals. The adoption of open operating systems and execution environments (technologies such as Java J2ME, Symbian, Windows Mobile/CE, Android, MHP, OpenTV are just a few noticeable examples) enables provisioning and installation of new applications and gives the necessary flexibility to cope with a fast-paced proposition evolution. The price to pay is a further increase in terminal complexity and risk of unpredictable behaviours when different applications –not always foreseen at terminal launch– are running in parallel and competing for underlying terminal resources.

Last but not least, many actors are involved throughout the product lifecycle and all of them have a direct or indirect impact on terminals and their usability: OS and chipset vendors, terminal manufacturers, network or broadcasting operators, third party content providers, organizations, just to name the main ones.

In this scenario, keeping terminal quality under control while ensuring an appropriate profiling of contents and applications based on terminal features and capabilities is a difficult yet imperative task, and the combination of so many critical factors dictates the adoption of the best solutions available in the market in order to deliver proper quality to the end user without bloating costs related to quality assurance processes.

REPLY ON THE FIELD

Set-top-Box

- **Audio/Video Multimedia**
 - Protocols: RTSP, RTP, RTCP, SDP, DVB-T, DVB-S, IGMP, unicast, multicast
 - Codecs: H.264, MPEG2, MPEG4, WM9/VC1
- **Operating Systems**
 - Linux, Windows CE
- **Browsing & Content Download**
 - Protocols: HTTP, TCP/IP, HTML
 - Browsing: DOM/CSS, Opera, Conqueror, ...
- **Management**
 - DSI -Forum TR-069, SMTP
- **Conditional Access**
 - NagraVision, DRM
- **Applications**
 - MHP, MacroMedia Flash, ...
 - ...

Mobile Handset

- **Java J2ME**
 - SUN KVM and J2ME Specifications, DTAP, Java Security Framework
 - MIDP1.0/2.0 (3D Graphics, Bluetooth, PDA, ...)
 - Tools: SUN JDTS Test Automation Tool
- **Audio/Video Multimedia**
 - Protocols: RTSP, RTP, RTCP, SDP, DVB-H
 - Codecs: H.263, MPEG4, ARM-NB, AMR-WB, RealAudio, RealVideo, AAC, AAC+E
 - Multimedia Formats: JPEG, GIF, PNG, SVG, (S)MIDI, SM4F, AMR, WAV, MP3
- **Operating Systems**
 - Linux Mobile, Windows Mobile/CE, Symbian
- **Browsing & Content Download**
 - Protocols: HTTP, TCP/IP, WAP (WSP, WTP), DRM, Wap Push - ML, XHTML-MP, WML
- **Messaging**
 - OMA MMS 1.0, 1.1, 1.2, SMIL, Wireless Village 1.1, 1.2, OMA EMN 1.0, IMAP4, SMTP
 - ...

Reply has a sound competence on processes and technologies related to terminal testing, certification and profiling, achieved in more than five years of best practice partnering with world-class wired/wireless network operators, broadcasters and terminal manufacturers.

During these years, Reply gathered technical expertise on terminal hardware, firmware and software for a variety of terminals including fixed and mobile telephones, smart phones, PDAs, digital STBs (either based on IP or DVB standards), and UMPCs.

This expertise, together with consolidated knowledge of industry-standards for application development, communication protocols and media encodings, is

Fig.1 – Reply skills on VAS applications for terminals

leveraged by Reply in order to offer high-quality testing and certification services that target the needs of operators, terminal manufacturers and content (media, applications, etc.) developers.

In particular on mobile handsets and STBs, Reply provides total testing coverage for all of the technological aspects, not only limited to VAS services (e.g. browsing & content download, messaging, etc.) but also on network protocols and bearers (e.g. lab, live and drive tests for wireless terminals), and innovative technologies (e.g. IPv6, SIP, IMS, HSDPA/HSUPA, etc.) that will act as enablers for even more wired and wireless services and applications.

CERTIFICATION AS A SERVICE

Reply concept of Certification as a Service is a proposition that allows the Client to outsource terminal certification and testing activities, featuring a complete set of functions, from process and project management down to the deeper technological facets related to terminal certification:

- Technical Product Management, Program and Project management;
- Requirements and Standards analysis and Test Specification definition;
- Integration, deployment and maintenance of test automation tools and test environments;
- Terminal testing, from early terminal development stage down to technical acceptance and certification;
- Fault analysis, troubleshooting and technical solution proposals, on both terminal side and server/network side;
- Terminal capabilities testing and configuration on service platforms, performances and QoS in the E2E chain.

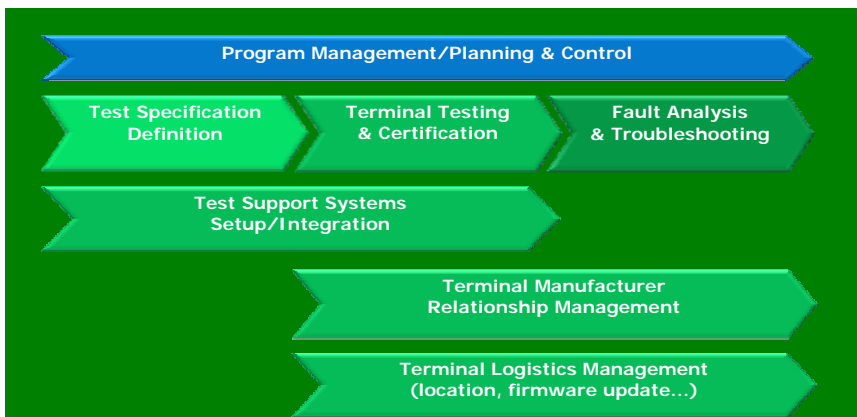


Fig.2 – Main process flows for terminal certification

According to Client needs, Reply offers certification services in different scenarios: **hosted service** in Reply premises; **on-site service** in Client premises; **distributed service** (hybrid from the first two).

In the first case (hosted service), Reply engages internal resources and infrastructures in order to set-up the whole testing structure and run the main process flows related to terminal certification.

In this scenario, Reply covers the whole management and technical activities related to the certification. Reply takes care of planning communication for all the interactions with the Client, with clear points of contact and escalation.

In the other two cases (on-site service and distributed service), all or part of the activities can take place in Client premises, and Reply may offer different bundles of management and technical services, with interaction mechanisms that best fit Client needs.

Reply Certification as a Service has already been successfully instantiated with prominent operators in the Telco market, which have been favoured by the following benefits:

- ensuring of maximum terminal and application quality, while keeping at the same time strict time to market constraints;
- cost saving through process industrialization and use of best-in-class testing solutions;
- management of workload peaks or drifts, with guaranteed commitment by Reply on the agreed SLA and milestones;
- process simplification and efficiency improvement: detailed planning in charge to Reply, while the Client maintains full control on the overall process and masterplan with clear and optimized interfaces;
- in case of pre-existing testing activities on Client side, safe roadmap to reach the final service configuration without discontinuity risks.



Live Reply is the Reply group company dedicated to advanced services and digital contents for Mobile, Web and TV. Live Reply satisfies the requirements of Telecommunication and Media Company Operators to create a new generation of services able to leverage the conversion between media, the potentialities of the new consumer electronics and the ever-growing possibilities of customizing the “user experience” offered by the network.

In particular, Live Reply is specialized in the planning, development and distribution of services and contents on Mobile and TV, in defining Community and Entertainment services for Web, Mobile and TV, and in developing advanced applications for Mobile Devices and Set-Top-Box.

Live Reply
www.reply.eu