MOBILE APPLICATION TESTING

TekMindz's
Testing solutions
for enterprises

TEKMINDZ ™

Mobile Testing Strategy

There are unique challenges in testing mobile applications. The challenges are mainly due to the availability of vast types of applications, mobile OS, manufacturers, models, resolutions, service providers and regions. In order to overcome these challenges, we, at TekMindz, have devised a mobile Testing strategy that combines different testing options which not only provide us the best overall testing result but also balance out the trade-off between quality, cost and time-to-market. Our testing strategy is formulated by bringing in vast hands-on-experience in testing various natures of applications across different mobile OS from across service providers.

To overcome such challenges of OS diversity, cost and time-to-market, our structured approach to mobile testing incorporates the adoption of testing right from the development phase of the application lifecycle. The following sections discuss our mobile testing strategy.

Unit Testing

We test mobile applications' functional aspects during the development phase itself using Emulators and ensure that basic functionalities are working fine and there are no surprises at the formal testing stage.

Integration Testing

Integration testing is also carried out during the development phase itself using Emulators which ensures that the functional testing phase goes smooth.

System Testing

Install/un-install/upgrade Testing: We carry out installation/un-installation and upgrade testing using various communication media (as applicable) such as mobile network (app stores), Wi-Fi, USB cable, Bluetooth etc. This ensures that both the application, as well as mobile, are usable on installs/un-installs and upgrades. Also, mobile resources are manageable and recoverable as a result of these processes. Testing is carried out on real devices.

Functional Testing: Starting off, Functional testing is carried out on Emulators according to the compatibility of the OS/models is required. Once the application stabilizes, testing is carried out on real devices. Our functional testing includes:

I. *Various Network strengths:* testing is carried out on various network strengths like "No network", "Low" and "Normal" to ensure smooth working of the application.

II. *Various network speeds:* Applications are testing on various network speeds like "Low", "Medium" and "High".

III. *Network types* – We carry out testing on different network types like 2G, 3G, Wi-Fi and, also, (as per application requirements) testing is carried out on different mobile plans.

IV. *Memory usage:* Memory usage of the phone is monitored during the testing.

V. *Battery usage:* Battery usage is also monitored for longevity of the charge cycle of the mobile with the application usage.

VI. *Battery consumption:* Consumption pattern of battery is also monitored for different modes of usage e.g., applications running in background, active and inactive applications with short as well long application usage.

VII. *Interruption testing:* It is carried out to ensure that application behaves as desired when it is interrupted with scenario such as mobile voice calls, SMS/MMS, device shutdown/battery removal, network on/off, network change.

Testing usability: Usability testing is carried out to identify the non-user friendly areas of the applications; these could be ease of navigation or application flow, application intuitiveness or just for proper messages and hints.

Multi OS and multi device testing: As per the application requirement, testing is carried out on various OS (iOS, Android, BB, Symbian, Windows and J2ME) and the various mobiles hardware devices that use these OS. We also cover the testing of different input types of each model (such as single/multiple touch, Virtual/normal keypad, track ball/track wheels etc.). Also, different modes are covered (such as portrait and landscape).

Regression testing

Regression testing is normally carried out manually but if time permits, then automation can also be done so that maximum functionalities can be regressed in minimum time across various handsets. We use Appium and Robotium for automating the functional area of mobile applications.

List of Tools and Framework for Mobile Application Testing

Manual Testing

We generally use Physical Mobile Devices and Emulator for manual testing.

- **Apple (iPhone/ iPad) Emulators:** A computer running a version of OS X (i.e. an Apple Mac)
- **Android Emulator:** A computer running AVD (Android Virtual Device) by using Eclipse Development Environment
- **Mobile Devices:** iPhone, iPad, android Tablet, Android mobile phones. (its depends on OS version & screen resolution)

Automation Testing

Frameworks:

- JUnit testing framework for Android
- Keyword-driven test automation framework

Tools:

- For native iOS app, Apple provides an *Automation instrument* that automates UI tests against the iOS mobile application
- Appium test automation tool is used for Android and iPhone

"The proliferation of smartphones and tablets – predominantly bolstered by more affordable mobile hardware form factors and steady advancements in technology offerings – is prioritizing the need for robust Mobile strategies for enterprises. The potential opportunity Mobility brings for enterprises is enormous. Yet, the array of challenges enterprises will need to overcome cannot be overlooked. As such, enterprise needs for scalability, effectiveness and user experience is becoming pressing concerns for Mobile strategy leaders.

TekMindz's Testing Center of Excellence (TCoE) leverages the Testing ecosystem to offer comprehensive testing solutions to deliver predictable quality and faster time to market for clients. Our Mobile Testing approach combines and establishes testing methodology with a wide range of industry standards and testing tools for our clients to achieve superior quality mobile applications to enhance business readiness and realize competitive advantage from their Mobility initiatives.

About TekMindz

TekMindz is an IT consulting & technology services company with headquarters in India, serving clients across Asia/Pacific, Middle East, North America and Africa. Bringing together technology, people and processes across diverse sectors for organizations around the world, TekMindz enables business enterprises and governments to most effectively serve their customers and citizens.

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