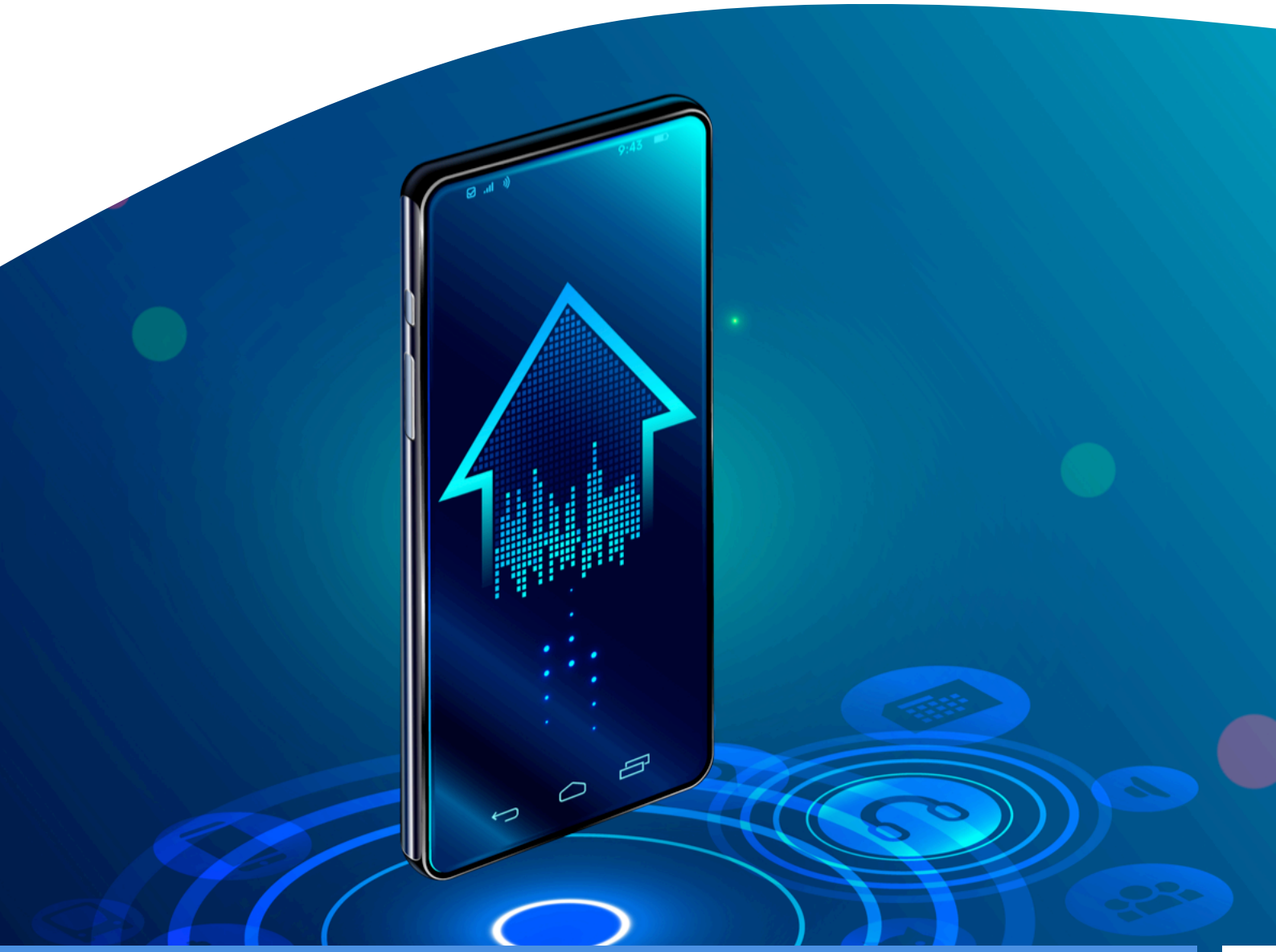
White **PAPER**

TEST TRIANGLE
Trusted Partner in IT Consulting

Why we need a Unique Approach for Mobile Test Automation?



Mobile boom has occurred and every other organization is creating its own mobile application. But creating powerful mobile applications is complex as mobile applications are developed in a dynamic ecosystem. There are several unique challenges in mobile application development such as hardware and software fragmentation, networking issues, performance, and memory leakage and battery consumption. Therefore, today there is a need of having a unique approach for mobile test automation.

Introduction

There are only a few technologies, which have such a profound impact as the mobile devices. The shift towards mobile phones began at the beginning of this century and yet, mobile phones and similar traction of devices have been around for a while. These mobile devices have a very strong impact on the IT industry.

Meanwhile, the technological advancements and explosion of the mobile devices have made rolling out new products and applications more challenging for the IT division. Further, the mobile vendors want to test each application to assure that it is integrating seamlessly with other platforms. There is a high pressure of short mobile development cycle; however, it is necessary to test the mobile applications across the operating systems, device platforms and networks. The non-functional testing is also important for checking that the mobile applications are working in a proper manner. Mobile testing also assures that the applications are constantly improving their quality. With the increasing pressure on quality and efficiency, mobile automation is becoming an ideal choice for the mobile testing. The present white paper sheds light on the best mobile automation practices. It also highlights the challenges in mobile automation testing.

