

Timeless Skills for Modern Testers: Communication, Collaboration and Creativity

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Abstract

As testers in today's world of agile and DevOps, we are challenged to champion quality in new and unique ways and to develop innovative test approaches that focus on customer value. It is in using not only our technical expertise but more importantly, our creativity in bringing innovative techniques such as test optimization, Behavior Driven Development (BDD) and others to our test practices that we can make our most valuable contribution.

We determine both what to test and how to test and we test jointly with developers. We assess risk and communicate this to our teams and stakeholders through our stories. Our ability to innovate comes from not only our technical skills, but also from our skills in communication, collaboration and creativity.

In this paper, Gerie and Peter will discuss the key skills that the modern testers need to be innovative: communication, collaboration and creativity. Using real-life examples, Gerie and Peter show how we can create intersections of creativity both individually and as a team. You will learn how to look at issues in multiple, unexpected ways to eliminate your own associative barriers. Finally, you will learn how create true innovation by connecting seemingly unrelated ideas generated by teams of multiple disciplines.

Biography

Gerie Owen is a Testing Strategist and Evangelist. She is a Certified Scrum Master, Conference Presenter and Author on technology and testing topics. She enjoys mentoring new QA Leads and brings a cohesive team approach to testing. Gerie is the author of many articles on technology including Agile and DevOps topics. Gerie chooses her presentation topics based on her experiences in technology, what she has learned from them and what she would like to do to improve them.

Peter Varhol is a well-known writer and speaker on software and technology topics, having authored dozens of articles and spoken at a number of industry conferences and webcasts. He has advanced degrees in computer science, applied mathematics, and psychology, and is Managing Director at Technology Strategy Research, consulting with companies on software development, testing, and machine learning. His past roles include technology journalist, software product manager, software developer, and university professor.

1. Introduction

Of the many roles that testers take on in Agile and DevOps teams, probably one of the most important is that of champions of the quality assurance process. This role is critical to achieving the ongoing success of the organization, especially during digital and business transformations. As testers we enable transformations by transforming testing.

In the [2016-17 World Quality Report \(Buenen and Muthukrishnan, 2017\)](#), Buenen and Muthukrishnan report that digital transformation is the top IT strategy that presents both opportunities and challenges to quality assurance and testing groups ^[1]. The report noted a fundamental shift in the role of QA and testing from getting products released with as few defects as possible to improving business performance through transformed customer experience and updated business operations leading to revenue growth.

To transform our test practices, testers must innovate; the usual quality assurance and testing approaches in today's business environment will not meet the needs of Agile and DevOps as well as business transformations.

Our technical skills are important; however, it is in using our expertise in testing strategy and design and risk analysis that we can make our most valuable contributions. We determine both what to test and how to test and we test jointly with developers. We assess risk and communicate this to our teams and stakeholders through our stories. We implement new techniques including test optimization, continuous testing, Acceptance Test Driven Development (ATDD), Behavior Driven Development (BDD), Test Driven Development (TDD) and shift left. So then, our expertise comes not only from our technical experience; but more importantly, from our skills in communication and collaboration.

Although we do not always know the right answer, we can find the most innovative solutions through conversation, collaboration and creativity. True innovation doesn't happen in a vacuum; it almost always requires the intersection of seemingly disparate fields. True innovation is hard and it begins with communication and collaboration.

2. Communication

Communication is simply an exchange of information; however, communicating effectively is an art. Communication is the foundation for collaboration and creativity; it is virtually impossible to collaborate and innovate without engaging in effective communication.

Effective communication begins with talking to people directly, face-to-face, if possible. When our teams are distributed, it is extremely important to use high-quality audio and video tools that can simulate face-to-face conversations.

As we focus on how to best use JIRA, HipChat, Slack, project management products, incident and defect tracking solutions, and a myriad of other software tools as a part of our development and delivery environment, we often lose sight of the most fundamental and powerful tool available – talking to people, to our team members, management, customers, and other stakeholders.

Rather than burying ourselves in tools and devices, software and search engines, we can do more for our overall application quality and delivery processes by simply talking to the people around us. While a focus on software may produce more data, knowing and understanding the thought processes,

expectations, pain points and ideas of the stakeholders will result in more innovative ideas as well as provide a filter for developing optimal solutions.

In Reclaiming Conversation: The Power of Talk in a Digital Age (Turkle, 2016), Sherry Turkle points out that when we communicate through texts and emails, we lose the spontaneity and exchange of ideas that come with direct conversation ^[2]. These direct conversations lead to a flow of ideas that may lead to unexpected solutions to issues. It is exactly this spontaneous exchange of ideas that enables collaboration, creativity and innovation.

Communication is the enabler of collaboration and communication coupled with collaboration provide the underpinning for innovation. Communication is the key component of the systems development lifecycle, no matter what methodology is espoused. Whether an organization has embraced agile and iterative methodologies or DevOps or uses a waterfall approach, teams must communicate effectively among themselves and with their stakeholders. Testers and test managers must use their communications skills to tell the story of the quality of the release and explain the business risk of releasing in the current state.

