

Embedded System Testing: Messaging via Bluetooth

“Using the invaluable information about the current state of the system, its flaws and potential risks, we managed to create a really high quality product. Now we can focus our efforts on the strategy of further system improvement and development.”

Project Manager

Customer

The customer specializes in development of new interactive media channels based on Bluetooth technology.

Company	<i>Interactive media channel development company utilizing Bluetooth technology</i>
Country	<i>Russia</i>
Business Domain	<i>Development, implementation and advancement of interactive media channels</i>
Services Used	<i>Quality Control</i>
Cooperation Model	<i>Independent Software Testing and Quality Control</i>
Duration	<i>1 month</i>
Efforts	<i>3 man-months</i>

Project

The customer product arranges networks for delivery of advertisements to mobile devices via Bluetooth.

The system includes message delivery devices and a server that controls these devices. The server is also used for managing message content and delivery rules.

The delivery devices may operate offline or they can be connected to the server via Ethernet, Wi-Fi, or GPRS, which allows setting up a mobile interactive network for delivery of messages.

Challenge

The project set a number of specific requirements, including the following:

- Work out and set up the testing process in compliance with applicable world standards.
- Test both hardware and software.
- Execute supplementary testing of the interfaces connecting the control server and message delivery devices.
- Run functional tests.

Solution

The project implementation strategy involved procedures and test activities attuned to the customer objectives, namely:

- Engineering of the testing process, development of test documentation, setup of systems for defect tracking and requirement management.
- Testing of the graphical user interface for message delivery devices.
- Testing of automatic message generation by message delivery devices.
- Testing the message delivery process in mobile devices that allow data receipt/transmission via Bluetooth (mobile phones, pocket PC, notebooks). This type of testing was executed on a wide scope of popular models with various functionalities and screen resolutions.
- GUI testing of the control server.
- Testing of various interfaces connecting the control server and message delivery devices (Ethernet, Wi-Fi, GPRS).
- Testing if the message delivery devices can determine the model and maker of mobile devices. Check of the dependency between the delivered content and model/capabilities of each given mobile device.

Technologies used

Defect tracking system: Rational ClearQuest

Requirement management tool: Rational RequisitePro

Success

- The QA team delivered a complete package of test documentation (test results, final reports, quality evaluation, and multiple improvement proposals).
- The customer received an objective assessment of the product quality.
- A large number of defects were uncovered and fixed, which significantly improved the fail safety and overall quality of the product.
- A1QA arranged the cooperation and defect fixing process in such a way that it required only minimum participation of the customer.