How to Turn Your Testing Team Into a High-Performance Organization

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Why change?

Testing is often looked upon by some people as an unmanageable, unpredictable, unorganized practice with little structure.

Testers know this is not true.

This debate aside- there is always room for an improved Test Strategy. As quality professionals *Continuous Improvement* is a rallying cry.

The first step in improving our strategy and turning our team into a higher performance team is getting a grasp on where we are now!

What are we trying to solve?

We commonly hear questions or complaints in development such as:

- What is testing doing?
- Testing takes too long
- Testers have negative attitudes

There can be organization issues such as:

- Customer complaints
- The blame game
- Product quality problems

You want to know:

- What testing is effective?
- Are we testing the right things at the right time?
- Do I need a staffing upgrade?
- What training does our team need?
- How does the Product team value the test effort?

Objective

In this session my objective is to give you a framework for assessing your team.

- how to plan for an assessment,
- how to execute the assessment and judge your current performance,
- what to do with the information
- how to chart an improvement plan toward higher performance.

Overview

I will conduct this session based upon practical experience of conducting a number of assessment programs at a variety of development organizations domestically and internationally.

I will use my *lessons learned* to help you avoid pitfalls and failure of your efforts

Overview

Having decided:

"Let's look the issue straight in the eye. Let's deal with these issues. We want to improve our performance and contribution to the team."

The goal of doing a test process assessment is to get a clear picture of what is going on in testing, the good things, the problems, possible paths to improvement.

What is an Assessment?

Assess:

To sit beside, assist in the office of a judge.

Merriam-Webster Online Dictionary

A test assessment is a data gathering process. To make decisions we need data.

Important note

This effort is much larger than test team.

Issues will arise over:

- Who owns quality?
- What is goal of testing?

If this assessment is done well you may step on some toes!

Standards

There are many standards or assessment processes that are well documented for development organizations.

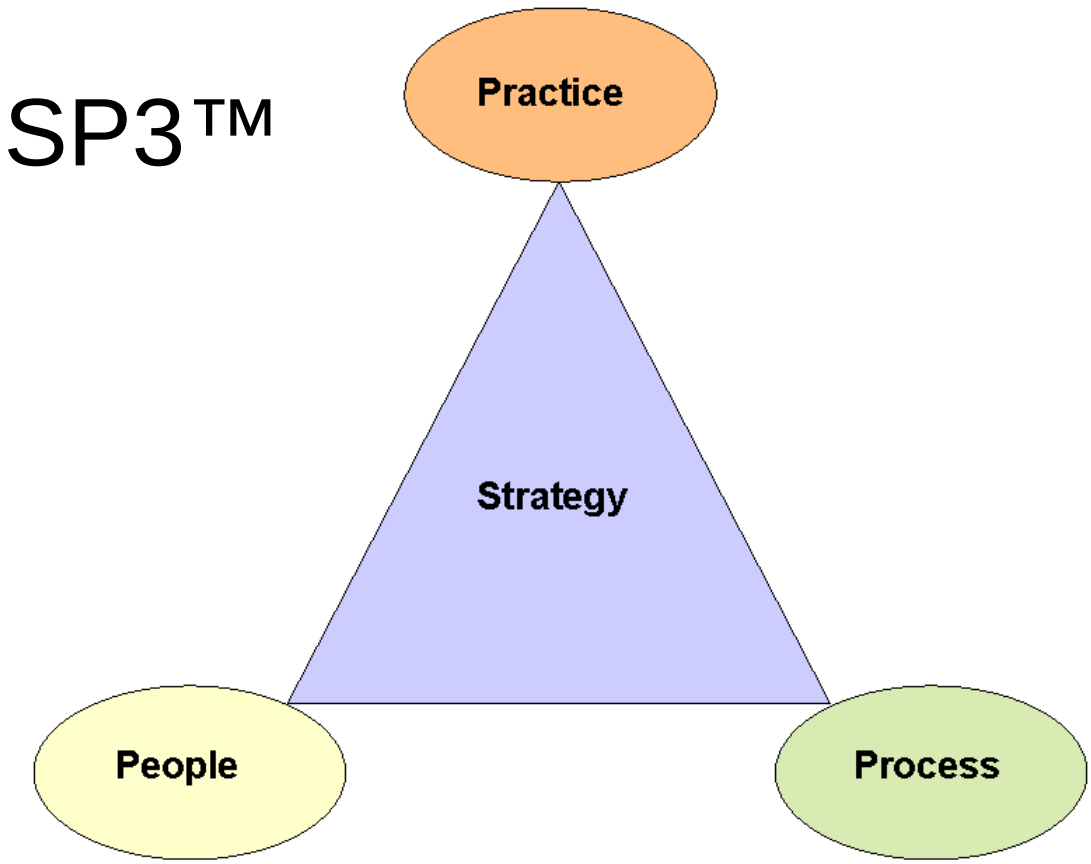
CMM and ISO9000 are the most commonly mentioned.

