

A Review Report on Different Type of Testing in Agile Environment

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Abstract---The software testing is the technique of software engineering to test the software faults. The various type of testing are there such as black box, white box, automatic, etc. the agile testing contains multiple testing which are applied on the software to discover maximum number of faults. The major issue of agile testing is to define exact sequence of the testing. In the base paper, the genetic algorithm is applied to define the sequence of testing. In the genetic algorithm the objective function is static. Due to which, its efficiency is less as compared to algorithm in which objective function is dynamic. In this research work, technique will be proposed which has dynamic objective function to define exact sequence of testing in agile testing.

Keywords---software engineering; agile methodology; testing.

I. INTRODUCTION

Software engineering is all about development of software product using well defined principles, methods and procedures. The term software engineering is made of two words; software and engineering where software is ingathering of executable programming code, connected libraries and documentation, and engineering is all about preparing products using well-defined principles, methods and procedures [1]. It is a highly challenging task to developing and delivering multi-person, multi-year software projects successfully. According to 2015 chaos report [2] [3], in addition to completely failed projects, more than half of software projects run over budget and time. So according to a field study by Mohammad S Raunak and David Binkley [4], include a focus on trends in adoption of agile practices-industry moves towards agile development. As we face rapid change in the technique of developing any software- a new environment known as "Agile Environment" is introduced in 2001 and become popular day by day [5], agile environment of software development have come to values:

- *Individuals and Interaction over processes and tools:* more stress is laid on people and interactions instead of processes and tools. Developers, customer and tester consistently interact with each other.
- *Working Software over comprehensive documentation:* Live software is more preferable then detailed

documentation. Agile software development methodology works on the fact of face-to-face interaction.

- *Customers Collaboration over contract negotiation:* customer involvement is the most important part in agile process. Developer can immediately seeks suggestion on requirements from the customer for better clarification.
- *Responding to Change over following a plan:* responding to change is more considerable in comparison to extensive planning.

Agile Manifesto also provides twelve principles which help the developer to develop best quality software [6].

II. SOFTWARE TESTING

Software testing is a process which is performed to analyze/discover product quality and improving the quality by describing defects and problems. Software testing is consisting as a dynamic functioning of a program on a finite set of test cases which are usually picked from the infinite execution domain, against the expected functionality of the program. Software testing also stated as a process of validation and verification that a software product:

- Meets the technical and business requirements
- Work as expected
- Can be enforced with same characteristics [7].

A) Agile Testing

The software testing practice in which the principles of agile software development are followed is known as agile testing. Testing in agile is no more a separate phase by itself, the testing is integrated into development process with the help of agile development and not kept aside from the SDLC phase. A "whole-team" mechanism is utilized in order to enhance the quality of the software product by the agile team.[8]

1) Technique for Agile testing

There are three types of planning in agile:

- a) Release planning: performed during sprint zero and helps team members in specifying the test strategy and test approach planning for all the iteration.
 - Write user story and acceptance criteria
 - Specify the high-level test strategy
 - Define number of test level to be execute
 - Remark any testing risk

b) Iteration planning: this planning was done after the release planning. The testers perform the under mentioned activities:

- Breaking user story into testing task
- Specify test coverage of every story
- Calculate the testing task like creating test strategy, test plans and test cases specific to user stories

c) Daily planning: this planning is also called as “stand-up” meetings, where developers’ team and tester team meets daily to discuss their progress in the assigned task [5] [18].

III. LITERATURE REVIEW

Swadha Gupta et.al (2017) presented in this paper that the agile manifesto is applied along with Agile Software Development in order to provide quick modifications. The changes that have occurred and have been observed during the implementation are presented in this paper. This will step towards the success of agile adaptation on large products in order to develop the software [9].

Manuel Acosta, et.al (2017) proposed in this paper a robust virtual sensor that uses a type-model-less approach for estimating the chassis planar motion stated and tyre forces during agile manoeuvres. This helps in providing a continuous approximation of the road friction properties or features present within the rigid as well as loose surfaces. The advanced vehicle controllers can possibly be designed with the help of tyre model. All such enhancements help in providing improvement in the traditional approaches and provide a better system which can perform better testing in terms of various aspects [10].

James B. Dabney, et.al (2017), while conventional agile methods are not applicable to large multi-year and mission-critical system, agile hybrid method is developed. This paper also studies the compatibility of standard IV and V techniques in the hybrid agile development systems. It is found here that there are three groups amongst which the IV and V methods of hybrid agile process can be employed. An assessment is need within the IV and V techniques that can provide complete artifact which is simple in comparison to the hybrid agile processed. All such modifications proposed in this paper help in making enhanced testing systems and provide better results [11].

Khush Bakhat Awar, et.al (2017) presented in this paper that there are numerous issues being faced by the distributed teams when they utilize agile systems within their environment. The important factors of the distributed agile environment are presented in this paper. The Scrum and XP methods were tailored in order to apply the agile practices within the distributed scenarios in better way and to avoid various issues [12].

Narjes T. Jahromi, et.al (2017) presented in this paper that there is a need to provision the value-added video. Within the content delivery networks (CDNs) a cost-efficient and agile technique is to be presented which might help in

providing enhancement in the previous existing approaches. The value-added video services are enabled within the Virtual Network Functions (VNFs) within the proposed architecture. Further they are linked together with the help of application-level SDN switches. In order to generate the implementation architecture, the HTTP technology is utilized. It is seen that there is huge improvement within these systems to provide enhanced mechanisms for testing [13].

Olivier Liechti, et.al (2017) presented in this paper that the important aspects of agile methods involve continuous improvement, feedback mechanisms and the automated testing. A goal or objective is set here in order to provide testing which are much better the existing approaches. In order to initiate the test analytics platform there are numerous experiments conducted [14].

