

IT software Quality Management - A Reverse Innovation approach for SME's for a Quality Management Practice

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ABSTRACT

This paper brings out current software testing practices their benefits and integrates the best practices in each testing standard . Choosing the right metrics at affordable cost is the biggest challenge for SME's there are whole lot of certification practices and the main challenge is to get one that has investment which is feasible for SME's and sustainable development which looks back to reverse innovation to go back and redesign for sustainability. And implementation by the small and medium companies. Not choosing to adopt one can bring adverse effects on software quality, therefore to achieve benefit of software testing under limited resources, it becomes necessary to identify the best software testing practices and create a mapping between various existing software methods and tools. This can be achieved by analyzing current testing practices and identifying the improvement potential. Testing plays a central role in quality assurance activities of many organizations. Finding one metric which is and cost effective is a key challenge for SME 's . It is observed that an efficient testing practice is vital to the quality of the developed product and to reduce the overall development expenses which is redefined as Reverse Innovation approach.

Key Words: IT, Reverse innovation, Metrics, SME's, software testing, Quality

INTRODUCTION

According to Vijay Govindrajan "It's not enough to innovate and bring in a product that does not sustain" looking at sustainability and practical implementation and feasibility cost wise for small organizations .Converting the non users as users will bring in big business opportunism same exits for the Quality management practices for SME's which cannot adopt expensive and cost centric accreditations , The whole concept of going back and looking at our own innovations for a sustainable innovative practice is what brings in the opportunity for a new integrated soft ware testing frame work which gets the best practices and integrates it into a simple SOP for the SMES at sustainable cost and does not burden the company Software is the only product which reaches the customers place with bugs and errors and may call for correction at customers location and is the only..

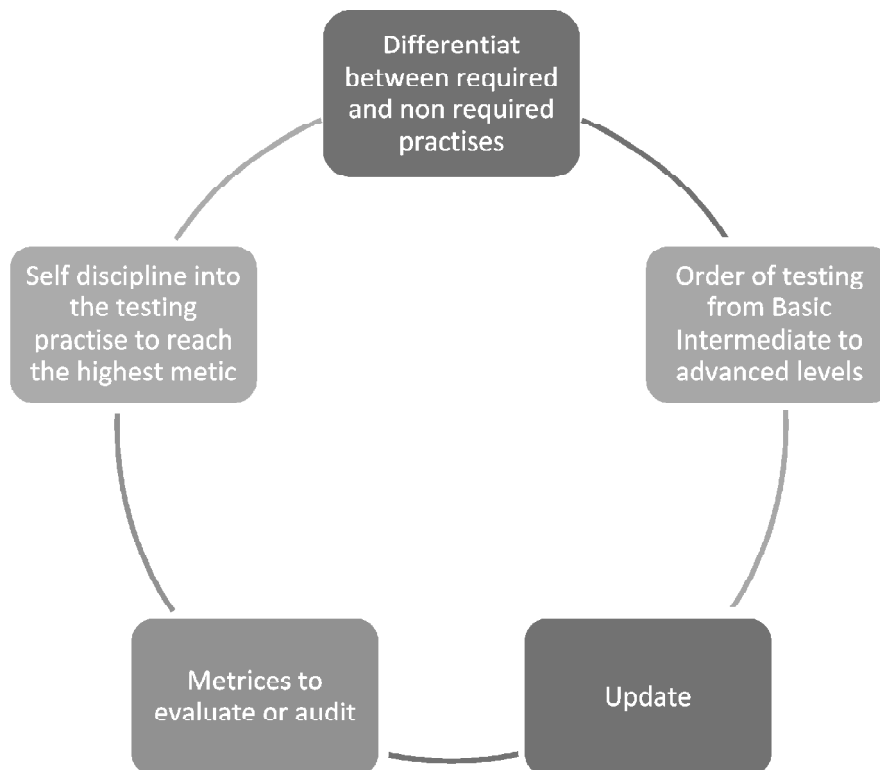
Testing plays a central role in quality assurance activities of many organizations. Finding one metric which is and cost effective is a key challenge for SME 's . It is observed that an efficient testing practice is vital to the quality of the developed product and to reduce the overall development expenses (IEEE, 1990). Galin (2004) explains that software quality has a direct relationship with software testing; hence testing is an important phase of the software development life cycle. According to Perry (1995) about 24% of the overall software budget and 32% of project management budget is allocated for testing. Due to extra pressure to finish projects on time project managers are likely to reduce the testing activities . This can bring adverse effects on software quality, therefore to achieve benefit of software testing under limited

