Scrum Methodology in Product Testing:
A Practical Approach

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Proceedings for the session

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Challenges faced: Race Ahead with competition

- Customers waiting for new features in product are disappointed by slipping schedules, growing budgets and poor quality.

- Developers are disheartened by working even longer hours to even poorer software due to bugs in later cycles of product development.

- Competitors move ahead leaving the latest release outdated.
Root Cause

- Bad Visibility of progress of the S/w development process
- Frequently Changing Business Requirement
- Delayed feedback from customers
- Technical and Integration Issue during last phase of cycle
- Unprioritized requirement lingering till end
<table>
<thead>
<tr>
<th>&quot;To satisfy the Customer thru’ early and continuous delivery of valuable software&quot;</th>
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<tbody>
<tr>
<td>To understand the fact that “Business requirement will change over the course of development process”</td>
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<tr>
<td>That “People are a more important part of the development than processes and tools”</td>
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<td>And, that customers must be involved along the entire process</td>
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What do we do now?

- Liaise with key stakeholders throughout the life cycle:
  to ensure that work responds to changes in business needs

- Break down the projects into Bite Sized modules:
  (Iterations, each of which is worked on as a separate entity)
  In anticipation of changing requirements

- The Product Manager/Customer tapped for knowledge along the way:
  To check for digression from required path at earliest stage

- Testing to start early in the cycle:
  To reduce last minute bugs and for reducing cycle time

We decided to go for **SCRUM** : A defined iterative incremental process of agile s/w development
Implementing SCRUM...

- Scrum is superimposed on and encapsulates whatever engineering practices which already exist.

- To implement the scrum process for a specific area of work:
  - Start the scrum process by making teams for Key solution areas 6-9 members
  - Appoint a scrum Master
  - Identify Backlog
  - Establish and conduct Daily Scrum Meetings
  - Why Scrum is powerful
Implementing SCRUM…

• Pre-Sprint

• Scrum Team maintains a series of backlogs that identify product features

• Product Backlog initially contains only obvious features that are enough for first sprint

• Product Backlog is created and prioritized by Product owner

• Sprint planning meeting is attended by Product owner, Scrum Master and the Scrum team.
• **Sprint**
  - Daily scrum meeting attended by whole Scrum team
  - Scrum team members to answer: what they did yesterday, the plan for today and if there are any impediments
  - Scrum Master monitors Sprint Burn down chart for the progress

• **Post Sprint**
  - The project is assessed against the sprint goals listed in the sprint backlog
  - Any new requirement learned is added in the Product Backlog
Testing is the most affected area in SCRUM

- No good estimation effort for scrum processes
- In most of the cases there is no defined requirements/Use cases
- Frequent changes in the requirement
- Not ample time to create the test plan and the test cases
As Scrum does not say much about Testing Processes, customized existing process

- We followed WATERFALL within sprint

Enabling conventional Testing team to understand testing in scrum

- Making the team understand the cardinal rules of Scrum process
- Don’t base the testing on a requirements document
- Be proactive in getting information on what needs to be tested.
- Use design and BPR documents as a starting point.
- Voice your opinions and effect change in design and project documentation if necessary
- Communicate frequently and provide feedback
- Use your existing expertise to look for answers and think of creative solutions.
Solving Testing Challenges: Best Practices Followed

Sprint Entry - 2 days of Sprint planning

3 Weeks of Development and Testing

Final Build & Sprint Review: 3 days

Sprint Exit

Best Practices in the sprint cycle

Sprint Entry Criteria:
- Sprint Activities
- Build Process
- Defect Logging and Tracking Process

Sprint Exit Criteria

Some Important Recommendations
Solving Testing Challenges: Best Practices Followed

