

The Changing Role of Software Tester

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Abstract

In 2008 my company reorganized into product units and adopted Agile process methodology. As a result, my QA manager position became obsolete. The new reality was not comfortable at first, until, some time and practice later I recognized that my test manager/strategist skills are equally important and applicable to the new role of a tester on the multidisciplinary team. That synthesis emerged into a new role of a "peer leader" which I later identified as a new trend -- through conversations with coaches and thought leaders of our industry. This role is in demand now, and, as I foresee, will be in even higher demand in the future.

I firmly believe that advancement of the testing profession is calling for leaders, fully versed in testing strategies, equipped with the knowledge of psychology and team dynamics, who know how to effectively apply all available team's assets (skills, knowledge, tools, time, etc.) to optimize the delivery of a quality product. The testers in new roles are motivators and educators who can transform every team member into the quality advocate.

In this paper, I will share my observations confirming that the new role is demanded; discuss in which ways it advances testing profession, show how and where it adds value to the Agile development team. I will also assess what the "skilled testing" education entitles, as the traditional view of QA is no longer applicable to the demands of the future.

Biography

A context-driven scholar, professional tester for over 15 years and a thought leader, Anna is always on a quest for quality. Her passion is in discovering new techniques and creating environments that allow people to be most effective at what they do.

Anna is an international conference speaker; she is the AST Leadership SIG chair and CAST 2014 conference chair. She serves on Community Advisory Board for Software Test Professionals Association.

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1 Introduction

Agile process was largely introduced to technology as a concept of eliminating 'middle men' between the 'user' and the 'development team' in order to speed up the delivery of working software. Such original perception led to misconceptions that resulted in somewhat unsupported claims of calling 'obsolete' many disciplines that were traditionally involved in the product development and delivery lifecycle.

"If we replace requirements documents with stories, there is no need for Business Analysts", "if everyone on a team does testing and we automate all our tests, there is no need for Testers", "if the Developer shows working software to the customer and gets instant feedback, there is no need for Designers", etc., etc. – such statements and corresponding actions are still very common for the newly converted Agile enthusiasts.

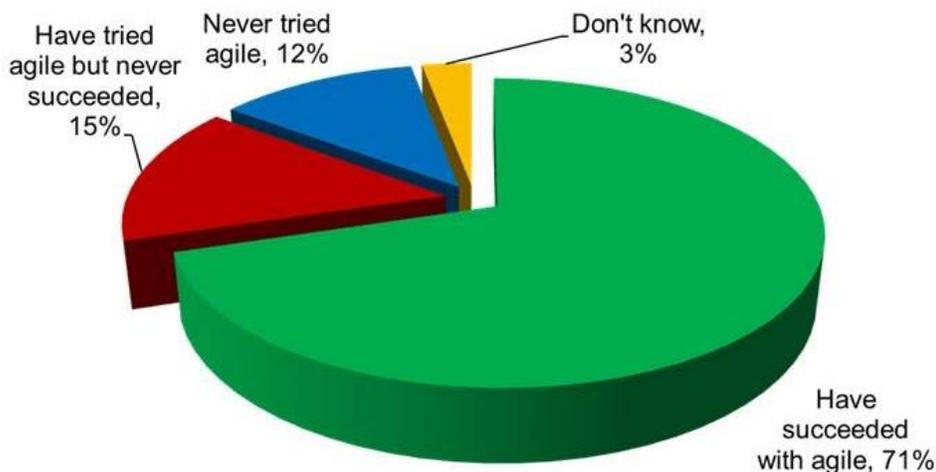
Practice has shown, however, that the need for skills of the abovementioned specialists still exists, while these professionals would take on somewhat expanded roles in the Agile team. This paper will focus on the changing role of software tester on such team.

2 Agile trends

Numerous industry research as well as noticeable infiltration and industry-wide promotion of the "Agile" models (Agile Coach as a new profession, multiple international conferences with 'Agile' in the name, Agile track on almost every technical conference) indicate that the practice "crossed the chasm". The adoption trends that are traced in the diagram below are revealing. While the measure of success is not scientifically supported in this survey, the answers indicate that 86% of respondents work in organizations that are at least trying the agile techniques:

Agile Adoption and Success Rates

Question: To your knowledge, has your organization successfully applied agile techniques/strategies/processes on one or more development projects?



Implication: 86% of respondents work in organizations that are at least trying agile techniques.

