Mobile Application Testing Demands In Today's Market

MOBILE APPLICATION TESTING DEMANDS IN TODAY'S MARKET

by Benjamin R. Waymire

According to global market intelligence firm, IDC, "shipments of app-capable, non-PC mobile devices (smart phones, media tablets, etc.) will outnumber PC shipments within the next 18 months – and there will be no looking back," the company said.

That's a powerful prediction. But we've seen this coming for some time now, haven't we? Today's generation of hand-held, mobile devices is built with application qualities central to design. As a result, mobile application testing on smart phones and tablets has become a critical part of the software development process for both medium and large organizations. Players like Apple (iOS), Microsoft (Windows Phone 7), Google (Android), Nokia (Symbian), and Research In Motion (Blackberry 6), have stepped up to stake their claims in this highly-competitive market. The explosion in the variety of devices that use quickly-morphing operating platforms is disruptive: both in terms of people's expectations with mobile applications *and* the technology itself.

There is no question that with the power and complexity of mobile applications come significant value and efficiency. However, we must also remember that such power and complexity also present abundant challenges to ensure that mobile applications excel in reliability, performance, and usability. So how does a testing organization deliver success? The answer is short but not simple: **comprehensive mobile application testing in a sophisticated environment**.

A LITTLE BACKGROUND

Software application testing and quality assurance (QA) is nothing new. Applications for the desktop are much more mature, with multiple generations of usage and testing procedures. On the other hand, mobile device application testing isn't as mature, and certainly there have to be some base similarities in testing desktop and mobile applications, right? Right. But despite some development and testing similarities in both environments, mobile application testing has far more challenges and potential pitfalls.

Because of the dynamic complexities in testing mobile applications, it is nothing short of business critical to contract a testing service that not only understands the differences, but also is equipped to address them…again…**comprehensively**. So what does that mean? Reliable mobile application testing must cover the entire lifecycle of an application: from design and development to deployment and new releases. Modern mobile operating systems like iOS and Android, and innovative devices like the iPad promise very exciting, innovative flavors of mobile applications. New applications will also require individualized testing to the integration and management of all parties – internal and external – in a carefully-mapped strategy to a quality release, every time.

THE CHALLENGES OF MOBILE APPLICATION TESTING

Rapidly Evolving Field of Players

Application-based mobile technology is restructuring the playing field for top providers (and carriers). Apple, with its iPhone and iPad, is probably the mega-

disruptive player in the market. Android and Windows Phone 7 are other contenders, though it's debatable that Android and Windows Phone 7 are even viable contenders to Apple when it comes to tablets, as one example. Long-time players like Nokia, with its Symbian operating system, are drastically losing market share. Blackberry, long the "king of the hill" in business communication, is in real trouble nowadays. Its application technology isn't nearly as attractive to third-party developers as Android or Apple, for example. Blackberry's new phones and tablets require Adobe AIR for application development, which is also unattractive to developers. What is not debatable, however, is that mobile application devices are the future.

Complexity of Devices

Just like with any software, mobile applications must operate correctly on the intended user client devices. In desktop applications, there is only a handful of operating systems to consider and a relatively small pool of hardware producers. Desktop hardware and operating systems are also mature, and there is a much deeper pool to draw from in making comparisons and doing testing. Such is not the case in mobile applications. Mobile applications present a more challenging landscape of platforms than desktop or server platforms.

