



ISTQB, TMMi OR TEST AUTOMATION

**THREE PILLARS FOR SUCCESS:
THE PPT FRAMEWORK**

In trying to improve software testing and thereby achieve higher levels of product quality, the testing community doesn't seem to agree. There are those that claim that in Agile, it's all about people following the manifesto statement "people over process". To them processes are no longer needed. They more or less coincide with those that state that models like TMMi, despite tangible results having been reported [1], are obsolete and processes are not needed anymore. Of course there are also those to whom test automation is the answer to everything. Who needs skilled testers, a mature process, let's just start with test automation and every software quality problem will be solved. Who is right, or at least partly right? Who is wrong? This has been an endless, and perhaps even senseless, debate over the last so many years. Sometimes it helps to look outside of testing, or even outside of software development. In business management, a highly popular framework is the People, Process, Technology framework (also known as the PPT framework). It refers to and exhibits how the balance of people, processes, and technologies drive successful organizational change, improvements and re-engineering.

The PPT Framework

The PPT framework has already been around since the early 1960s [2]. The original model featured four elements:

1. *People: those who perform the tasks*
2. *Structure: how the people are organized*
3. *Tasks: what the people are doing*
4. *Technology: the tools that are being used.*



Figure 1: The PPT Triangle

Many have since combined structure and tasks into processes creating a sort of triangle shaped framework (figure 1). "People, process, technology" has become a mantra in business management. Since the 1990's there has been a shift away from individuating people, processes, and technology from one another. Instead, the focus when using the PPT framework is on looking at how these elements work together and influence each another. This has been a major shift in thinking. As separate components, people, process, and technology are essential for organizational growth, transformation, and management. To achieve organizational efficiency and effectiveness, all three elements must balance and sustain good relationships and interactions among themselves. As such the PPT framework is widely applied in for example the security domain and throughout the digital transformation process that organizations are undergoing. When it started security was often largely considered to be technology-only issue, using the PPT framework the notion that people and process needed to be incorporated into an overall security system was established. Understanding each element of the PPT Framework individually is a pre-requisite, before trying to understand the relationships between the elements. Learning how to regulate each aspect, implies

better being able to control them. Although the balance is critical, let's first briefly explain and discuss each element of the framework.

People

The PPT framework considers people to be the most crucial part of the triangle. People refers to the employees within the organization. They are the ones who complete the process tasks, sometimes supported or leveraged by technology. Employing and hiring the right people is essential. An organization needs to identify which skills, experience, attitude, and values are required for their employees. People also require clearly defined roles, so everybody knows their responsibilities. Ensuring that a team consists of the right (mix of) people, with the right communication between everyone who's a part of a change is also critical. Finally, businesses need to get a buy-in from their employees. They need to understand what they have to do, why they're doing it, and how changes affect them. The more they understand and believe in the changes that are being made, the more effort they will put into implementing them.

Without discussing the people aspect of the PPT framework in detail, trying to relate this to testing, we can very easily state that the International Software Testing Qualifications Board (ISTQB) scheme and portfolio plays an essential part for complying with the people aspect for testers with regards to the PPT framework.

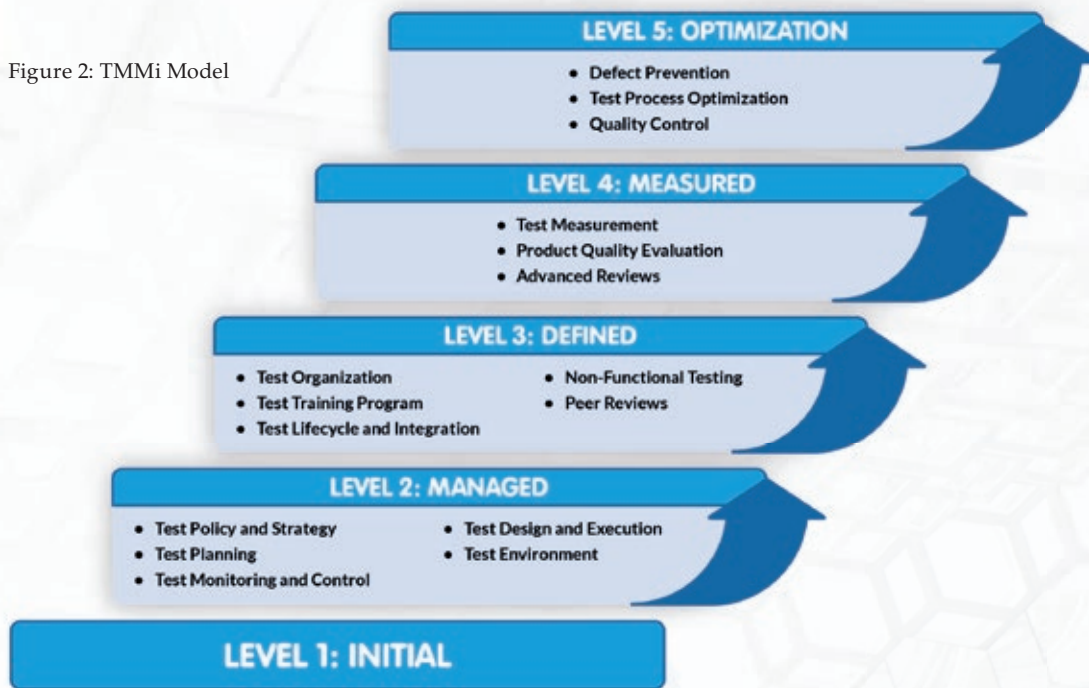
Process

With the framework process refers to the steps or actions to produce a particular result. A process in the PPT framework mostly focuses on the "how to do" aspect. How will we reach our results? How do we utilize the people and technology to reach this result? Without processes in place, people don't have a clear idea of what and how to do. Without people in place, processes don't get done. Processes are repeatable actions that theoretically produce the same result independent of who performs them. Implementing processes in an organization is most often not as easy as it initially looks. It's typically a difficult and extremely challenging task. The PPT framework provides guidelines for designing and implementing processes. It also states that once the people and processes are in place, organizations should consider the technology to support them thereby prioritizing the three aspects.