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Forrester Research data also supports that the agile methods are becoming one of the main development approaches. Through several reports, spanned from 2009 to 2013, Tom Grant, the Senior Analyst at Forrester Research, traced how agile development reached mainstream proportion (Agile Development: Mainstream Adoption Has Changed Agility, 2010; Agile in the Real World: Going Mainstream, Creating Bigger Waves, Making Course Corrections, 2013).

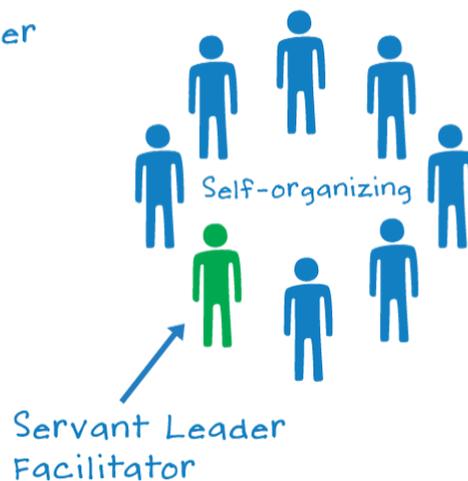
3 Self-organizing team – a mini-model of an organization

A foundation of the Agile framework is the self-organizing team. Such a team resembles the “organization in a nutshell” – a mini-model of an organization. The difference is in size and in relationships; while the traditional hierarchical structure leaves all the power and strategy with the superiors, and execution with the reports, the self-organizing team retains both the strategy and the execution with their team members. The leads of various disciplines in self-organizing teams serve the team as strategists, enablers and facilitators, while still being the members of the team. Someone on the team, as in any large hierarchical organization, has to lead the quality efforts professionally.

Traditional Teams



Agile Teams



Picture credit: <http://blogs.seapine.com/>

Testers, with their unique skills and approaches (such as mastering the art of asking the right questions, not taking anything for granted, analyzing assumptions) and passion for quality are capable of adding much value to the software development teams on all stages of product conception through delivery. When the tester is also armed with the knowledge of various testing methodologies and understands how to apply the test strategy within a unique context, such a tester is better equipped to assist the team to define, and then establish the quality practices.

4 Demand for the new role

In 2012, I presented my experience report on fine-tuning testing strategies on product and project maturity to the Mile High Agile conference in Denver, Colorado. At the speakers' dinner later that night, I was at the table with two agile coaches, who at that time were tasked with the agile transformation of large organizations. We started discussing what skills the agile development team needs to succeed in

delivering good quality products. One of the coaches mentioned that the company he is working with is having a hard time finding Quality Leaders for their agile development teams. My first intent was to clarify whether they were looking for testers. The coach replied: “We have testers. What we need are Quality Leaders – individuals who can guide developers in adopting good testing practices, and motivate the team in thinking about quality.”

The concept of Quality Leader resonated well with my own experience. In 2008 my position as a Director of Functional Testing was eliminated, as my company reoriented into business units while adopting Agile methodology. I found that my test strategist skills became very important in the new position of the single tester on an Agile team, which then transformed into the Test Lead role. Establishing a test strategy which the whole team could execute required deep knowledge of testing methodologies, along with the flexibility to adapt to ever-changing project needs. Becoming a quality advocate in cross-discipline team was challenging, as it required me to find my own reasons for encouraging quality processes. Making everyone else on the team a quality advocate required my formerly acquired managerial and facilitator skills.

Based on my experience, I concluded that the self-organizing team needs a person who:

- is fully versed in testing strategies
- has the skills to facilitate testing activities and learning
- has the end goal to transform each team member into a quality advocate so that the team can succeed in delivering high value products

When I took my message to testing conferences, I discovered that many testers and test leads find themselves in very similar conditions, where there are no more QA managers, and testers are asked to lead the testing practices, participate in pair testing, serve as test coaches, and help the teams adopt the processes that integrate quality practices. Many testers find the new environment unsettling, as there is a gap between the needs of a self-organizing team and the skills and expertise that many traditional testers bring to the table.

