# New Skills for Testers

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***Abstract:*** *In our world, software development and testing teams often work under ambitious deadlines, discovering what needs to be done at the same time as they're discovering how to do [1]. On the other front, there is a shift from quality assurance to operational assurance [2]. These ever changing and demanding expectations creates the requirement for the development of new skills in testers.*
*In this paper, we will discuss on following points from a tester's perspective:*
1. *Changes happening in the world of software testing.*
2. *New skills required – Under this section we will see significance of tester having knowledge and wisdom of using language, and importance of the study of epistemology.*

## I. Changes Happening In The World Of Software Testing

There is much debate about how testing will be organized in the near future. The testing profession has evolved from the very first time developers started testing through to separate test phases and independence and then to collaborative testing [2].

Volker Weimer, a member of the Board of COR&FJA, says, 'a number of banks are faced with the task of operating in a market that has undergone huge changes over the last few years – and not just caused by the financial crisis. It is this change that I should like to describe using an example: In times of volatile financial markets, new business requirements, such as refinancing through mortgage bonds, or altered customer management processes like online banking and CRM, are in demand. Banks that wish to introduce these facilities quickly and securely need IT solutions that can be integrated with flexibility'.

A study shows that, predominantly, small institutions with a balance sheet total of up to 2.5 Billion Euros want to make sure that their core banking software meets not only today's requirements but also tomorrow's [4].

Performance features that new, modern software for core banking business should have [4]:
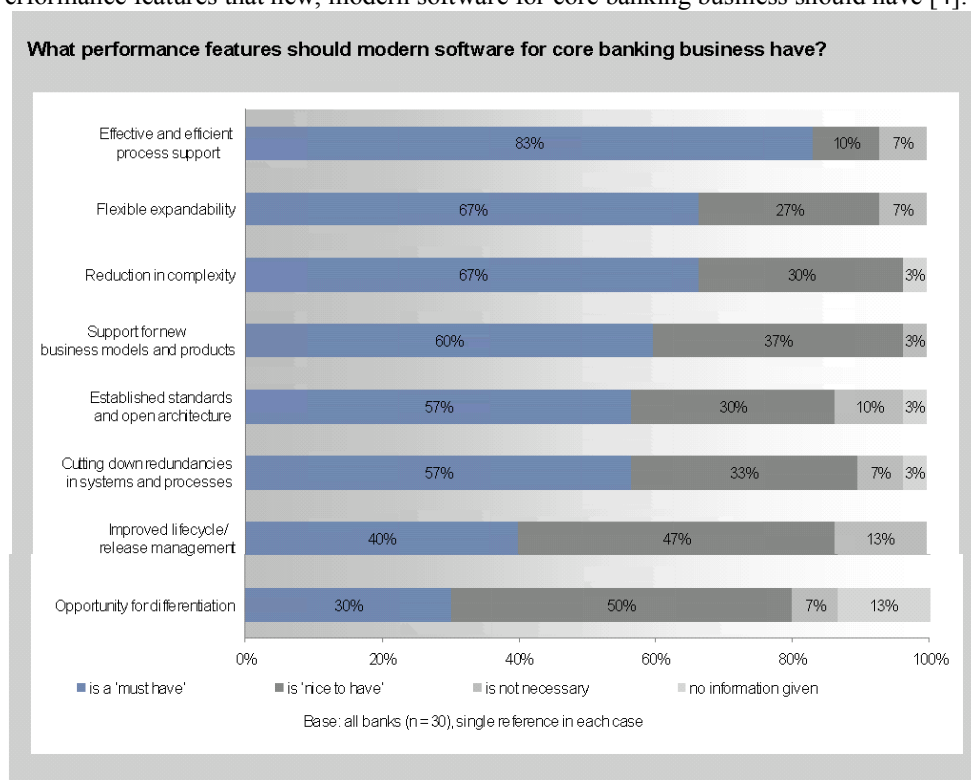
Change is so pervasive in our lives that it almost defeats description and analysis [3].
To meet the requirements of such ever changing and challenging world of software testing, testers need to develop skills suitable to the situation.

