**Measure Developer Performance using Agile Test Methodology:**

**A study of design new algorithm that can be used to measure developer performance using Agile test methodology**

**1 Abstract**

Agile Testing is used in Agile software development processes like Scrum, Extreme Programming, Kanban and Crystal. Testing can be divided in three main methods as Behavior Driven Development, Acceptance Test Driven Development and Exploratory Testing(1). In all three methods testers may not have clear documentation on the software and he/she may understand the system while testing. Miller, G. J. (2013) During this time the tester may identify the bugs in the system as well as identify missed parts in the software. These bugs may report to a bug tracking system. The data recorded in bug tracking system can be used to measure the performance of the team. The simple methodology of indicating the performance the Line of Codes (LOC), Bugs fixed and hours worked. (2)

In agile testing there can be more development cycles for one module due to frequent changes of the module. Those changes may break the working parts of the software as well may occur failures of the working software. The User Interface /User Experience (UI/UX) bugs may reported by the Quality Assurance Engineer (QA) or tester as an improvement of the system, only focusing the system. Those bugs may not be the problem of the developer. But when it comes to measure the performance of the developer, we may use number of bugs reported to the system, number of releases for a module as indications. These indications are not valid when it comes to agile testing since the bugs are reported more often. Those bugs are reported to bug tracking systems like Bugzilla, Mantis Bug Tracker, FogBugz, Redmine, Trac etc.

*1.1 Aim*

This study aims to generate new algorithm to indicate the performance of the agile team using company bug tracking system of the company. This algorithm will analyze the current data in bug tracking system generate the generalized value for performance of each role in the team. These values can be used as indication of every team member.

*1.2 scope*

The data of the bug tracking software will the main resource of generating the algorithm. As this research mainly focused on agile test methodology, the performance will only indicate regarding projects that are following agile process.

*1.3 Research Questions*

This research will be address following questions.

*Question 1:*

What are the key factors that will affected to developer performance in agile software development process?

*Question 2:*

Does developer’s performance affected by the above key factors in significant way?

*Question 3:*

What does the use of the new algorithm to a company when measure the performance of developer.

**Methodology**

This section presents the methodology that will be used in this research. The methods and processes in this research are discussed in relation to how they address the research objectives.

The design science paradigm is concerned with the creation, and subsequent evaluation, of IT artefacts within an organisational context to solve specific problems (A. Hevner & Chatterjee, 2010; AR Hevner, March, Park, & Ram, 2004).These artefacts include constructs, models, methods and instantiations (real-life products such as prototype systems) (AR Hevner, et al., 2004). Design science has as its goals the creation of effective artefacts and utility (Applegate, 1999; AR Hevner, et al., 2004; Simon, 1996). Hevner et al (2004) make the distinction between routine design and design science research by stating that routine design applies existing knowledge, such as current best practices, to organisational problems whereas design science research addresses either unsolved problems in new ways or solved problems more efficiently or more effectively. Design science researchers come to understand the problem that is addressed by the artefact and its appropriateness for providing a solution through the artefacts construction and use in the field (Nunamaker, Chen, & Purdin, 1990). In so doing they are not seeking ‘truth’ but attempting to improve an existing situation through the application of the artefact having considered the environment in which it is to be deployed and the intended users of the artefact

The data set of bug tracking software in five different companies will be used to this research and the data will be analysed and new algorithm will be created. As the verification and validation process two type of people will be used. One type is domain experts and other type is staff of each company. The algorithm will be show the performance of the developer in a scale and the generated value will be verified by domain experts.

Using bug tracking software databases first variables will be identified and measure the effect from each variable to the performance. To identify variables know data like reported bug count will be taken and other variables will be added later when developing the algorithm.

**References**

1. ReQtest, 2019 Feb 26, Retrieved from <https://reqtest.com/testing-blog/agile-testing-principles-methods-advantages/>
2. 7 Blog, 2019 Feb 27, Retrieved from <https://www.7pace.com/blog/how-to-measure-developer-productivity>