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resources, it becomes necessary to identify the best software testing practices and create a mapping between various existing software methods and tools. This can be achieved by analyzing current testing practices and identifying the improvement potential.

Testing forms a critical tool that provides continuity throughout operations, forming the link between policy requirements, performance objectives, targets. Activities, Resources/Linkages, Methods/Tools, Measurements, Regulatory requirements applicable to the process, Risks associated with the process, Effectiveness and Efficiency, perhaps most importantly: customer requirements, both external and internal to ensure the quality and safety of their products, processes, and systems.



The Japanese 5 s approach to adopting a single frame work for Software Testing

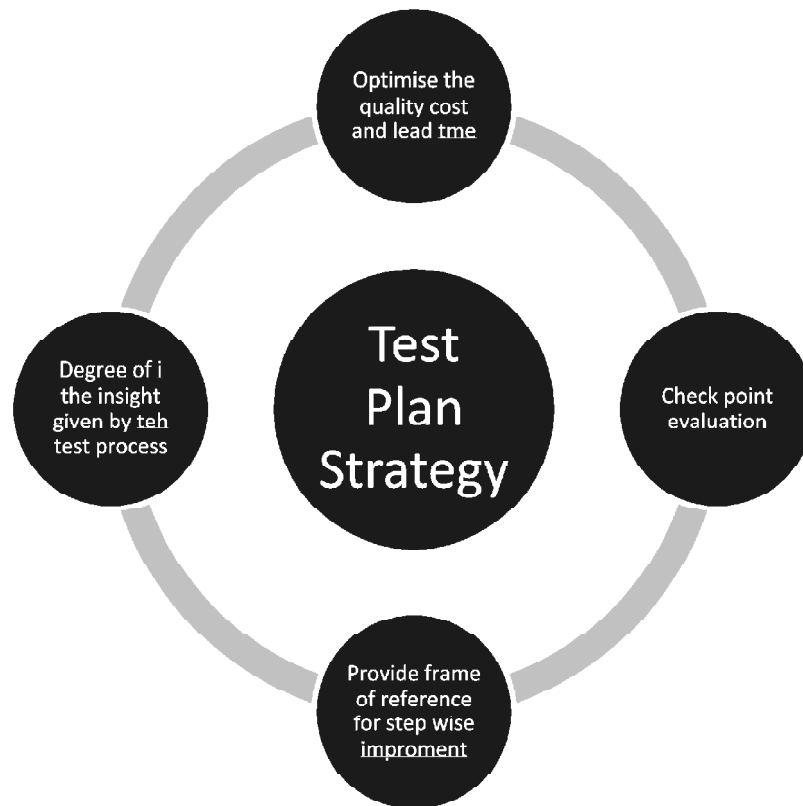
The metrics should go beyond auditing and certification and help companies improve performance, gain efficiencies in testing, logistics, overcome market constraints, and reduce risk. (Frits Philips Institute).

The purpose of this Integrated model is to improve the whole test process. comparing each model we found that every model must have a maturity structure and the whole process involves comparison of the latest practices and the addition of few more areas which could be a complete approach for maturing at test process areas. Economics of software testing is to determine and predict the defects early by using predictable models and implying strategies and different test methodologies to identify those at early stages. Psychology of software testing is to destructively test the application by identifying as many exceptional or out of the box scenarios or sometimes called as the third vision. Meyers is of the view that Software Testing is a systematic activity but it also involves economics and human psychology.

The approach of this paper is to compare and bring out the integrated best processes combining the best practices of TMMI, TPI, ISO and IEEE test plans to formulate an integrated approach for Levels 2 and 3. The research focus is to describe and compare the most important Test Process Improvement models compare and give useful input for the development of the comprehensive test process frame work. Several models are studied on goals, structure, key process areas and its assessment procedure.

