

WHITEPAPER

Regression Testing In Agile Environment

A White Paper by: Manoranjan Das / Grison Lopes
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Abstract

Regression testing (RT) is a method of testing to ensure that the changes made to the code does not impact the existing functionalities of the application. Before a new version of an application is released, the existing test scenarios are executed against the new version to ensure that all the earlier functionalities are still working. This practice is followed to ensure that the modified code or new code for enhancements does not break any existing functionalities.

Regression testing in traditional SDLC had not been an issue, but to perform RT in Agile SCRUM was a challenge especially when the team working on it had to be scattered across several locations. This paper showcases Datamatics' solutions to these challenges.

Introduction

Software keeps changing continually due to bug fixes or introduction of new business requirements. Therefore, it becomes necessary to perform Regression Testing when there is any change to the existing application. This ensures that the existing functionalities are not impacted due to the changes in the application. However, as the application evolves, the scope of the regression test keeps increasing, which subsequently impacts the schedule, thereby the product release cycle and the cost.

Challenges

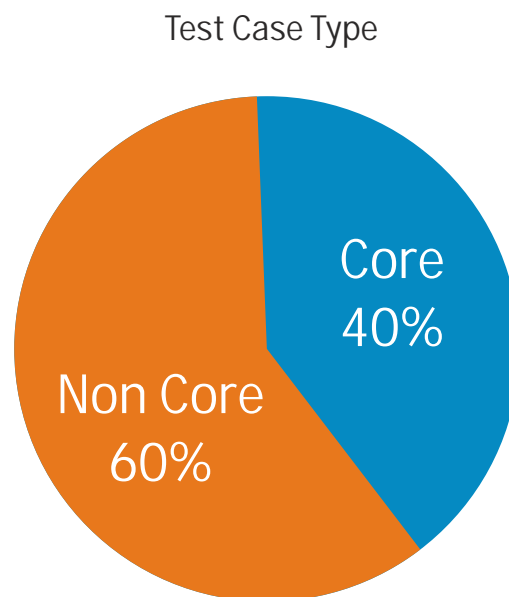
The principle challenge had been to perform regression testing in Agile SCRUM where it became necessary to spend weeks for a single cycle of regression testing. This goes against SCRUM principles as the product should be ideally shippable at the end of each sprint. Additionally, getting the regression testing done by SCRUM team would mean putting in additional resources within the SCRUM team, thereby increasing the team size above the ideal SCRUM team size. Here in this paper, we would like to showcase how our RT test practice has overcome these challenges.

Solutions

A number of techniques are available for selecting the regression test pack for application validation within a SCRUM keeping coverage and project schedule in mind. However, they have their own limitations when it comes to implementation for specific projects like sprint-wise execution in Agile. To overcome the above problems, a separate regression team was formed which operated outside the SCRUM team and worked independent of the SCRUM cycle. It was suggested that the RT cycle would start once the sprint zero was done. Hence, the RT team would get sufficient time to analyze the changes and identify the regression test pack accordingly.

Also, the entire regression test pack was segregated in two parts viz: Core and Non-core tests. The Core test cases were those that had the coverage of key business scenarios meeting certain must-have criteria, whereas the Non-core scenarios were those that were combination of different datasets.

These test packs were continuously reviewed by the business users and signed off. These test packs have since been used as baseline regression test pack.



During the sprint, while the development is going on in Smoke Environment, the RT testers identify the relevant test cases from the base-line test cases. They are further used for the regression test execution in UAT environment which is one version behind the Smoke environment. This continues for two weeks after the last Sprint. The regression test is carried out with full pack of Core test cases and the relevant impacted test cases from non-core for the execution by regression testers.

Regression Cycle Execution Phases									
Release 1						Release 2			
Sprint 0	Sprint 1	Sprint 2	Sprint 3	Sprint 4	Defect Fix Sprint	Sprint 0	Sprint 1	Sprint 2
KT from SCRUM Team Changes from Previous Releases	RT Cycle1	RT Cycle2	RT Cycle3	RT Cycle4	RT Cycle5	KT from SCRUM Team Changes from Previous Releases	RT Cycle1	RT Cycle2

Work Flow

At the beginning of Sprint, the team receives the list of stories which are going to be implemented in the Sprint. All testers are required to go through the stories and come back with their impact analysis.