The process of improving or a guideline for standardized processes is not as well agreed upon for test teams.

They are also expensive, time consuming, and for most US based organizations- what is the goal of using them?

Introduction

In our view, a Test Strategy has 3 components that need to work together to produce an effective test effort.



Source: LogiGear developed this model by learning from Mitchell Levy, Value Framework® Institute

Introduction

We will focus our assessment on People, the software development and test Process, and the Practice, meaning the methods and tools your team employs to accomplish the testing task.

Caution!

As a result of an assessment, your work may increase. There may be:

- more demands for documentation
- more metrics
- more responsibility for communication and visibility into testing.

Lessons Learned

The process will be doomed if:

- -no executive sponsorship.
- -no measurement program built
- -no tools to support change
- -risk averse culture
- -the exercise is an effort to blame testing for project-wide failures
- -no commitment about the goal of testing
- -no understanding of testing or quality assurance across product team
- -lack of responsibility for quality

The Assessment Process

Phase 1 Pre-Assessment Planning

Goal- set expectation, plan project, set a timeline, firm executive sponsorship.

Action- meet with management of groups, layout expectation for result of process, describe plan, establish timeline

Result- agreement of expectation and buy-in of the assessment process and follow-up commitment for improvement.

Deliverable- schedule and project plan.

Hint- make sure team understands the assessment is only the beginning.

The Assessment Process
Before you begin

Get executive buy-in.

Make a schedule and stick to it.

Give a presentation of what you are doing, why and what you hope to get out of it.

Make a statement of goals or outline of work as a commitment.

The Assessment Process
Before you begin

- Make a Scope Document a pre-approval/budget deliverable.
- What is in scope and out?
  - The requirements process?
  - How much unit testing the developers do?
  - The Product Management team?
  - The Automation Framework and Program?

The Assessment Process

Phase 2- Information Gathering

Goal- Develop interview questions and surveys which become the backbone of your findings. Gather information and develop more questions.

Action- gather documentation, develop interview questions, develop test team survey.

Result- you are ready to begin the assessment.

Deliverable- Development Process Documentation set complete, Interview questions, Tester Survey.

Hint- you will be collecting much information. Get help! Stay organized.

Sample Documents to Gather

Project/Developers

- SDLC Document
- Engineering Requirements Doc

Test Docs

- Test Plan
  - Template and example
- Test Case
  - Template and example
- Status Reports
- Test Summary Reports

The Interviews

The Interviews need to cover a wide range of issues. For example:

- Development Process
- Test Process
- Requirements issues
- Change Control
- Automation
- Tool use
- Developer Unit testing
- Opinions about the test team from other groups
- Expectation of the test effort
- Political Problems
- Communication issues

The Interviews

In our assessment work we use a range of issues partially based on TPI developed by Tim Koomen, Martin Pol in:

Test Process Improvement : Step-By-Step Guide to Structured Testing

June 1999, Addison-Wesley

The Interviews

What we like about TPI is the structure that enables us to frame the presentation, discussion and improvement effort.

However, it is essential to think about the definitions of various attributes being evaluated. Don’t be afraid to use you own attributes and definitions. The process is not *cookie-cutter* and needs to be customized to cover all bases during the assessment.

It is essential to formulate targeted questions particular to tools and technologies so you get the information you want.

Sample Interview Questions

One topic…

The Development Process

- What do you think about the overall development process?
- Do you think the processes have been followed effectively?
- Have people been trained in the process?
- What is your opinion of the process?
- How is the process constructed?
- What do you think is the effectiveness of the overall quality process, including, requirements tracking, unit testing, build engineering?

The Survey

In addition to the interviews the survey and the doc review are the main sources of information gathering we do.

Short answer, multiple choice, true/false is easiest to process.

These surveys go to the test team only. You are trying to discover how much *knowledge* the team has in a few areas, such as:

- *Domain of the product*
- *Technical knowledge*
- *Software development lifecycle & process*
- *Test/QA knowledge*
- *Quality theory, test methods*

Sample Survey Questions

- What are the strengths and weaknesses of your group?
- How do you think other groups would characterize the competency of your group? What makes you draw that conclusion?
- What are the MOST effective things in your current approach to testing?
- What are the LEAST effective things in your current approach to testing?
- What would you like to CHANGE or IMPROVE if you could (please list at least 3 items)?

