

# White **PAPER**



**TEST  
TRIANGLE**

Trusted Partner in IT Consulting

## **A leap forward in Agile Testing**



Agile is an empowering process, which makes organizations do things which were never possible before. Gone are the days when the production team thought that they can focus on either product quality or speed. Now the market competition has forced companies to deliver high-quality products in the smallest production time. Agile makes this easier but, adopting agile is not easy. **The 12th annual "State of Agile" report, states that agile is easy to learn but difficult to master.** When a team masters latest agile techniques, a new trend comes into the market. The present white paper discusses the latest trends in agile development, which have a strong potential to impact the IT industry.

## Introduction

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Agile is no more a buzzword and organizations of every ilk and scale are adopting it. It is because agile adoption opens a plethora of opportunities for business organizations. It not only tenders cost-containment and high productivity but is also imperative for succeeding in the marketplace. The agile methodology was developed for the software development teams to create a time-focused, iterative method of achieving high value.

In agile methodology, rather than releasing the project after the completion, the project is divided into several small deployable states and user feedback is used for product improvising. It is beneficial in increasing flexibility, user satisfaction and adaptability towards customer preference. These benefits of agile magnify as the iteration time shrinks. However, agile development also requires a different testing approach. The present white paper discusses the manner in which agile and associated development are impacting the software quality assurance methodology.

# What is Agile Testing

Software testing is the only method of determining whether an application can work real-time. Agile testing came into existence to support agile development. It refers to the software testing practice that follows the principles of agile software development. In agile, testing goes along with the software development process. There are several features of agile testing such as it works alongside software development and testing is considered a team responsibility. In agile, project advances with the testing, as there are short testing feedback loops and development team try to write clean code. The story acceptance is an integral part of the agile lifecycle. In story acceptance approach, there is no partial acceptance and the conditions either pass or fail. In other words, acceptance denotes whether a user story is complete or not.

Agile testing is based on release or delivery driven approach and comprises of small time frames. There are several features of the agile testing:

- The test plan is updated after every iteration of software release
- The agile test plan encompasses the test data requirements, test scope and functionalities
- Agile testing is not sequential but continuous and comprises of four stages, namely, iteration, construction iteration, release and production



# A Leap Forward

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## Automation in Agile

Agile Methodology aims to deliver a high-quality product with speed. But, sometimes unhealthy practices and delays in software development; slow down product delivery and divert the real concept of Agile.

With the increased use of the agile approach, it has become mandatory for business organizations to switch towards automation testing to handle time and delivery pressures. Agile automation is the solution to handle time and delivery pressures. In our experience, automation in the same sprint can reduce the product deployment time significantly. However, testing automation should be conducted in such a way that by the time, code development is completed; the test cases will be in pipeline for execution. Further, we can support this with the concept of continuous testing and continuous delivery. Following best practices should be adopted for agile test automation:

### **Standardization of Test Environment:**

Test environment should be standardized for seamless operations and fast product deployment

### **Using online tools for Agile Automation:**

With the help of online tools, the distributed teams remain informed and connected with the project progress. A number of tools are available in the market for organizing and planning sprints, managing task boards and tracking bugs or issues.

### **Building Effective Communication Channel/Methods:**

Real-time communication is important in getting the work done and resolving project issues. Online meeting, real-time communication and share screens can be used for instant communication.



## Reporting & Metrics

According to the World Quality Report (2018), the metrics and reporting are useless if they are not measuring the business goals. In agile and lean process, continuous measurement should transform in incremental improvements in business processes and production environments. Reporting is important as they are the test “certificates” for each software release. The business client expects that the test report contains testing efforts information regarding automation unit-test, automated integration-test, manual end-to-end test, and exploratory testing sessions. Reporting should be on the basis of key performance indicators. There are several factors that can determine continuous improvement in agile business processes. The key performance indicators (KPI) in agile testing are discussed below:

### Test Case Execution percentage

The test case execution metrics refers to the improvements in sprint test execution. When a test case is executed, the outcomes or results can be either passed, fail or cannot test case. The percentage of test case execution is the overall sum of these cases divided by a total number of test cases. This metrics offers an insight into the efficiency of the QA processes. However, it should be noted that some test cases need more time; therefore, it cannot be a standalone factor in judging QA efficiency.

### Test Case Pass Rate

The test case pass rate indicates the ratio of the pass tests to the total number of tests cases. The test case pass rate should increase with the project progress. If the test case pass rate does not decrease, it means that the development team cannot resolve the existing bugs. On the other hand, if the test case pass rate is increasing, it means that the previous bugs are opening up or re-entering in the software.

### Team Velocity

The team velocity refers to the time required to complete iteration. It evaluates the speed of work and the amount of time required for completing the project.

## Testing in SAFe Agile

SAFe or Scaled agile framework has become the most popular framework in large business organizations. The framework is built on the agile-lean principles and offers insight on how a large business enterprise can scale agile methodology at program, solution and portfolio level. It offers test plan at various project stages such as value stream, program, team, test case, and test suite.

The SAFe agile framework is based on Agile Release Train. It emphasizes value stream of the product and builds solutions around it. There are four main stages of agile release train, which are, defining new functionality, implementing the functionality, acceptance test and function deployment. Therefore, acceptance test is integral to the agile testing. In SAFe framework, specific testing is conducted for maintenance of service and network virtualization system, wherein teams can test and develop independently of each other. The testing procedure is completed with cross-team review and evaluation of different features such as single sign-on, open source usage, common security requirements and regulatory standards.

## Continuous Testing in Continuous Integration / Continuous Delivery (CI/CD)

The continuous integration/continuous delivery environment is created to reduce the lead time in an agile environment. In continuous integration, the software changes are merged with the main code as frequently as possible whereas in continuous delivery, these changes are released to the customers quickly.

According to Gartner (2017) report, in the present scenario, continuous integration (CI), continuous delivery (CD) and continuous testing (CT) are critical in enabling the project speed and quality. Among these features, Continuous Testing (CT) is the most challenging. The continuous testing assures that there is continuous feedback regarding the software quality. In continuous testing, the test cases are built prior and code integration is achieved during the continuous integration process and the tests get executed automatically without any human intervention. CT is more people and process driven activity. In the software delivery pipeline, continuous feedback by automated test execution can prevent business risk. Development methods such as TDD (Test Driven Development) and Behavior Driven Development (BDD) align with the DevOps and continuous testing. The benefit of continuous testing is that once the code is entered into the source code repository, the validation process automatically begins and feedback is generated automatically.

# 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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