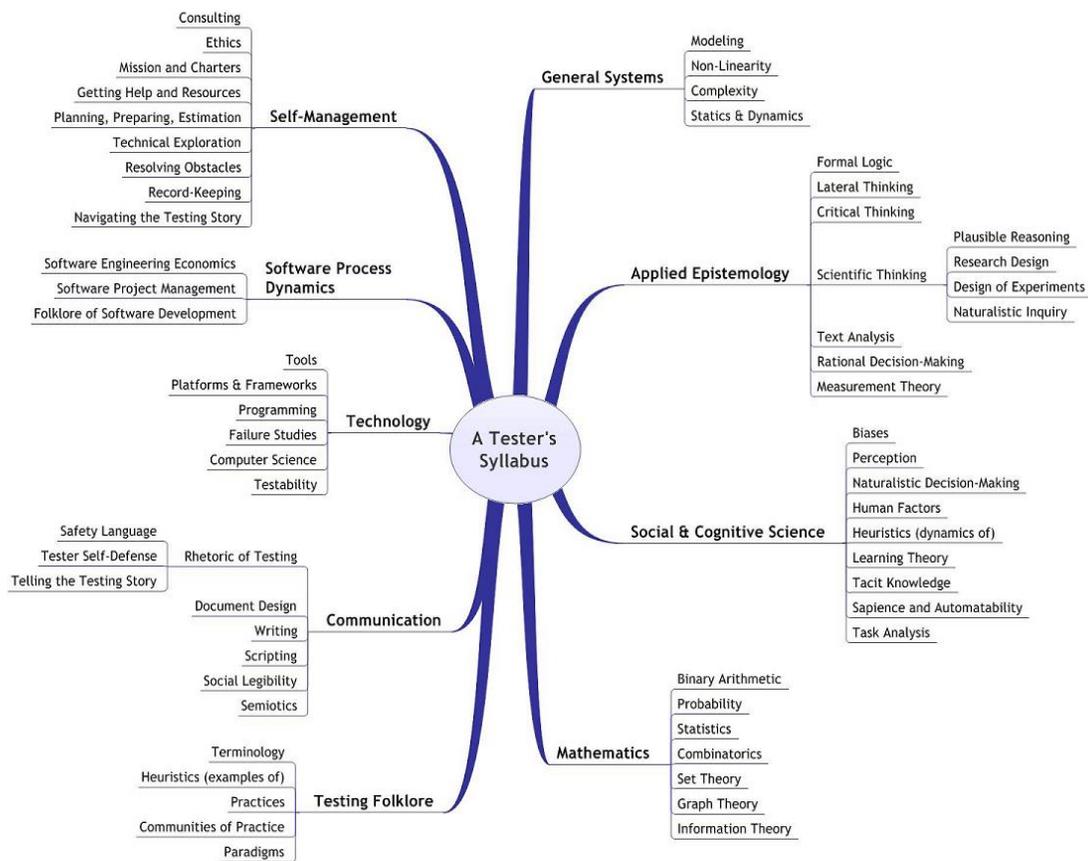
5 Skills needed to succeed in the new role

Quality Leader skills largely match the ones of a test manager and test architect who rose from the ranks of hands on testing, with the caveat that:

- The whole team and not only the testers are participating in testing activities
- The Quality Leader is a peer leader; he or she does not have people reporting to them, thus the authority and trust needs to be earned.

The skills required of the Quality Leaders in cross-functional Agile teams are:

- First and foremost, **good testing skills**. A comprehensive list of skills required to be mastered by everyone who performs software testing professionally, is best described in James Bach's Tester's Syllabus:



Credit: <http://www.satisfice.com/>

- Understanding of test strategies** and knowing how to select an appropriate methodology within the context of project needs. This skill and experience is extremely important in a cross-functional team, where majority of the team members don't have the same level of expertise and may push for an extreme usage of one particular methodology, such as "automate all tests". To provide more light on the given argument, it may be a bad decision to have full automation of a throw-away code as is usually the case in projects in R&D stage. It may be a very costly and ineffective solution to continue 'full test automation' on a mature system that has many different workflows. Maintaining a large and complex automation suite could severely impede development. The better automation solution for large mature systems may be selecting critical workflows and functions for automation coverage, and creating a robust safety net automation suite which performs reliable checks on each new build while leaving room for exploratory testing.
- Domain expertise, understanding of technology** and "big picture" thinking. The Quality Leader has to look outside of working software and develop an understanding on how the software is intended to solve the customer needs, and how it's used by the customers. Learning how the software is constructed adds another perspective to understanding how the system works and where the potential problems or bottlenecks could occur. The person possessing such combined knowledge becomes invaluable in all discussions on new features, architecture changes and other technological decisions. Knowing how the system works inside out and knowing how and why it's used by customers is essential for impact and risk analysis of any modifications introduced to the system.