Objectives: I test Plan strategy

To bring out an integrated test plan



Steps to have an integrated test policy approach implementing the following steps “

1. Distribution of test policy to stake holders
2. Clearly define the scope of the test plan
 - a) Test Plan identifier
 - b) Version number
 - c) Configuration requirement
 - d) Deter
3. Testing definition
4. Test Process
5. Test Results evaluation
6. Bench marking with quality metrics
7. Test improvement process suggestion
8. Test policy definition
9. Feed back and reports of testing deficiencies
10. Determinants of software risks such as
11. A. Safety
12. Multiple interface
13. Impact on clients
14. Government regulations

- a) Test Goals
- b) Task of partial test

15. Debugging definition

- a) Clearly bring out difference between testing and debugging

09. Key notes of test manager must include

- a) Test plans
- b) Test reports
- a) Report generation - Sub areas
 - b. Tools used
 - Error logs and exit log
 - Corrective action
 - Suggestions to qualifier
 - Time frame and deadlines for corrective action
- c) Test document
- d) Test result evaluation comparison
- e) Exit criteria
- F) Suspension and resumption requirement.
- g) Defect number

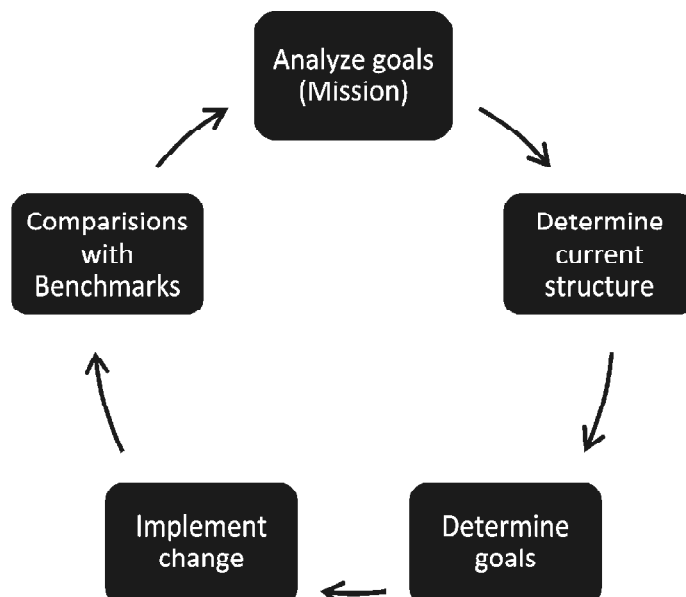
Distribution of test policy to stake holders:

Policy former and people who use the policy should be involving the benefits could be: good perception of test policy Engage the stake holder in process creation in the following areas

Engage the stake holders in process of its creation. Could be involved in

Test policy implementation in terms of application process supported by other organisation documents such as:

- a) Organisation policy
- b) Quality Plan
- c) Test process improvement plan



Test Policy and Strategy

<i>Key areas</i>	<i>Sub Goals</i>
Define Test Goals	Product Validation
Study and explain business goals and needs of the organisation	Defect Prevention during
Update whenever business goal changes	<ul style="list-style-type: none"> • Product Validation • Extended standard • Product quality • Short test execution time
Test Policy	<ul style="list-style-type: none"> • Scope definition • Testing definition • Test process • Test Results evaluation • Assumed quality level and benchmarking • Test Process improvement
Test Policy definition	<ul style="list-style-type: none"> • Test Goals • Tasks of particular test
Debugging definition	Keynotes of test manager <ul style="list-style-type: none"> • Test cases • Test Reports • Test Documents • Test result evaluation and comparison • Exit criteria • Defect numbers
Distribution of test policy to stake holders	Involve policy former and people who use the policy which will lead to good perception of test policy Engage stake holders in process of its creation along with Organisation policy, Quality plan, test process improvement plan etc.
Evaluation Metrics	Combined Check list to pass the Quality gates at each level leading to a complete product at the end. Rating schemes to be approved before the next stage is achieved.
Determinants of software risks	Software complexity Multiple interface Impact on client Government compliance

Proposed Model

Information integration theory was proposed by Norman H. Anderson to describe and model how a person integrates information from a number of sources in order to make an overall judgment.