Ying-Dong Pi, et.al (2017) presented in this paper that the combined conventional method might not perform good in terms of accuracy within the agile optical satellite applications. This might be mainly due to the issues arising in the geometric accuracy of the reference data and the matching accuracy amongst the images present amongst various sensors. A cross-image pair (CIP) method is proposed in this paper. Various experiments were conducted in this paper using CIP simulated which helped in determining the performance of imaging process of AOS. Huge improvement is achieved here in terms of accuracy [15].

Ted J. Steiner, et.al (2017) proposed in this paper the smoothing and mapping with Inertial State estimation (SAMWISE) navigation system which is a vision-aided inertial navigation system. It helps in providing high rate and low latency state for enabling the high dynamic flight. A flexible framework is provided by SAMWISE in order to furnish the inertial navigation system. Various experiments are conducted here in order to find out the performance of projected system. It is seen that the projected navigation system provides robust mechanism during the high speed across the multiple distinct scenarios in various aspects [16].

Ka Wai Wong, et.al (2017) proposed in this paper that there is a bandwidth and rejection level of improvement within the systems with the application of filter within this device. Asynchronous biases are applied in order to enhance the performance of the filter. This results in enhancing the various parameters of the proposed system. There is a wideband phase inverter also utilized here which helps in generating various design guidelines. It is seen that the performance of the system is improved along with various other modifications [17].

IV. CONCLUSION

In this work, it has been concluded that agile testing is the efficient technique to detect maximum number of faults from the software. The agile testing consists of various other types

of testing like black box, white box, automation and so on. The major challenge of agile testing is that we need to define exact testing sequence. In this work, the algorithm which has dynamic objective function will be proposed to define testing sequence. The proposed improvement leads to increase fault detection rate and reduce execution time.

V. REFERENCES

- [1]. Roger S. Pressman, "Software Engineering Practitioner's Approach", VOL. 860, NO. 6, 2005.
- [2]. Chaos Report, "The Standard Group Chaos Report" 2015.
- [3]. J. Laurenz Eveleens and Chris Verhoef, "The Rise and Fall of the Chaos Report Figure" IEEE Computer Society, pp 1-7, 2010.
- [4]. Mohammad S. Raunak and David Binkley, "Agile and Other Trends in Software Engineering" IEEE 28th Annual Software Technology Conference, 2017.
- [5]. Kalpana Sureshchandra, Jagdish Shrinivasavadhani, "Adopting Agile in Distributed Development", Global Software Engineering, 2008.
- [6]. <http://agilemanifesto.org>
- [7]. Carlos Enriquez, Pilar Gomez Gil, "A Model for Improving Training of Software Developers in Small Companies", VOL. 13, pp. 1453-1461, May 2015.
- [8]. Bertrand Meyer, "Making Sense of Agile Methods", VOL. 35, pp. 91-94, March 2018.
- [9]. Swadha Gupta and Deepali Gouttam, "Towards Changing the Paradigm of Software Development in Software Industries: An Emergence of Agile Software Development", 2017 IEEE International Conference on Smart Technologies and Management for Computing, Communication, Controls, Energy and Materials (ICSTM), pp.18-21
- [10]. Manuel Acosta, Stratis Kanarachos, and Michael E. Fitzpatrick, "Robust Virtual Sensing for Vehicle Agile Manoeuvring: A Tyre-model-less Approach", VOL. 67, pp. 1894-1908 2017, IEEE
- [11]. James B. Dabney, James D. Arthur, "Applying Standard Independent Verification and Validation (IV&V) Techniques within an Agile Framework: Is there a Compatibility Issue?", 2017, IEEE
- [12]. Khush Bakhat Awar, M. Shujah Islam Sameem, Yasir Hafeez, "A Model for Applying Agile Practices in Distributed Environment: A Case of Local Software Industry", 2017 International Conference on Communication, Computing and Digital Systems (C-CODE)
- [13]. Narjes T. Jahromi, Sami Yangui, Adel Larabi, Daniel Smith, Mohammad A. Salahuddin, Roch H., Glitho, Richard Brunner, Halima Elbiaze, "NFV and SDN-based Cost efficient and Agile Value-added Video Services Provisioning in Content Delivery Networks", 2017, IEEE
- [14]. Olivier Liechti, Jacques Pasquier, Rodney Reis, "Supporting Agile Teams with a Test Analytics Platform: a Case Study", 2017 IEEE/ACM 12th International Workshop on Automation of Software Testing
- [15]. Ying-Dong Pi, Bo Yang, Mi Wang, Xin Li, Yu-Feng Cheng, and Wen-Li Tang, "On-Orbit Geometric Calibration Using a Cross-Image Pair for the Linear Sensor Aboard the Agile Optical Satellite", 2017, IEEE GEOSCIENCE AND REMOTE SENSING LETTERS, VOL. 14, NO. 7
- [16]. Ted J. Steiner, Robert D. Truax, Kristoffer Frey, "A Vision-aided Inertial Navigation System for Agile High-speed Flight in Unmapped Environments", 2017, IEEE
- [17]. Ka Wai Wong, Raafat R. Mansour, and Gareth Weale, "Reconfigurable Bandstop and Bandpass Filters With Wideband Balun Using IPD Technology for Frequency Agile Applications", 2017, IEEE TRANSACTIONS ON COMPONENTS, PACKAGING AND MANUFACTURING TECHNOLOGY
- [18]. Arvind Kumar, Reetika Nagar, Anurag Singh Baghel, "A Genetic Algorithm Approach to Release Planning in Agile Environment", 2014, IEEE, pp. 118-122.