If we think about processes in the context of testing, the leading model or process framework for test process improvement today is the Testing Maturity Model integration (TMMi). The TMMi is a five level staged framework with process area at each level (figure 2). Testers perform the testing processes, and of course skilled and experienced testers typically produce better results using the same processes. The TMMi sur-



Figure 2: TMMi Model



vey [1] revealed that no less than 87% of the TMMi world-wide users have also embraced ISTQB to train their testers (and sometimes developers). This is good example where in practice both the people and process aspect are used in conjunction to improve testing and thereby achieve higher levels of product quality.

Technology

The technology provides the tools that the people can use to implement and perform the process. It also helps automate some parts of the process. The industry is coming up with new, helpful technologies and tools almost every single day. Ideally, the latest technology creates the most impact. It's very tempting to get attracted to "shiny" new tools. However, technology alone cannot solve all of your problems. Given the PPT framework, technology needs people and processes to work correctly and achieve the expected benefits. Too often companies make huge investments into technology to gain strategic advantages with people and processes being a second thought. Then they try to fit the people and process into this new technology. But this typically won't bring out the best outcome. Technology is only as good as the processes that are implemented around it, and processes are only as good as the people who execute them. If the people have not been trained how to use it or the process doesn't utilize it well, then the technology will not bring the best return on investment. Therefore, according to the PPT framework technology cannot be the solution to any problem by itself. Businesses need to articulate the objectives ("their needs"), define the process, and train the people to leverage technology to its fullest.

Translating the technology aspect to testing, points in the direction of test tools and test environments. There are many type of test tools but of course the most popular is test automation also referred to as test execution tooling supported by

various methods, techniques and frameworks, e.g., Selenium being a highly popular test automation framework. Especially with the uptake of Agile, more focus on unit testing, these tools including their framework, have become highly popular. Indeed the quality of this technology has improvement tremendously over the last decade. At the same time, I still see many organization struggling with test automation. Quoting Rex Black "less than half of the major test automation efforts I've seen with my clients are still achieving a positive ROI after five years" [3]. Putting test automation in the context of the PPT framework, technology needs people and processes to be really successful. Remember, people (testers) know what to test, they assess the risks and design the most interesting test cases that make the difference. All of this seems like an obvious statement, but apparently it is less obvious looking at every practice.



Balancing

The PPT framework is all about how the three elements interact. The three elements must balance one another. The three elements exist independently, but they do affect each another. This means that the actions of one component will affect another. If you change technology, you'll see changes in people and processes. The same relationships exist with each intersection. Some people refer to the relationship between these three elements as a 'triple constraint.' If one element shifts, the other two must do so as well. Without compensation, the

three elements will fall out of balance. Balancing the PPT Framework isn't easy. It takes constant management and restructuring. Many businesses throw new technology at their problems. However, technology is only as effective as the processes utilizing it and the people who handle it. In this way they will also most probably not take full advantage of the value delivered by technology. If an organization is too much process focused, they'll end up with a good plan on paper but without the right people or the technology to support it. Without mature processes, the actions of the people will be highly ineffective. Thus, businesses need to find the right balance between the three critical components. The PPT framework encourages organizations to think multi-dimensionally. The framework helps to map the entire value streams of people, processes, and technology. Understanding the balance between the elements can be difficult, with the balance being different for each context.

The era of new technologies, digital transformation and technology-focused businesses

When the age of digital transformation began, some people started assuming that the PPT framework would no longer be relevant. However in practice, successful businesses were leaning on the model more than ever while implementing new technologies in their organization workplace. Without the PPT framework, organizations would fall out of balance with all of the new, innovative technologies being implemented.

Traditionally, the order for structuring the framework was defined as: 1. People, 2. Processes, 3. Technologies. Technology-focused organizations may reverse the steps. Since they focus on technology use, they will typically be more successful with an altered approach. Instead of completely balancing technologies with people and processes, they preference technologies. In information security, people and processes can be unreliable. Therefore, a focus on technology can lead to more impactful change faster. The PPT framework may be slightly altered, but the main idea is still the same. There is a favor towards technology, but this does not change the fact that everything must be balanced. Favoring technology does not mean that technology should overpower people or processes. One must make sure that technology is being used in a way that it complements the people and processes within an organization.

Bringing it all together, changing the mindset

Going back to the initial problem stated, with the testing community debating what has more impact: ISTQB, TMMi or Test Automation. It should not be 'or' but rather 'and'. The focus of the discussion should be how the three can work together successfully. We need people, processes and technology to make the change and achieve higher levels of software quality being delivered to our customers. Many things from the business oriented PPT framework can easily be translated to testing and/or software development. Already in the 1960's the framework stated that people should be the primary fo-

cus, we now finally have Agile stating "people over process". The balance will be different depending on the context. In Agile people will core, but in regulated environment processes tend to be very important as well. There are certainly many technology-focused organization in the testing industry; they will favor the technology aspect to make the most impact. Of course the people aspect is much more than just ISTQB, but ISTQB with over 1.000.000 exams is certainly part of it. It's great to see that the ISTQB organization and the TMMi Foundation have signed an alliance to work together. This is what is needed.

Let's not spent our negative energy anymore on debating the differences and who is the winner. Let's change our mindset towards a positive attitude by focusing on how people (ISTQB), process (TMMi) and Technology (test automation) can successfully work together and make the impact that is so much needed in today's industry.



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