Not only are mobile operating systems young by comparison, but also mobile hardware is far more heterogeneous. The complexity of differing minimum screen sizes, varying input modes and means, and sharply contrasting computational resources is daunting to any application developer. All desktop operating systems are very mature, and PC hardware is basically homogeneous. Some mobile hardware approaches a level of uniformity, making the testing of applications on devices like the iPhone, iPad, and BlackBerry a little easier. But Android devices, for example, are not at all homogeneous; requiring an application tester to seek out other pragmatic options when it comes to the scope of test coverage.**User Experience**

Every good application developer understands that software has to do more than just run. When testing mobile applications, it is vital that a tester recognizes the differences in desktop and mobile application testing. In testing the user experience with mobile applications, there are several things that differentiate it from desktop application testing:

Fewer User Expectations – The relative immaturity of the mobile operating systems means that there are fewer usage conventions on which to depend and therefore fewer user expectations that can be anticipated. Indeed, some Android vendors are layering their own user interfaces over the OS-provided user interface (UI). The Barnes and Nobles Nook Color eReader, for example, uses Android apps but only those ported to work with the Nook. If a mobile application developer expects the application to be used on Nooks, another layer of testing required.

Need to Appear "Native" - The diversity of operating systems and UIs means that one application might have to present vastly different interfaces on different devices, if the application is to appear "native" to the user. This may apply even within a single operating system: compare the iPhone and the iPad.

Combinations of Interactions - The variety of hardware input modes translates into more combinations of interactions to test. The BlackBerry Pearl for instance (and trackpad controller) is platform-specific, as are many multi-touch screens. This

variety presents a significant challenge in producing successful mobile applications.

SOUND TESTING AND A COMPETITIVE ADVANTAGE

Companies and application developers need to get serious about testing mobile applications to adequately keep up with market demand. It takes very well-seasoned, "serious" developers working in a proper testing framework to test mobile applications correctly. To attain a competitive advantage, mobile application developers need well-founded and state-of-the-art testing environments that recognize the following factors:

➢ Mobile and desktop applications must be in sync and cross-tested (and must be tested in an environment that can guarantee that).
➢ Current and future generations of mobile applications have to work with client servers and many mobile-to-desktop configurations.
➢ Adequate testing requires a heavy investment in a wide spectrum of mobile communications technology, resolving operating system "idiosyncrasies," and dealing with variances in mobile and landline response times.
➢ Ideally, working with ONE organization for all testing (mobile and desktop) is ideal. Why? The result is efficiency, speed, more development capabilities, better deployment, and **accountability**. The bottom line is that a single point of testing (one organization) yields much better end-to-end capabilities.

Mobile application testing is a demanding process that requires thorough deliberation through every stage of an application's lifecycle: from initial design to wide-scale end use. Contracting an organization that specializes in this kind of multi-faceted testing ultimately means achieving maximum return on investment.

THE UNIQUE REQUIREMENTS OF MOBILE APPLICATION TESTING

Design Phase – Mobile application developers generally need a third party to provide testing during the design phase. Such testing provides incorporation of quality assurance tools such as testing libraries or software performance instrumentation. From the initial design, unique features like battery life and connectivity are a challenge not faced by today's desktop developers.

Development Phase – The release cycles of mobile operating systems occur two to three times faster than desktop operating systems. This, combined with the accelerated pace of innovation in mobile device hardware, requires the utmost in testing environment flexibility. It also means that testing schedules have to be flexible as well.

SUMMARY

Part of the reason for the shortened lifecycle of mobile application development compared to desktop application development has already been discussed. But there is another important element at play here. Users of mobile applications will be using those applications far more than they use desktop applications in the not-so-distant future. And they will be using them in a more personal way. Mobile applications are not tethered to a desktop device or a somewhat-mobile laptop computer. Rather, these applications are attached to *users*: at the office, on the way to meetings, at home, on vacation, and everywhere in between. Additionally, mobile

applications are often used cross-platform, meaning the application an end user has on his or her smart phone is now also showing up on his or her new, internet-capable television. The same application is experienced in very different environments. Most importantly, the applications are being tightly woven into the very fabric of our everyday lives. Therefore, the criticality of mobile application testing cannot be overstated.

The greatest driving factor in innovation is the demand of its marketplace. Well, today's marketplace demand for mobile applications is ferocious, to say the least, and headed on a steep curve upward. Developers know they need to get it right the first time and avoid very costly product delays to the end user. Proper mobile application testing eliminates those costly mistakes before they ever occur.

About The Author

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