For any initiative, especially transformational innovative initiatives, to be accepted and implemented, they must be clearly and effectively communicated to multiple stakeholders at various levels throughout the organization.

3. Collaboration

Collaboration is one of the most critical skills for testing professionals today. As information systems technologies become increasingly more complex and development methodologies focus on increased velocity, individual testers and test teams cannot possibly provide effective testing alone. Testing must become a team effort. Transforming testing requires implementing shift-left techniques such as TDD, BDD and ATDD. Implementing these techniques require testers to collaborate across roles and functions; working more closely with developers, operations professionals and the business than ever before.

Collaboration is about people working together to achieve goals. It is a process through which people work as a group to achieve a common purpose. Through collaboration, teams learn about themselves both as individuals and as members of teams. Energy is created through disagreement and through the intersection of ideas, new possibilities emerge.

Although it may seem like a simple process, effective collaboration can be difficult to achieve. In CIO View: Ten Principles for Effective Collaboration (Graham, 2011), Dr Graham Hill offers ten principles that organizations can use to develop a framework for their collaboration process.

They are:

1. Focus on achieving business results
2. Develop collaboration as a capability
3. Define a decision-making structure that includes information sharing and authority
4. Champion personal accountability
5. Instil cooperative standards for information-sharing, dialog and discussion
6. Expect, encourage and make use of the natural divergences and convergences
7. Manage trade offs
8. Define and enforce high standards of personal behaviour
9. Develop a flexible organizational structure that enables collaboration
10. Employ collaboration tools and systems to support ownership^[3].

Due to nature and functional goal of QA teams, there are several aspects of the collaborative process that are of particular importance. These include clear communications, traceability and visibility. A QA team must collaborate not only within the team, but as part of a cross functional team. The team may be distributed across various time zones, making collaboration via the usual social collaboration tools such as Skype or video conferencing, useful as only part of the solution.

Collaboration is the process that enables creativity and therein lies its true power. In Group Genius: The Creative Power of Collaboration (Sawyer, 2017), Keith Sawyer shows how collaboration is the only way to achieve breakthrough creativity and true innovation. Sawyer offers seven characteristics of innovative teams:

1. Innovation happens over time when the right ideas are combined in the right structure.
2. Collaborative team members practice deep listening; each member listens attentively rather than planning what they will say next.
3. Collaborative team members build upon each other's ideas.
4. Initial ideas are accepted without having meaning at the time; meaning can be built upon later.
5. Questions emerge that spawn new problems, issues, ideas and solutions.
6. Innovation comes from lots and lots of failed ideas; it is not an efficient process
7. Innovation emerges from the bottom up; often in self-organized and self-managed teams^[4].

Group flow is the peak of collaboration. In Flow: The Psychology of Optimal Experience (Csikszentmihalyi, 2008), Mihaly Csikszentmihalyi defines flow as a state in which an individual or a group is completely absorbed in a task, almost in a higher state of consciousness. When flow happens in a group, they are performing at their highest level of ability and are finding personal fulfilment in the process. In his study of flow, Csikszentmihalyi found that environment is critical to achieving flow. In the environment that promotes flow, the challenge must match the skillset, the goal must be clear, immediate feedback is required and the team must be free to concentrate on the task at hand. To achieve the highest levels of collaboration that lead to innovation it is important to facilitate and enable this environment^[5].

For teams to collaborate, it is important that all team members feel empowered to make suggestions and build off of each other's ideas. This requires emotional intelligence as well as the ability to resolve conflicts using empathy. Testers can foster collaboration by using their requirements review skills by looking at ideas in different ways and asking probing questions that enable the team to think outside the box.

4. Creativity

Creativity is the basis of innovation. So why is innovation so hard? Our natural tendency in approaching a challenge is to analyze the issue from a framework of our current knowledge and expertise. In this way, our innovation becomes incremental, building upon what we have done in the past. Then, by collaborating with colleagues from within our own field, we "innovate" new versions of the same old ideas, furthering our incremental innovation. We may improve on our processes in this way; but we don't create anything truly new in direction. This is sometimes known as directional innovation.

Therefore, to create something totally new, actually the only way to create a completely new innovation, is to combine ideas from different, usually disparate fields. A field is not necessarily our line of work, it can

be any area of study in which we are interested and have become well-versed. Our fields can come not only from our educational experiences and previous jobs, but also from our hobbies, travels and other interests. Ground breaking innovation begins when individuals or groups combine their expertise in various fields to solve a problem.

In [the Medici Effect: What Elephants and Epidemics Can Teach Us About Innovation \(Johansson, 2006\)](#), Frans Johansson suggests that the process of combining ideas requires “stepping into the intersection”. He describes the intersection as the place where “different cultures, domains and disciplines connect and established concepts clash and combine through which ground breaking new ideas are generated”. To describe the process of stepping into the intersection, he coined the term, the “Medici Effect”^[6]. This is because it was through the Medici family’s patronage of many disciplines in Florence in fifteenth century Italy that experts were brought together producing an era of many innovations.