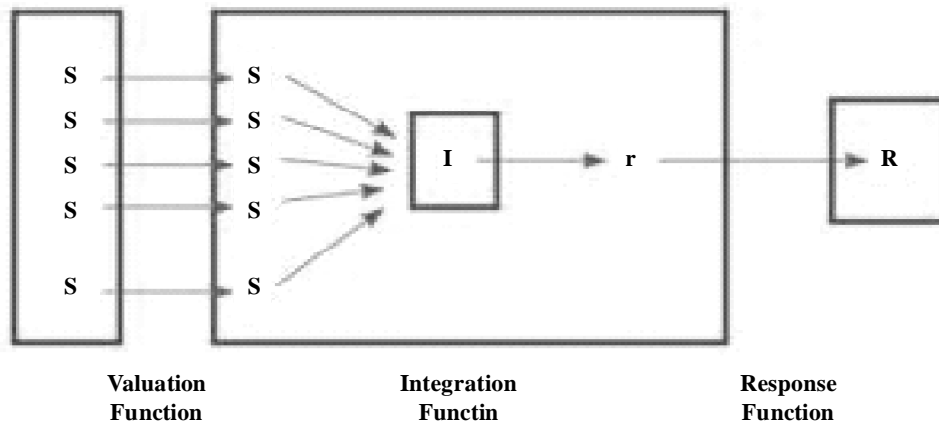
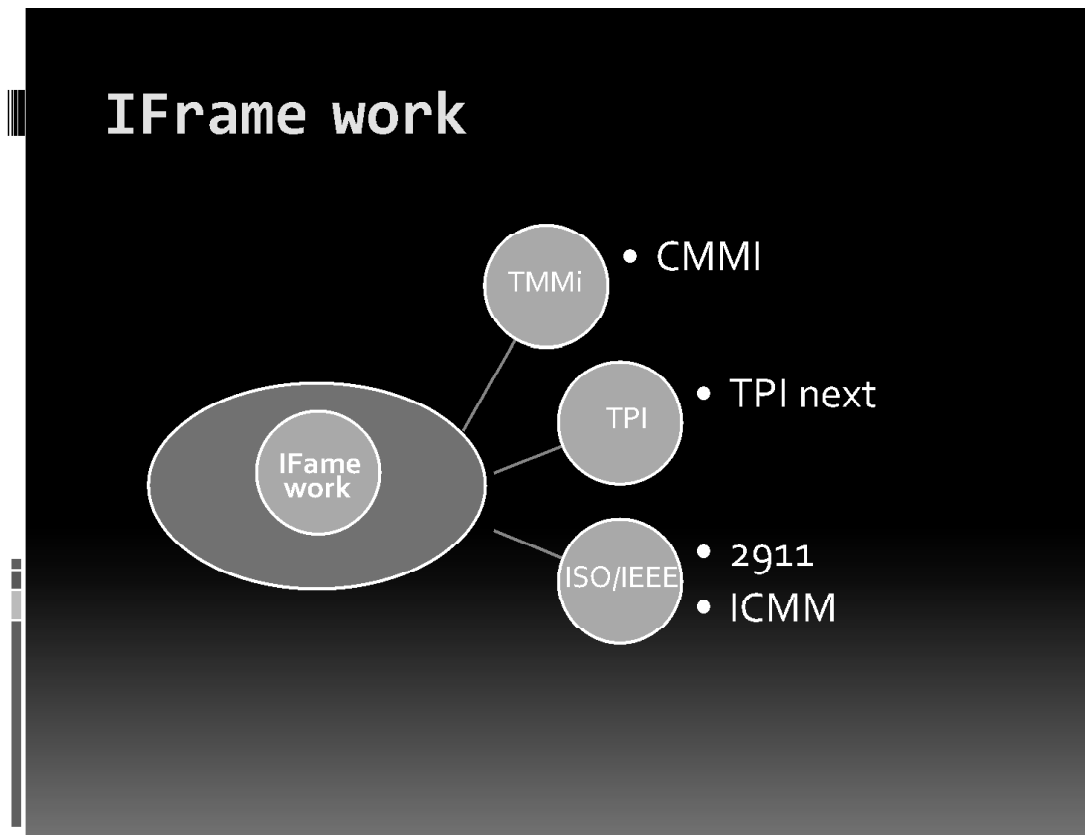
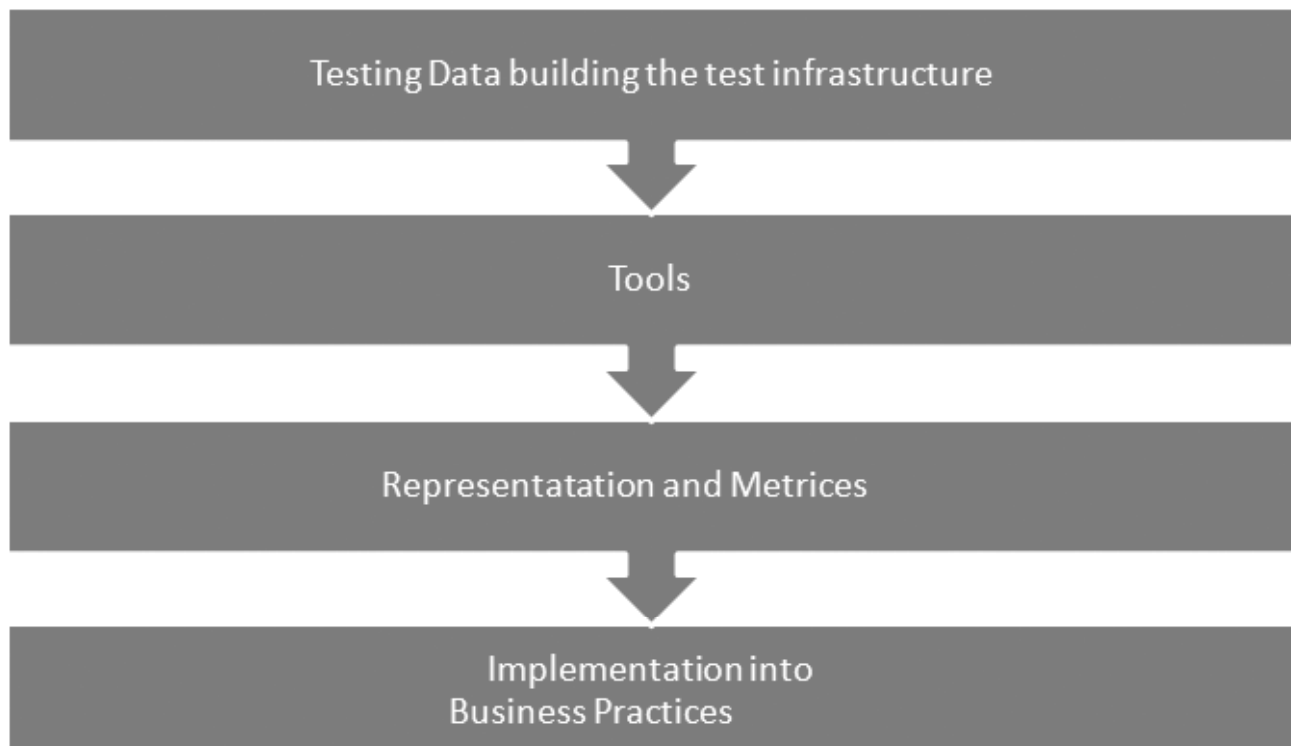


