CASE STUDY

stag

Enhanced Delivery Confidence with Improved Product Maturity

STAG's unique engineering approach to designing test cases enabled detection of critical defects and improved product maturity of a mobile phone application of a global embedded telecom solution provider, enabling go-to-market with high confidence.

▶ Domain/Category - Embedded and Telecom

▶ Technology - C/C++

CUSTOMER AND PRODUCT BACKGROUND

The customer is a global communication technology solution provider helping businesses across the telecom value chain – terminal device manufacturers, network equipment manufacturers, semiconductor vendors, and network operators – accelerate product development through a unique combination of ready-to-use technology blocks and services backed by unparalleled telecom experience.

The product in question was new initiative and involved developing mobile application framework software. The product was developed using C/C++ on the Windows platform and used some COTS components.

PROBLEM STATEMENT

This was a prestigious project for the customer as it was a business opportunity that could potentially open up new markets, create a new revenue model, and establish a major product-line. The product development was based on an integrated model, with various software components being developed by multiple development centers of the customer and also by partner vendors. With the software components coming from different sources at different stages, the maturity of the product for release was suspect. Hence the customer decided to seek the help of a testing expert to evaluate the product maturity before going to market.

SOLUTION

The STAG team first reviewed the existing test process and detected numerous anomalies. These included:

- Inappropriate test cases due to gaps in requirements.
- Test cases being documented in a way that allowed only domain experts to execute them.
- Test cases being more UI-specific.
- Lack of ability to detect critical defects.
- Builds being accepted for system testing without any sanity check, resulting in repeated testing and, therefore, increased testing time and effort.
- Large amounts of time being spent on integration testing and system testing in host environment as well as on target hardware.

\# Test cases added: 1000

\# High severity defects detected: 400

Next, the STAG team put in place a well-structured knowledge transfer mechanism to understand the requirements and product features. The team applied Black Box testing techniques to design test cases, used the HBT technique of EFF (Error, Fault, and Failure Model) for devising strategy, and applied the HBT testing techniques of BeST and Quality Factors to generate test scenarios from data and logic specifications.

The team documented the test cases in a way that enabled simple and easy execution. Further, it also defined the build acceptance criteria for system testing. It created positive and negative test data for the various audio and video codecs/formats required for multimedia testing using tools like Super, JPEG Imager, and HexEdit.

The STAG team applied HBT's Interaction Matrix tool to broaden test coverage and identify proper regression scope for all builds.

Finally, after testing every release, the team collected metrics and prepared test reports that contained data on test progress, high impact issues detected, and product maturity.

OUTCOME AND VALUE ADDITIONS

Segregating the tests and test cases according to the levels of testing being performed at the unit, integration, and system levels helped put appropriate gates at each level of testing and enabled the build quality to be gauged better right at the unit and integration levels itself, instead of only at the system levels. This also helped determine the appropriate steps to be taken once the defects in requirements were detected at the early stages. An improved test process led to lower operational costs and resulted in:

- 40% reduction in system testing effort
- Reduction in the rejection of builds, from 60% to 30%
- Improvement in the product maturity index, from 35% to 65%
- Zero defect in customer acceptance testing

Finally, the management's buy-in with regard to the quality of the product enabled the customer to go-to-market with high confidence.