

# SYNERGY OF FUNCTION-ORIENTED MANUAL AND AUTOMATION TESTING FOR QUALITY MOBILE SOLUTIONS

*ELEKS and the client, the leading provider of enterprise and mobile application solutions, have been successfully collaborating for over 10 years and have established a comprehensive mobile enterprise system for B2B business which can be easily run on diverse existing and emerging mobile platforms.*

*Mobile testing was integrated into the complicated multi-phased cycle of software development process bringing flawless mobile testing solutions to reality while ensuring mobility with efficiency, productivity and reliability.*

## CHALLENGE

At the initial stage of the project, the main challenge was to transfer the legacy application from PalmOS to Android and iOS. Due to the continuous evolution and improvement of the mobile solution, the number of challenges increased. The initial goal of the solution was to guarantee usability so the system can be easily and intuitively understood.

The web server was another bottleneck as its behavior was to be checked under different conditions, e.g., continuous server load, data deleting etc. Due to the large amount of data, the ELEKS team ensured the high quality of data reviewing and downloading for the multi-user application. Another challenge was related to the integration of the system with a scanner while having a critical need to ensure a quick, easy and flawless scanning process of barcodes with the help of Bluetooth or a camera.

While the accuracy of data input and deletion is an important part for users, the related testing of the database was performed.

### Solution overview

The overall solution structure involves investigative testing at the intuitive level as well as the requirements analysis. The solution focused on the combination of manual and automation testing to effectively provide an end-to-end testing process. During the testing proceedings, the new functionality and requirements were added to the system by the client, which resulted in the adjustment of the test plan to all the specifications with an immediate effect.

### Customer

Leading provider of enterprise and mobile application solutions for industries such as wholesale, distribution and retail.

### Industry

Wholesale, distribution and retail



## SOLUTION

While implementing mobile testing, the QA team focused on the following critical aspects:

- **Functionality**

The application was tested due to the functional requirements in the course of the two-stage implementation process: the positive scenario or 'as-needed' (within the scope of the provided requirements) and the negative scenario or 'what-if' (out of the requirements scope) - in order to ensure the smooth functioning of the system.

- **Efficiency**

The seamless work and speed of the system was checked based on different types of internet access as WIFI, 3G/4G and LTE.

- **Usability**

The verification of the system was conducted in terms of proper responsiveness of the system, e.g. notifications of the user's actions, dialogue boxes where necessary. The general requirement was that the user should understand how to create events as placing an order or just closing the application at the intuitive level.

- **Reliability**

The software application was checked for stability and solidity. The ELEKS team validated the accurate work of the application in case of divergent failures, e.g., internet connection loss, battery discharge, interruptions by incoming calls, etc. Additionally, the security of the application was verified in terms of keeping the user's data secure.

The following types of testing were performed to check the critical aspects of the mobile application:

Stress testing was conducted continuously upon the implementation of a new module or before each build phase to ensure the stability of the system.

Security testing was introduced at the end of each iteration to check the security loopholes and verify if the system meets all the security requirements to eliminate leakage of sensitive users' data.

Regression testing was performed before each build phase in the testing process to assure the resilience of the previously built functionality.

Load testing was mandatory to use as the system is multi-user and operates with large amounts of data.

Performance testing was performed to check the system quality metrics such as scalability, reliability, and additionally, to explore how the system operates in terms of responsiveness.

### Technologies and tools

Divergence tools were estimated and checked beforehand. Due to the specific features of the system, such as a large number of external libraries posing a conflict to some of the frameworks, the thorough investigation was conducted with the following technologies accepted:

- Robotium
- UIAutomation embedded
- Embedded Visual Studio
- Selenium



## Key deliverables

The efficiency of the well-considered combination of manual and automation testing with all selected frameworks and tools ensured the client's confidence in the high-grade quality solution and brought significant business benefits. On the delivery stage, the ELEKS QA team provided the comprehensive reports on multiple test scenario results with recommendations for covered issues. We provided end-to-end mobile testing, delivering the excellent product within the specific client's constraints including timing, budget, and resources.

## Business benefits

With our end-user focused approach, the ELEKS team guaranteed the delivery of high-quality performance solution resulting in increased loyalty of the client's users. Due to the successful software release on the new operating systems, the customer database of our client grew, and therefore, the overall number of the end-users increased several times over within six months, contributing to the tremendous growth of the client's ROI.

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### The ultimate business benefits provided for the client:

- Accelerated time-to-market due to our innovative testing techniques and the Bring Your Own Device (BYOD) corporate strategy;
- Lessened vulnerability to security breaches in order to keep end-user's sensitive data protected;
- Cost efficiency through considerate use of both manual and automation tests;
- Decreased time for the testing process through the improvement of auto test efficiency by 4-5 times;
- Assured robust and stable performance of the system through a highly rigorous and effective testing process;
- Detection of mission-critical post-production flaws that generated unblemished digital accuracy.

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