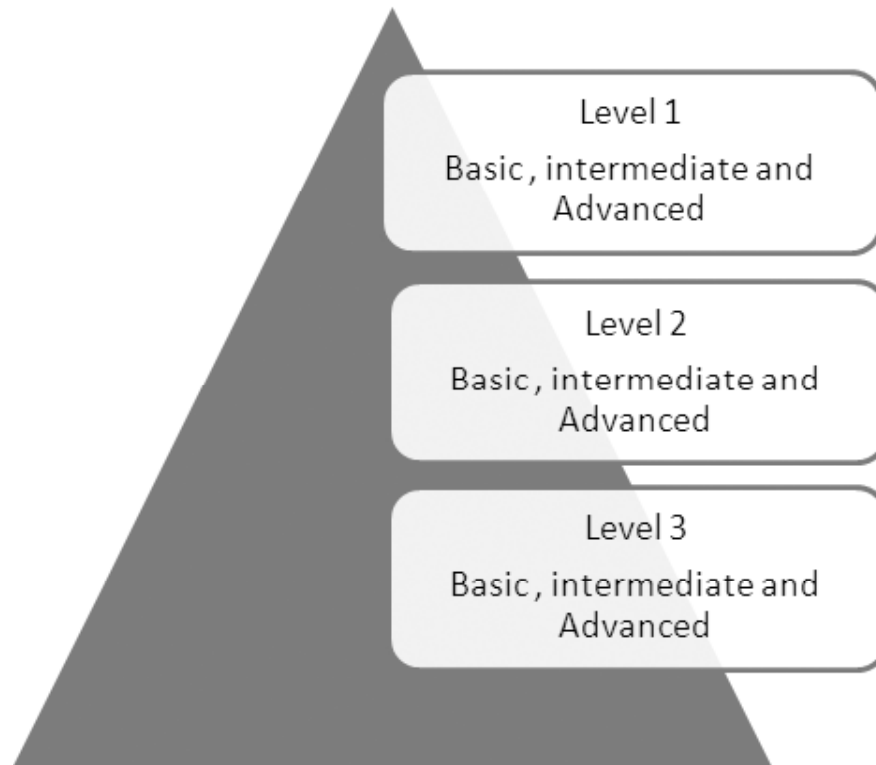
Image Courtesy: Norman H. Anderson 's integration model

