Future of Testing: Agile Testing

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Abstract
Agile methodology is the trending software development lifecycle which promises early to market and enable competition between different products in market. In this document we will see what agile methodology, challenges faced during testing are and how we can overcome those challenges to leverage best of it.

1. INTRODUCTION
1.1 What is SDLC?
SDLC (Software Development Life Cycle) is the process or method which is used to create or update software projects. Each of these methodologies defines unique way to create a new software module or program.

1.2 What is Agile Methodology?
Agile software development methodology is a group of software development methods which is based on iterative and incremental development, where requirements and solutions evolve through collaboration between self-organizing, cross-functional teams. It uses adaptive planning, evolutionary development and delivery, a time-boxed iterative approach, and encourages rapid and flexible response to change. It is a conceptual framework that promotes foreseen interactions throughout the development cycle. Features/Enhancements are added in each iteration to create software products/modules. Each iteration has definite timeframe called as Sprint Cycle. Products and requirements are reviewed after each iteration to make and adapt changes which helps to create market compatible products.

1.3 Testing in Agile Methodology
Agile methodology follow test driven approach, enhancements are made in each iteration and are tested, products are modified and updated to meet the requirements.

1.4 Challenges with Agile Methodology – In Term of Testing Challenges which are generally faced during testing in agile methodology:

1. Systems are still under developments.
2. System requirements, system under test and test scenarios may change very frequently.
3. Testing is done very rigoursly and repeatedly, and regression is the biggest component of it. Short duration is provided for testing, it should be quick and efficient.
4. Testing and development phases are short and overlapping so synch between both is required.
2. TESTING APPROACH FOR AGILE METHODOLOGY

2.1 Tools selected for the approach
In the approach shown in Figure 3, we have used Junit, TestNG, selenium and Jmeter for implementing.
Reason for selecting these tools
1. Open source (Free License)
2. Can be configured and used with stubs and mocks
3. Can be used to create automated regression suites and maintenance is very efficient
4. Support all major defect, test and change management tools
5. Support all major browsers and technologies (Java)

2.2 Test Approach and Solution to challenges:
We can use below approaches to track major challenges faced with agile methodology.

- Data dependencies: Data dependencies issues with test cases will be recovered by separating test data from the test cases, test data will be stored in separate sheets/XMLs so that it can be changed without impacting test cases.
- Environment dependencies: Environment/target URL may change after iterations and has major impact on test case execution, it can be separated from target test cases by storing and retrieving it from external files(properties files).
- Integration Testing: Integration testing will be done using TestNG, test cases and test suites will be created for each scenario and there will be an controller to execute those test cases, controller will be able to invoke test cases related to different framework.
- Regression Suite: Regression test cases and suites will be created after each iteration/sprint and will be executed in next iterations.
- Tracking changes in the system and requirements: We can create change tracking system to track changes in UI, application, requirements and its impact on the test cases.
3. BENEFITS

3.1 Quick Comparison

3.3 Value delivered & Risk Assessment

### SDLC approach

<table>
<thead>
<tr>
<th>Waterfall Model</th>
<th>V Model</th>
<th>Agile Methodology</th>
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<tbody>
<tr>
<td>1. Waterfall is release driven, with a defined critical path and sequence for delivery</td>
<td>1. It follows verification and validation approach</td>
<td>1. Agile is based on short iterative delivery cycles usually 2-4 weeks in duration</td>
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<td>2. Estimates are based on the work required to meet the requirements</td>
<td>2. Phase containment</td>
<td>2. Estimates are done based on the amount of work the team can accomplish in a set period of time</td>
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<tr>
<td>3. Requires clearly defined requirements upfront</td>
<td>3. The testing gets “squished” because coding takes longer than expected, and because teams get into a code-and-fix cycle at the end.</td>
<td>3. Requirements are expected to evolve and changes are embraced</td>
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<td>4. Success is measured by the IT organization</td>
<td>4. It is perspective development.</td>
<td>4. Success is measured by business value delivered</td>
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<td>5. It is perspective development.</td>
<td></td>
<td>5. Team can see and feel development</td>
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<td>6. Time to market is low</td>
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<td>7. It is adaptive development.</td>
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*Based on CHAOS Manifesto 2011

3.2 Success Rate

4. CONCLUSION

- Agile methodology is one of the trending software development approaches.
- Testing in agile methodology faces several challenges and risks.
- Risks and challenges can be resolved using test automation approach.
- Success rate in agile method is very higher if compared with other software development approaches e.g. waterfall model.
• Value generated from the software product or module is visible from early test iterations.
• Risks reduce drastically with the iterations.

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6. REFERENCES