Need for a Unique approach to Mobile Test Automation

The first question that comes in mind regarding mobile testing is can we use the plethora of knowledge developed around the software testing in general. However, mobile testing differs from the traditional testing approaches in several ways:

Mobile System

A mobile system is different from the stationary system in various ways. In contrast to the stationary system, the mobile system uses public network such as GSM or WLAN, rather than secure company's network. The mobile system properties such as multiple browsers and platforms and different application runtimes also makes the testing procedure challenging.

Different Quality Benchmarks

Although the quality expectations for both mobile and desktop devices are similar; yet there are different benchmarks for security, performance, portability, reliability and maintainability. For instance, the mobile hardware should make a minimal impact on the battery to extend battery life. The mobile systems have more interfaces; therefore, a higher degree of security should be provided to the mobile applications.

Different networking platforms and operating systems

The basic principle of software quality assurance remains same for both mobile and desktop applications; therefore, it is not necessary that the business organizations adopt a novel approach for the quality assurance of the mobile devices. However, the QA system must be adapted for the mobile applications. The QA should assure that it can tender shorter time-to-market. Further, it should be assured that the mobile applications are not only compatible with different operating systems but also with different device classes and vendors.

Changes in Testware

The traditional security tools are not compatible with the mobile applications and are not able to test the quality data for security and efficiency. Fuzzing is a stress test, which can detect the problems regarding security and robustness.

Flexible Development Model

The mobile development systems are more flexible as the mobile products are changed more frequently than the traditional website applications. Iterative and incremental development model can are required as they can frequently implement the sequential procedures. The quality assurance can reduce the time-to-market.

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Mobile Test Automation

As per the previous discussion, frequent changes and updates are integral to the mobile application development. Therefore, with the automation of the repetitive tasks, the companies can leverage efficiency gains. In software testing, the major emphasis is on automating the testing activities as in this testing; the devices have to be tested on more than one platform. These can be virtualized devices in a test lab or device emulators which can run on PC hardware. Therefore, automation is a convenient way to increase efficiency in testing mobile devices.

However, proper consideration has to be made regarding the testing architecture and the testing tools for the success of the products. The traditional manual testing does not fit into this environment because of immense time pressure. The automated testing is effective approach to increase testing efficiency. It is expected that test automation will have the following features:

Complete Test Coverage: The QA automation tool should address the functional, non-functional and integration testing requirements.

Script less Automation: Business analysts and subject matter experts will be able to participate in the automation process and it will reduce the automation time and increase test efficiency.

Parallel test automation: The test automation should be executable in multiple devices and platforms

Continuous Integration: Timely execution of the test scenarios

In addition to the standard automation testing, following specific types of testing also need to be automated in mobile automation:

Cross-platform Testing: It ensures that the mobile application is compatible with different types of handsets and platforms.

Network Testing: The testing should be conducted to evaluate the device compatibility with variety of network types

User experience Testing: The testing should be conducted for the design and user-friendliness of the mobile applications

Certification testing: The leading app stores evaluate all the applications to determine if the mobile applications are reliable and free from any offensive data. A prior testing should be conducted to analyze that the mobile application meet all the standards

Test Automation Approach

The test automation of the mobile application can be achieved through one of the following approaches:

Web-based automation: In this approach, the user agent add-ons in the popular browsers are used to display the web content on the mobile devices. Either open-source or license-based tools can be used to automate these functionalities.

Cloud-based automation: The cloud technology is used to automate the web-based QA in different platforms and integrate with open source libraries

Lab-based Automation: In this approach, a mobile test environment is created using simulators. The testing can be automated using both commercial and open-source tools.

About Test Triangle

Originally founded in 2012, Test Triangle has become a leader in IT consultancy services providing services in application testing, DevOps, RPA, Custom software development, mobile app development, Atlassian consultancy, niche IT staff augmentation and training in advanced technologies. Test Triangle is headquartered in Ireland; but it also has branch offices in London, United Kingdom, and Hyderabad, India. We have exponentially grown to become a team of 200+ members providing services in different verticals such as Banking & Finance, Utilities, Pharma, Retail, IT & Education etc.

Test Triangle's R&D department has created a propriety platform, Test Outsourcing Dashboard [TOD] which can be used to manage software testing lifecycle using collaboration tools like email, live chat, video conferencing. We have also launched a self- service testing platform (the premium version will be released as SaaS solution), which can provide a project overview and real-time updates of the software development lifecycle.

Over the years, we have established the reputation of being a 'trusted partner in IT consulting'. Test triangle is an agile software company, which constantly strives to exceed the expectations of its clients. We adopt the software testing and software application lifecycle to meet the customer's demand in an efficient and reliable manner. With a global workforce, we have proved ourselves in delivering tight-deadline projects.

We are proud to declare ourselves a client of Enterprise Ireland and European commission.

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