Pre- Assessment

Just before the Assessment begins you may want to have a meeting with all staff that will be interviewed and surveyed so that they will understand the process and know you are sampling from a wide group. You may want to talk about confidentiality here… covering this may be a key to success of failure of the assessment.

The Assessment Process

Phase 3- Assessment

Goal- Conduct interviews and develop preliminary findings

Action- gather and review documentation, conduct interviews, send out and collect surveys

Result- you build a mountain of material and information to review.

The Interviews

The interview process is the most valuable aspect of the assessment.

In my experience the interview questions do not all have to be answered- they may be but they also may be jumping off points for discussions or issues that are on the mind of the interviewee.

Keep it under 90 minutes.

Hint: Since it is your job to take notes and facilitate discussion and listen and perhaps ask more questions- set aside time between scheduled interviews to synthesize, take notes and catch your breath.

The Interviews

Who you choose to interview:

- Be careful not to pick only friends or people who will tell you what you want to hear.
- Pick the widest range possible- the longest term employees, the newest, the biggest complainer, the quietest, the least techie, the most tech.
- Don’t interview too many people but you make sure you get a great mix or people from inside and outside the test group.
- This process does not only work to focus on testers.

The Assessment Process

This job can be very large. Critical review of the documentation, interviews, review of surveys is a full time job if the project is to be done in a timely fashion.

The Assessment Process

Phase 4- Post–Assessment

Goal- Synthesize information into a list of findings

Action- Review, collate, think, form opinions, make postulations.

Result- You have taken all the information gathered from the document review, interviews and survey and developed a list of findings.

Hint-get help.

Deliverable- List of Findings, Collated Survey answers, Collated Interview responses, Staff Assessment, Test Group Maturity Ranking

The Findings

The findings may be a difficult in that you may feel like you are stepping on toes, criticizing other's work, or making more work for your test team.. This is one of the primary reasons for executive-level sponsorship.

The Findings

Some random but Typical Findings examples:

- Requirements are not good enough
- The schedule is constantly unrealistic
- Test team only has time for requirements validation not bug finding.
- Ineffective Test Automation Framework
- Team is afraid to make process suggestions.
- Team skill level is too low for increased technical testing requirement.
- Team begins testing too late due to lack of API and white box testing skill.
- Well thought out processes are often ignored.
- There is too much test documentation, the team spends too much time writing and not enough time testing
- There is not enough test documentation leading to very little repeatability, little visibility, a perception of only ad hoc testing.

The Assessment Process
Post-Assessment

Findings can be categorized into:

- People
  - Technical Skill
  - Interpersonal skills
- Process
  - Documentation
  - Test Process
  - SDLC
- Practice
  - Strategy
  - Automation
  - Environment
  - Tools

…And more subcategories that suit your need.

Staff Assessment

Rank of Test Team based upon our own assessment scale

(2 sample categories):

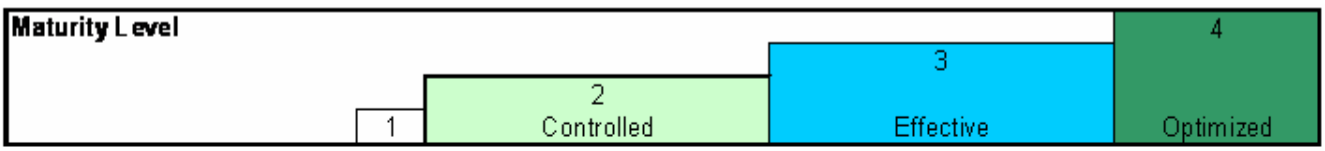
0 = No Knowledge 1 = Some Knowledge R = Required

2 = Knowledgeable 3 = Lead Expertise D = Desirable

III. Mathematical Skills	
Understand concepts behind data processing algorithm	
Apply mathematical operations to such tasks as frequency distribution	
Apply statistical analysis techniques	
Determine testability, reliability and validity	
IV. Reasoning Skills	
Define problems	
Collect, interpret and analyze data	
Establish facts and draw reasonable if not valid conclusions	
Interpret complex technical instructions in mathematical or diagram form	
Deal with several abstract and concrete variables	
Trouble-shoot logically and reasonably	

Test Group Maturity

TPI® has twenty areas to rank. Here are an example three of the lifecycle items.