Proposed Integrated Model; based

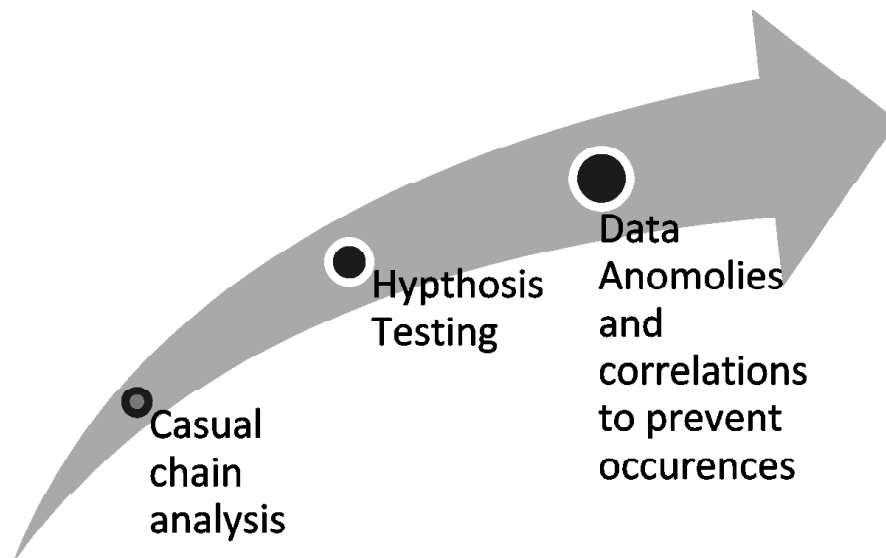


Frame work implementation





The Integrated Approach



CONCLUSION

The whole concept of testing is to bring out a great product and a simple Standard operating procedure that will help the SME'e to add more to the objective of giving a great product and more value addition and easier implementation without too much burden on procedures and cost .The whole concept of Reverse innovation works on the theory of workable solutions and sustainable practices to deliver a great product at affordable cost. A new integrated frame work will create a platform for SME's to follow a simple procedure to assure their software quality and bring in a Quality Culture into SME's without many hassles and cost effectiveness.

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