- Understanding the work stream area that is being changed in Scrums
- Identify resources from the Regression team which has a proper understanding of those work streams
- Participate in daily stand-up meetings or else, maintain continual interaction with the SCRUM testing team to understand changes being made as part of stories
- Suggest extra regression tests that need to be carried out by the SCRUM team
- Alternatively, pull additional tests (from Non-Core to Core) from within the regression pack to cover the extra tests against functionalities that are being changed/impacted
- Use a percolator report to identify tests that have passed over last few cycles and leave them out of the pack to have a better coverage
- End of release, only the tests relevant for regression are identified by scrum team and marked as Core and Non-Core
- Knowledge transfer and handing over of tests are provided by the SCRUM test team to regression team
- If the tests are for new feature introduced, then those are added to regression pack
- For tests that implement changes to existing feature, the regression team removes obsolete tests and adds new tests as per changed functionality that are provided by SCRUM team part of the handover
- For the next release, the procedure as above is repeated and the total test case for regression is maintained by moving core and non-core tests based on the feature that is being changed in that release

Key benefits

- The Regression defects are identified early during the sprint
- The 100% coverage of Core test case ensures the key business scenarios are intact
- The required scenarios of Non-core test case are executed ensuring that the multiple combinations of data set are validated

Reports

Dashboard is created to report the status instantaneously to all the stake holders. If there is any deviation from the plan, then it helps to take the corrective action instantly.

Targets and Actuals		Coverage (BP) % (Test Cases Completion				
Actual		100	100	100		
Target for Day	0	80	80	80		
Overall Cycle Days	0	100	100	100		
			Coverage (BP)	Coverage (Test Case)	Completion	
CR's		Today's Targets	80	80	80	
		Amber Targets	75	75	75	
Status as at:		9/4/2013				
Overall RAG	Functionality Headline	Total Test	Executed	Coverage % (BP)	Coverage % (Test Case)	Completion %
G	Sales	341	341	100	100	100
G	Admin	167	167	100	100	100
G	Claims & Preauth	350	350	100	100	100
G	Provider	10	10	100	100	100
G	Commissions	26	26	100	100	100
G	Common Services	62	62	100	100	98
G	Batchload	43	43	100	100	100
G	Interfaces	279	279	100	100	99
G	Production Scrum Support	4	4	100	100	100
G	TOTAL	1282	1282	100	100	100



Conclusion

The implemented solution has been well received and appreciated by the client as the complete RT was carried out during the Agile development phase. This led to enhancement of confidence of the business users/end users who had been concerned about the implementation of Agile development and how it would impact the end product they receive.

About the Authors



Manoranjan Das
Test Manager

Manoranjan is working as a Test Manager. In DGSL He has more than 18 years of experience out of which 8 years are in Software Development and more than 10 years in Testing. Being a Test Manager, he independently manages multiple off-shore testing projects. He has completed a Post Graduate in Computer Management and has completed PMP, Six Sigma Green Belt, ISTQB and CSM certifications. Before joining Datamatics, he had worked with Bharat Bijle Ltd & Maegabyte Ltd. He has sound expertise in Insurance, Supply Chain Management, Banking, Finance, Inventory Management, Planning and Budgetary, Restaurant and Hospitality, Database warehouse and so on.



Grison Lopes
Test Lead

Grison is working as Test Lead. In DGSL He has more than 12 years' experience in Testing. Being a Test Lead, he independently handles off-shore testing projects. He holds a BSc. in Physics and has completed certifications in CSM and ISTQB. Before joining Datamatics, he had worked with Infracsoft Tech, Sancez Capital and Covances. He has sound knowledge in Insurance, , Banking & Finance and so on.

About Datamatics Global Services

- Global Information Technology (IT) & Knowledge Process Outsourcing (KPO) organization
- Delivers smart, next-generation business solutions
- Trusted partner to several Fortune 500 companies
- Capabilities built around technology, domain expertise & knowledge of business processes
- Featured amongst the Global Services 100 List in 2010 & 2011
- Decades of global experience having executed projects across 60 countries
- Alliances with global technology leaders such as Microsoft, IBM & EMC²
- Certified for SEI CMMI Level 3 V1.3, ISO 27001:2005 ISO 9001:2008
- SSAE 16 compliant processes
- Global presence: U.S, UK, Germany, Switzerland, Bosnia, Australia, Singapore & India

To know more, connect with us on business@datamatics.com