In today’s world of Agile, DevOps and distributed teams, we have the opportunity to collaborate with colleagues from many different, often disparate areas of expertise. Since we and our colleagues also have additional fields of study, the opportunities for intersection expand exponentially. Although collaborating with our diverse colleagues yields many opportunities for stepping into the intersection, ground-breaking innovation will not happen unless our teams are able to associate their disparate fields of study. In other words, it is not just about putting together seemingly unrelated fields; It is finding the relationships between them.

This is usually difficult because it is the opposite of our typical problem-solving process. Our minds analyze problems by association. We solve problems based on past successful actions which is useful in most situations: however, association doesn’t encourage different perspectives or exploring unrelated concepts. This becomes an issue when we are addressing a problem that we cannot solve using this approach.

So then, when we are trying to solve a difficult problem that seems to beg for an innovative solution, we need to form not only a team of people from disparate fields, but more importantly, those people need to be open-minded and able to find these associative relationships easily. Frans Johansson describes these people as having low associative barriers. How do we recognize these people among our colleagues and teams?

Although they are often people who have been exposed to different cultures are curious and are self-taught in many disciplines, there are some personality characteristics that make them predisposed to having low associative barriers. Specifically, they have a growth mindset, they are able to look at problems intuitively with limited bias and the ability to use their adaptive unconscious to appreciate the importance of initial impressions and gut reactions. Let’s take a more in-depth look at each of these characteristics.

In [Mindset: The New Psychology of Success \(Dweck, 2007\)](#), Carol Dweck describes a mindset as the way in which we mentally approach life and its challenges. Understanding mindsets explains why brains and talent don’t bring success, how they can stand in the way of it and why praising brains and talent doesn’t foster self-esteem and accomplishment, but can jeopardize them. Dweck described two types of mindsets, ‘fixed’ and ‘growth’^[7]. People of a fixed mindset believe that intelligence is based on what a person is born with whereas people of a growth mindset believe that intelligence can be developed.

As a result, people of a fixed mindset continually try to prove their intelligence and they see failure as a personal reflection of their intelligence. On the other hand, people of a growth mindset look at failures as

opportunities to learn; they believe what they have now is a starting point and work to improve their intelligence and abilities. It follows that people of a growth mindset are better innovators as they are willing to risk failure as they explore new ideas.

The ability to think intuitively plays an important role in innovation. In Thinking Fast and Slow (Kahneman, 2011), Daniel Kahneman describes two distinctly different decision-making processes which he terms System 1 and System 2 thinking. System 1 thinking is fast and deliberate whereas System 2 thinking is more intuitive. Cognitive biases or errors in judgement based on beliefs that we are predisposed to have are the result of dichotomies between System 1 and System 2 thinking^[8].

There are several biases that may limit our ability to relate seemingly unrelated concepts. These include representativeness, the confirmation bias, congruence and framing. Representativeness and the confirmation bias describe our usual approach to decision-making. Representativeness is at play when people tend to make judgements about situations based on how similar the situation under consideration is to others with which they are familiar. The confirmation bias is displayed when people consider only the information which supports what they have decided is true. It is easy to see how these biases impact true innovative thinking.

Congruence and framing impact our ability to generate atypical or unusual solutions. Congruence, or the tendency of experimenters to plan and execute tests on just their own hypotheses without considering alternative hypotheses limits the ability to try seemingly unworkable solutions to problems. Framing impacts our approach to risk. It is due to framing that people make different, sometimes opposite, choices depending upon how the information was presented. We are less likely to try a solution that has a 50 percent chance of failure than one that has a 50 percent chance of success, even though both solutions literally have the same likelihood of both failure and success.

People who are able to use their adaptive unconscious are better able to innovate. In Blink: The Power of Thinking without Thinking (Gladwell, 2007), Malcom Gladwell defines adaptive unconscious as “our mental processes that work quickly with little information”^[9]. Of course, as with System 1 and System 2 thinking, it is important not to rely exclusively on one or the other; however, by allowing ourselves to make quick assessments about ideas without association to other ideas, we can limit the effect of cognitive bias. Malcolm Gladwell terms the recognition and use of adaptive unconscious, “Thin Slicing”. It is usually an unconscious feeling, but following those intuitions can lead to intersectional innovation.

As testers, we must challenge ourselves and our colleagues to work together to solve our challenging technological problems and improve our methodologies using intersectional innovation. And how do we do this? We must understand that true innovation comes from the Intersections of seemingly unrelated fields of study and that intersectional innovators have low associative barriers and work as individuals and teams to lower those barriers. We can become innovators by: reversing assumptions and examining different perspectives being aware of our biases, having a growth mindset and using our adaptive unconscious to think without thinking.

5. Conclusion

Communication, collaboration and creativity are the key skills that testers need to champion quality and enable innovation among their cross-functional teams. As testers, we must embrace failure and use it as a learning experience individually, as a team and as an organization. In The Element: How Finding Your Passion Changes Everything (Robinson and Aronica, 2007), Sir Ken Robinson and Lou Aronica suggest

that if we are not prepared to be wrong, we will never come up with anything original^[10]. Truly innovative teams will generate many ideas and initiative that fail in their quest for true intersectional innovation; we must foster an organizational culture that not only accepts this but embraces and encourages failure.

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