- **Sprint Entry Criteria**
  - Sprint Goal/User Stories/Requirements for the sprint should be clear, reviewed, agreed upon by all
  - Product Backlogs along with their priorities in the sprint are well defined and entered in scrum works
    (Caution: Product Backlogs are requirements and not activities)
  - What need to be demoed at the end of the Sprint need to be clear to the team
  - All critical defects hindering testing of the feature in the sprint need to be fixed in early part of the sprint.
• Sprint Activities of Testing team
  • 2 days of clarifications on all agreed upon Product Backlog understanding
  • QA will continue testing of previous sprint features
  • Only based on R&D feedback on new feature implementation or critical Bug fix, QA will take daily build for testing
  • QA will generally not perform the whole QA acceptance in the weekly builds but will apprise all stakeholders about the critical issues.
  • Build to be demoed should be available to QA 3 days in advance of Sprint closure review so that R&D can work for it
  • Regression Automation Test Cases to be run twice in the sprint
• QA Deliverables at the end of the Sprint:
  • Test Scripts against current backlogs
  • Test Scripts against previous backlog
  • Integration Test Scripts against completed backlogs
  • Gap in Current Backlog Implementation (Not implemented/partially implemented)
  • Critical defects hindering testing of Sprint and completeness of features
  • Backlog Traceability Matrix for integration.

Solving Testing Challenges : Best Practices Followed
Solving Testing Challenges: Best Practices Followed

- Exit Criteria
  - Build to be reviewed should have been tested by QA before review
  - Installation Instruction are available.
  - Any documents if decided earlier for e.g. Help Files etc. are available
  - PM is convinced with the implementation of User Stories
  - Only After Review the Product Backlog should be marked as Ready for Beta Testing
  - Defect Backlog from this sprint has been agreed upon
  - Unimplemented and partially Implemented backlogs are to be taken in next Sprint.
• **Build Process**
  - Compatible Client and Server Builds each day
  - Build Release notes will be mandatory for each build

• **Defect Logging Process**
  - Based on R&D feedback QA will test on R&D environment and report the issues to R&D. If the above issues are not fixed in the next weekly Build then the QA will log a defect which may be thrashed
  - Regular Bugs will be logged against the Build provided by R&D on weekly basis
  - At the end of all the sprints, defect backlog of already logged defects for all the sprints need to be decided for them to be fixed for release.
### Some Important Recommendations

- It is recommended to use Scrum during feature releases and point releases of Product but not in **New release**
- **Heavy use of Regression Automation Tests, Memory Leak Testing**
- **Each Scrum team will have at least one Test Team member**
- **In general Each Scrum team has 1 senior and 1 junior member. Junior member generally helps in creation of artifacts**
- **Always ready with current version of Test Scripts**
- **Integration meeting of all Test Sprint testing teams to identify integration points**
- **Its always a Risk Based, Prioritized testing work**
- **A final End to End Testing Sprint to be added before Beta of the product**
Benefits Observed

In terms of Cycle Time and cost

- Release cycle reduced by 3 months compared to the earlier estimated release date in case of waterfall approach

Effort in Man Months for each release compared for Estimated Waterfall Vs Actual Scrum
Benefits Observed Contd.

In terms of number of defects

- 15% reduction in Bugs (210 Vs 179)

Valid Defects comparison Waterfall Vs Scrum

Valid Defects comparison Waterfall Vs Scrum

- Estimated Defects (Based on Waterfall Average)
- Actual Defects (SCRUM)
In terms of Confidence during implementation

- Average quality factor of per bug towards the end of sprint always declined heavily leading to confidence in the release quality

**Average Quality Factor of each bug during Release cycle**
<table>
<thead>
<tr>
<th>Metric</th>
<th>Description</th>
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<tr>
<td>Backlog Closure</td>
<td>No of backlog items closed/no. of items in the sprint backlog</td>
</tr>
<tr>
<td>(Partial) Backlog completion</td>
<td>No of backlog items implemented (partially implemented)/no. of items in the sprint backlog</td>
</tr>
<tr>
<td>Testability Effectiveness of Sprint</td>
<td>No of critical bugs logged/No of critical bugs fixed</td>
</tr>
<tr>
<td>Fix Quality</td>
<td>No of defects reopened or no of bugs logged due to some bug fixes/No of total bugs fixed</td>
</tr>
<tr>
<td>Stability Quality</td>
<td>No of crash/Memory Leak/Critical Performance issues</td>
</tr>
<tr>
<td>Find rate per week/Sprint</td>
<td>No of defects logged in a week/ Sprint</td>
</tr>
<tr>
<td>Fix Rate per week/Sprint</td>
<td>No of defects fixed in a week / Sprint</td>
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Q & A
THANK YOU

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