- **Quality advocacy.** A Quality Leader is one who encourages everyone on the team to advocate for quality. Recognizing all the product stakeholders and what “quality” means to each is a first step of growing into the quality advocate. It is not possible without clear understanding of what each stakeholder group considers to be “quality” and what are each stakeholder’s needs. Speaking about quality with people in different positions requires knowledge of their ‘business/professional’ language and understanding how they think and what’s important to them. For example, a “quality product” means high ROI for the business manager, while it may mean hacker-protected system for security professional, and it may mean a user-friendly interface for customer support.
- **Facilitation and coaching skills.** Oftentimes, the testers on the agile teams are outnumbered by developers. It is not an issue per se, but a reflection of the changed responsibilities of the team members in agile team, where more testing activities are incorporated into development process. Testing skills however are not by default acquired with the new responsibilities. Therefore, it is vital to have a skilled test professional to coach other team members on how to do testing well, facilitate testing sessions, brainstorm test coverage with the team, or identify risk areas in need of deeper testing.
- **Leadership and communication skills.** The Quality Leader is not a manager, but an influencer. In order to change perception of the team members toward quality, the tester in this role has to lead by example and master personal communication skills as well. The leaders inspire people around them to change and improve. Sometimes it’s leading by example and sometimes it’s the art of persuasion or negotiation. In any case, the good communication skills are important in getting your point across.
- **Understanding the process and group dynamics.** From my observation, many testers who spent years in hierarchical organizations have a hard time adjusting into an Agile environment. They are facing team members who at first are not of the same mindset. A Quality Leader needs to be process-literate and be aware of the group forces and dynamics. The uniqueness of self-organizing teams requires flexibility from the leader, as by its nature each group will adopt to change on its own pace. Understanding systems constraints and human learning styles would allow gentle steering toward the end goal instead of dragging the team toward new mindset by brutal force. Changes take time and a good leader is aware of that.
- **Enabling the team** through utilizing all available team’s assets (skills, knowledge, tools, time, etc.) to optimize the delivery of a quality product. In majority of cases, the tester is not a ‘jack of all trades’; he or she does some things well, and is less experienced/skilled in other areas. The output however should not necessarily be limited to a single person’s ability, and the Quality Leader would look around and leverage all existing resources in order to help the team deliver the quality product in shorter time thus eliminating the bottlenecks.

6 Conclusion

6.1 What is missing?

In my opinion, the biggest skill which is lacking in most testers today is the ability to advocate and facilitate the process where testing becomes an integral part of every stage of the software development life cycle, be it Waterfall, Agile or any other. I mentioned ‘facilitate’ for a reason, as not all testing can and will be done by testers.

Let’s look at the bigger picture: validations of business claims, system architecture, functional specifications, software frameworks or support processes are equally important for the project’s success. Testers may not be in the best position to conduct a specific type of validation or review, due to their skillset or number of people on the project, but they should be able to encourage and facilitate the testing and validation processes. To have more weight in such conversations, it’s good for the testers to learn the

various strategies used by different disciplines to validate their assumptions. For example, UX designers construct little experiments to test business ideas by breaking down these ideas into testable elements, and defining 'criteria for success' when doing interviews or eliciting user responses in mock up frameworks to test each hypothesis. In a similar way, good development validation practices include writing unit tests that isolate each part of the program and show that individual parts are correct. Production-like experiments with the failure modes, known as "NASA training", are used in validating readiness of operations support team to respond to system failures.

6.2 Developing new Quality Leaders

I have noticed that the professional landscape is changing in the last few years by observing emerging discussions on testers' roles and skills at the agile conferences, through blogs, and social media. I have seen various attempts to rediscover and redefine this role. Speaking with many people at conferences, I often hear how difficult it is for a tester to fit into an Agile team and how confused testers are in such environments.

The material presented in this paper highlights that the "traditional" tester's skills are not matching the new demand. The new role is more advanced, and well-versed in various skills. Without these skills a tester is not adding value to the team and instead becomes an impediment.

I also see that this demand created an outbreak of certifications and training courses in "Agile testing" that often promote excessive usage of automation tools and do not offer much more besides a training in 'scrum terminology'. There is an obvious gap in providing testers the appropriate training for the new role and my goal is to bridge that gap in the future through raising awareness of the new requirements.

Working in the Agile team has its challenges and its rewards. My biggest incentive as a Quality Leader is seeing my whole team care about quality as much as I do and having an appetite for learning. As an Agile practitioner, being part of the self-developing team is the most rewarding feeling, and it motivates me to be my best as well.