## II.    New Skills Required

As a tester we first understand the requirement of the business in the language of business, we understand the system to test in the language of system, we prepare scenarios and test approaches in the language of testing, we test the system in (or considering) the language of end user, and we provide bug's information to developer in the language of developer. This makes us a very special Polyglot who is basically a Tester. In today's environment we need to reach and realize a very new level of understanding of the languages we use for our daily job. As a tester it may sound like asking too much for our role as a tester but if anyone has a little exposure to the world of testing she would surely know that testing job is not about absolute perfection or infallibility, it is about absolute vulnerability. Most of the testers learn important lessons and develop (and accept and apply) good practices in software testing by burning their hands someday while testing. We call it experience. It's not a matter of being an expert but it's a matter of being of practice and being of service. Being conscious about the skills we practice will make our service better day by day. Coming back to the importance of language, here I suggest how to practice to make ourselves better equipped to communicate with an identity in its own language: All testers usually learn the business, the technical language involved, and the system under test. Apart from these good practices a tester should develop a habit of **reading literature**. All the different types of languages used for the role of testing usually are made up of one basic language. For example, in Barclays Bank, the business language, the backend mainframes COBOL language, the system description documents etc are all based mostly on English language. Good knowledge of English will help a tester to quickly get (understand the context of) the requirements, system understanding, business understanding, the knowledge of each word will support her to understand the code better, and communicate better. Although good communications skill is a basic trait of a tester however that is just not enough in current circumstances. Reading different kinds of English literature will help a tester to build the wisdom of communicating to the individual in the language, which that individual understands. In literature the profundity of the ideas and subjects is enthralling. Observe how linking words together create a resplendent tapestry [5].

2.1 Another new skill that a tester needs to develop is to **practice Epistemology**. Epistemology (from Greek *(episteme)*, meaning "knowledge, understanding", and *(logos)*, meaning "study of") is the branch of philosophy concerned with the nature and scope (limitations) of knowledge [6]. It addresses mainly the following questions:
- What is knowledge?
- How is knowledge acquired?
- To what extent is it possible for a given subject or entity to be known?

Much of the debate in this field has focused on analyzing the nature of knowledge and how it relates to connected notions such as truth, belief, and justification. One view is the objection that there is very little or no knowledge at all—skepticism. The field is sometimes referred to as the *theory of knowledge*.
The term was introduced by the Scottish philosopher James Frederick Ferrier (1808–1864).
Testers offer evidence; they like to dispel the illusion that things work; they enjoy freeing their clients from the thrall of false belief. James Bach says that thinking like a tester means practicing epistemology. Testing is applied epistemology [1].
To be more specific, Epistemology is the study of evidence and reasoning. It establishes the foundations of scientific practice.
Epistemology is studied by scientists, educators, and philosophers—and elite software testers. Students of epistemology study science, philosophy, and psychology with the goal of learning how we all can improve our thinking.
Applied to software testing, epistemology asks questions like the following:
- How do you know the software is good enough?
- How would you know if it wasn't good enough?
- How do you know you've tested enough?

Topics in Epistemology that relate directly to software testing include:
- How to gather and assess evidence.
- How to make valid inferences.
- How to use different forms of logic.
- What it means to have a justified belief.
- Differences between formal and informal reasoning.

- Common fallacies in informal reasoning.
- Meaning and ambiguity in natural language.
- How to make a good decision.

Studying epistemology will help a tester devise effective testing strategies, better recognize mistakes in her work, know what her testing does and does not prove, and construct defensible test reports[1].

## III. Conclusion

With growing expectation, reducing timelines, and maturing art of testing we need new level of understanding and clarity of our roles and responsibilities as testers and revisit the tools (skills) we need to succeed in delivering what matters to the stakeholders. Some of the basic skills in a tester like Communication skills need to move to a completely new arena of realization and some untapped and unrecognized skills like practicing Epistemology also need to be developed.

## References

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