Harnessing the power of the crowd for the mob

A guide to crowdsourced mobility testing for BYOD enabled enterprises

With over 1.8 billion mobile phones sold around the globe[1] and millions of apps that mobile users can choose from, organizations have embraced 'bring your own device' (BYOD) policies to enhance employee productivity by mobile-enabling the workforce. In fact, Gartner predicts that, by 2015, smart phone and tablet app development projects will outnumber those for native PCs by a ratio of 4:1[2].

However, large organizations struggle to keep abreast of testing product reliability and app stability. Critical failures in handheld device functionality, however small, can lead to alarming disruptions in business. Mobile users can delete an app en masse – and swiftly bring the app developer to the ground. Robust testing of mobile features, localization, platforms, and versions – a time and effort-intensive activity – is thus imperative. For BYOD-enabled enterprises, in particular, testers must typically carry out three times the normal testing iterations within a short window, to assure desired device performance.

Enter crowdtesting

Crowdsourced testing – 'crowdtesting', in short – offers a simple, easily manageable, and cost-effective method of testing device-OS-app combinations across geographies. It typically involves a large team of software testing experts and consultants in different geographies who run the devices, operating system (OS) versions, browsers, applications, and human languages under test in different real-world scenarios at varying loads.

In crowdtesting, the testing team first carries out a functional analysis of the app, OS, or platform under test, logging bugs and vulnerabilities or defects, based on generic guidelines and test cases. The testers uncover defects deep within the software, which is particularly advantageous for user-centric applications with a large user base, as crowdtesting can mimic scenarios typical in large multinational organizations.

Pluses and pitfalls of crowdtesting

Such well-distributed pools of experienced testers and testing resources, configurations, contexts, and data can be difficult to access in-house. Thus, crowdtesting raises test reliability levels, shortens development and deployment time-frames, and delivers bug-free apps for full-fledged deployment.

Moreover, crowdtesting becomes cost-effective when, both, client and service provider work through details on scope, coverage, and type of testing; tester skill-sets; device arrays; and test frameworks envisaged.

The elapsed time for testing is relatively short. Productivity is thus higher for, both, the client and the service provider. Concurrent testing by a large pool of testers compresses the time required to take the software to production, providing the client with faster time to market.

Crowdtesting inducts external testers as well. This has the advantage of enhancing professional neutrality regarding shortfalls in software quality. However, confidentiality could become a pressing concern if the service provider cannot vouch for the integrity of independent consultants and other contract workers within the external testing team. What's more, free-agent testers sometimes inflate the number of defects logged – and, consequently, project costs.

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[1] http://mobithinking.com/mobile-marketing-tools/latest-mobile-stats/a#mobiledevices

[2] http://www.gartner.com/newsroom/id/2131115

Team communication and management could be hampered if the service provider doesn't have a well-established, proactive culture. Moreover, unless the client engages with a multi-geography service provider with mature onsite/offshore systems and processes, management overheads could escalate.

Win-win enterprise crowdtesting

The challenges associated with crowdtesting have therefore led to a mature crowdsourced testing approach called 'enterprise crowdtesting'. This approach uses assets by service provider organizations and its resources to replicate a quasi-cloud environment. It introduces the governance measures necessary for secure and accountable crowdsourced testing. Enterprise crowdtesting retains the agility of uncontrolled crowdsourcing and incorporates the best practices of formal software testing.

The actions that can be taken, as part of a mature enterprise crowdtesting methodology, should cover four phases – requirements, process, execution, and management. The 'do's' in each phase which must be considered are as follows:

Requirements

Finalize the range of real devices, OS combinations, and cloud-based tools, and testing strategies and techniques. Identify the subset of device, OS, and network combinations for which to optimize the testable apps.

Define the fit between the client organization's BYOD policy and the crowdsourcing model. Ensure that you and the service provider have a strong, secure organizational enterprise BYOD policy.

Secure an in-house enterprise app store in which authorized testers formally register, authenticate, and monitor the devices you plan to use. Avail and utilize the device-OS-network combinations of your associates' mobile devices, for complete, end-to-end test coverage.

Process

Identify your organization's quality assurance (QA) and other internal business processes and resources. Select the right mix that combines mobiles, tablets, and other devices with OS' and geographies of operation. Formally enroll and approve the enrolment of associates and devices, as per the BYOD policy of your enterprise.

Deploy the required applications to the enterprise app store.

Share the test cases and test data with the enterprise crowd, through an approved test management tool.

Roll out secured authentication for accessing the required apps in the store.

Execution

Include both on-premise test execution and crowdsourced testing in the test plan that both you and the service provider have agreed on. Then, host the concerned apps in the enterprise app store.

Ensure rigor regarding the security defining the app store so that you can monitor all actions performed within it. Provide users inducted into the crowdtesting project with separate modules so that each tester tests the applications within their modules only.

Estimate the testing window on a module-to-module basis and make the appropriate enterprise apps accessible for that duration only, for test execution. Withdraw the corresponding user authentication thereafter. Monitor every action of a given tester, during test execution.

Based on the end-to-end scenarios planned, the modules in scope, application functionality, and the count and severity of defects, decide the total window for crowdsourcing.

Select the users, based on device-OS-network-geography fragmentation.

Device and Test Management

Load all test cases and test data into the test management tool to which the crowdsourced testers have access.

Log all defects, as part of your quality control function, mentioning device name and version, and network and geography of operation. Ensure that the on-premise test team validates the defects, and assign the defects to the developers concerned. Assign re-testing of the defects to the same crowd or on-premise team, as the case may be, based on device, OS, network, and geography identifiers.

Make the QA team accountable for the entire process.

A crowd of benefits

Enterprise crowdtesting offers many benefits and can provide maximum test coverage at a minimum cost with a high level of security:

Reduced defect leakage into production: As the mobile devices are tested with various device-OS combinations across geographical locations, you can identify issues pertaining to device/OS configurations before they leak into production.

Wide coverage in major devices and OS': There are a large number of devices in the market, and it is near-impossible to access them all for app testing in the device-OS model. However, this model utilizes all available devices from QA associates across geographies and overcomes related hurdles.

High performance under strategic geographical conditions: Testing of apps is not restricted only to offshore, but also directly in various geographies on popular devices and existing network conditions in that geography. The model thus exemplifies a best practice for geography-specific testing and rollout.

Multi-level intra-enterprise store app security: Another benefit is that you can restrict access to only those apps that have cleared multi-level security, are logged in the enterprise app store, and adhere strictly to the organization's BYOD policy.

Authentication monitoring during test execution: You can manage all testing within the enterprise app store through the test management tool, and monitor each authentication during test execution. Only associates selected to perform testing have due access.

Extensibility to incorporate the latest devices: This model enables testers to include devices that are the latest in the market, immediately post-launch. As device manufacturers introduce new products and OS' into the fast-changing market, including them even as they are released in a particular geography makes for a strategic advantage.

Minimal device procurement and high device utilization: Procuring major devices in order to test them is not a cost-effective approach. This model allows service providers to exercise the cost-effective sourcing option, since such devices are sourced from testers who perform test execution.

Conclusion

The benefits of crowdsourcing are immense, be it for software development, film production or, as in this case, mobility testing. Crowdsourcing leverages the common agenda among disparate stakeholder groups and creates innovations that can yield significant returns. In the words of contemporary American author Jennifer Egan, "It may be that a crowd at a particular moment of history creates the object to justify its gathering." Thus rests the case for crowdsourced mobility testing.

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