Key	Attribute													
L	Test Strategy		D					C				B		A	
L	Life-cycle model		B			A									
L	Moment of involvement			D				C				B		A	

The Assessment Process

Phase 5- Presentation of findings with project sponsor, executive sponsor and team.

- Goal- Present Preliminary findings to executives and project sponsor. Get agreement on the highest priority improvement areas.
- Hint- be prepared for a very different interpretation of the findings than you perceived.
- Deliverable- Improvement Roadmap

Presentation of Findings

Be prepared for difficult areas.

Before you have a presentation to the whole team about the results of your work, have a review of findings and roadmap with the executive sponsor to discuss any difficult areas, confidential issues.

Pick the top 5 or top 10 to become the catalysts for change or roadmap of actionable improvement.

The Assessment Process

Phase 6 - Implementation of Roadmap

Goal- setout goals with timelines and milestones and subtasks to accomplish the tasks agreed upon for improvement.

Action- Develop a schedule for implementation of the improvement plan.

Hint- Get some aspect of the project implemented immediately so people can see tangible results right away- even if they are the smallest or easiest improvement tasks. Roadmap tasks must also be achievable and budgeted.

Deliverable- The Roadmap for Improvement

Roadmap Task Example

Title: Integrate better between onshore and offshore teams to gain higher productivity

Priority: 4

Specific:

- Provide training and support to enable staff on both sides to collaborate more effectively
- Structure the work environment and relationship to make it more conducive to success
- Provide an effective productivity management framework help facilitate offshore activities
- Solicit feedback and address the feedback accordingly

Schedule:

- Date for completion

Roadmap Task Example

Title: Change/refine test automation strategy, specifically, methods and tools.

Priority: *4*

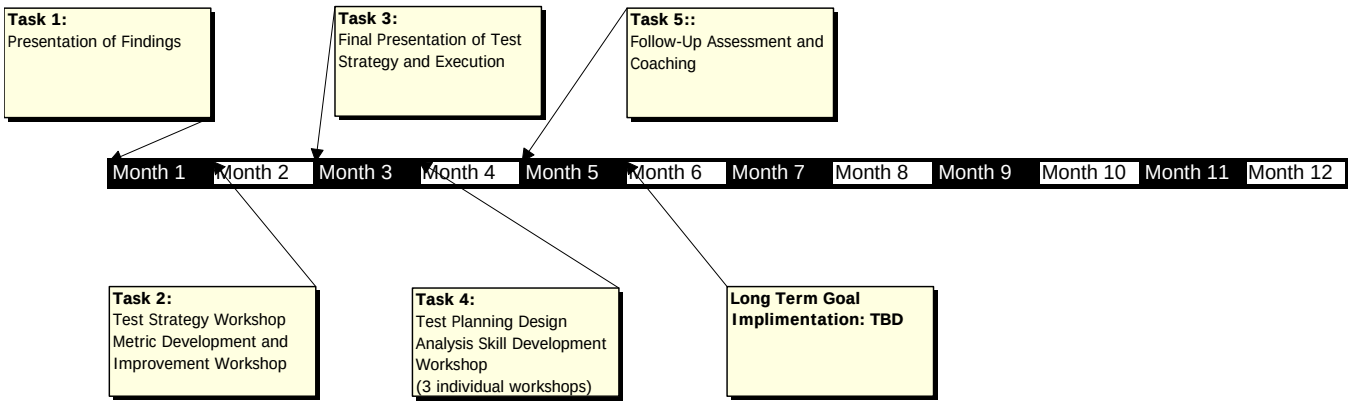
Specific:

- Improve test automation productivity, failure analysis, scalability, and reduce maintenance costs
- Make test automation efforts visible and quantifiable in a meaningful way
- Make test automation efforts manageable

Schedule:

- Date for completion

The Assessment Process



The Assessment Process

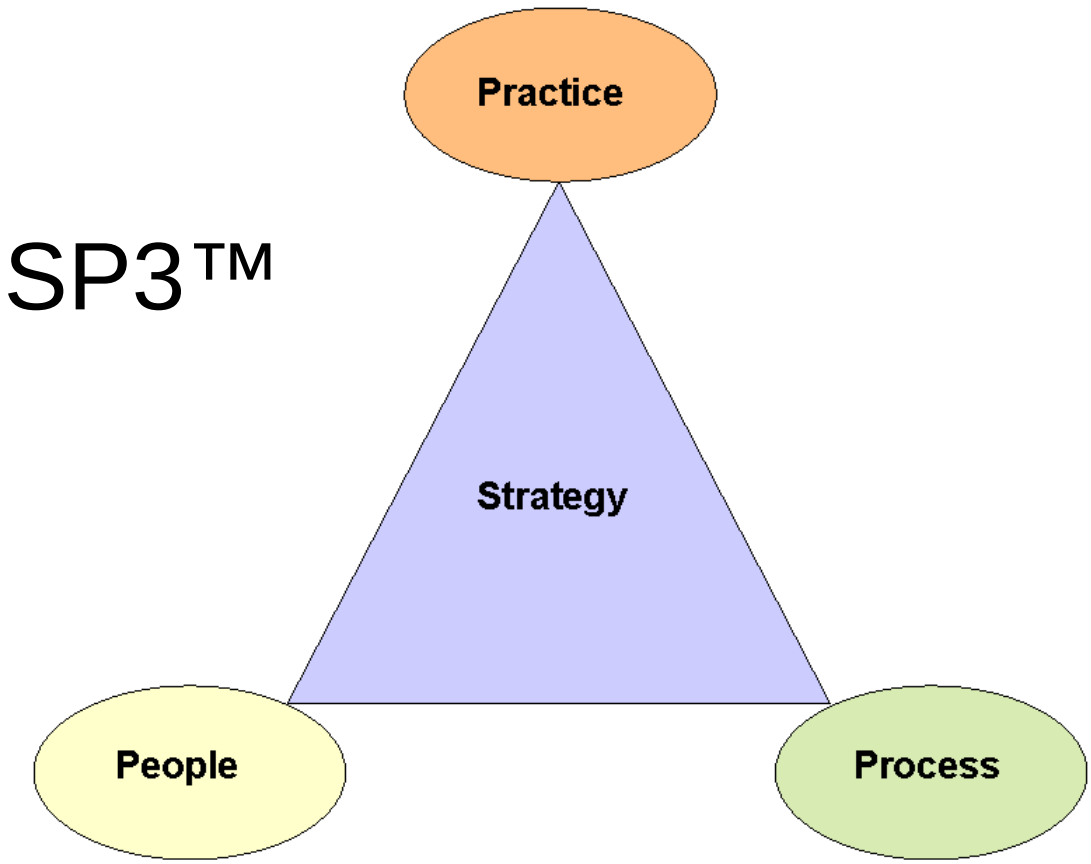
Once the Assessment and Presentation of Findings is complete it is typical to reformulate the Test Strategy.

One of the most common findings from an test assessment is discovering that the does what it does because that is what it has always done- not because it is what is most effective.

Testing Strategy in Context

A test strategy is a holistic plan that starts with a clear understanding of the core objective of testing, from which we derive a structure for testing by selecting from many testing styles and approaches available to help us meet our objectives.

Test Strategy



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Formulating a Test Strategy

- It's teamwork.
- It requires all stakeholders to participate.
- It requires executive support.
- It requires thinking out-of-the-box—Start with a blank piece of paper.
- It requires a lot of asking "why?"
- Think bottom-up, and start from the end.

Strategy Formulation Process

1. What are your quality objectives or characteristics?
2. What are the requirements for each characteristic? What are the types of bugs that affect each quality characteristic?
3. What are the test types or activities needed to support finding problems described in #3?
4. What are the most effective approaches to finding specific types of bugs as early as possible?
5. What is the required application maturity to support #4?
6. How would #4 and #5 be mapped to the various phases in the SDLC?
7. How would you qualify the maturity of the software to determine that it has reached its milestone?
8. How do you quantify and measure your work?
9. What tools can help you improve your work and which framework is needed to implement the tool successfully?

The Roadmap to change

Metrics Program Evaluation

While doing the assessment you will, of course, assess the success of the metrics program you have in place.

If you don’t have an effective metrics program in place now is the time to start one.

In addition you will want to add metrics to observe what changes in the SDLC and the product as a result of the assessment.

Metrics

"If we don't measure we can never improve!"

"Anything worth doing is worth measuring."

Metrics

Metrics have 2 goals for your organization. They are not mutually exclusive.

- First- ship an improved product with a better understanding of risk and test coverage.
- Second- improve the process so the next product can be release more efficiently with less stress and greater knowledge of the risk.

Metrics must be Actionable

Project Management- getting the product out. These are typically measures of software stability and Activity

- How many test cases done
- Defect counts
- Hours tested against a build
- Code turmoil
- Requirements stability

Process Improvement

- Defect Aging
- Requirement Stability
- Valid Defects found vs. test method
- Bugs by severity post release

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