Opinion
What will the tester of the future be like?

Inspiring trajectories in the world of testing
Daniel Nilsson

TMMI
The global standard for testing process improvement

Innovation
Eur3ka, rapid response to pandemic situations

SOFTWARE QUALITY ASSURANCE
TMMi, the world standard for Test Process Improvement

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TMMi is a well-known and world-wide most used framework [1] for improving test processes. Using the TMMi one can measure the maturity of test processes and derive recommendation for improving these processes. Much TMMi information, including an abstract of the model is, with the publication of the Pequeño TMMi [2], now also available in Spanish. The publication of this new Spanish (e)-book is a good enough reason for the Spanish testing and quality community to look more in detail into the TMMi model, how it can be used, the benefits that can be achieved and how one can get involved in TMMi initiative.

Test Maturity Model integration (TMMi)

The TMMi framework has been developed by the TMMi Foundation as a guideline and reference framework for test process improvement, addressing test related issues important to test managers, test engineers, developers and software quality professionals. Testing as defined within TMMi in its broadest sense to encompass all software product quality-related activities. TMMi uses the concept of maturity levels for process evaluation and improvement. Furthermore, process areas, goals and practices are identified.

Practical experiences are positive and show that TMMi supports the process of establishing a more effective and efficient test process. The world-wide TMMi user survey revealed that a high 88% of the TMMi users are experiencing benefits in product quality e.g., reduced product risks, and test efficiency (77%), e.g., increased testing productivity [3] TMMi has been developed to support organizations with evaluating and improving their test processes.

Terminology

TMMi is aligned with international testing standards, and the syllabi and terminology of the International Software Testing Qualifications Board (ISTQB). The TMMi Foundation has consciously not introduced new or their own terminology but re-uses the ISTQB terminology. This is an advantage for all those test professionals who are ISTQB certified (more than 800.000 worldwide at the time of this writing) TMMi is an objective- and business-driven model. Testing is never an activity on its own. By introducing the process area Test Policy and Goals already at TMMi level 2, testing becomes aligned with organizational and quality objectives early in the improvement model. It should be clear to all stakeholders why there is a need to improve and what is the business case behind this initiative.

Architecture

TMMi has a staged architecture for process improvement. It contains stages or levels through which an organization passes as its testing process evolves from one that is ad hoc and unmanaged to one that is managed, defined, measured, and continuously being optimized. Achieving a maturity implies that all goals of that level have been achieved and the achieved improvements are again the foundation for the next step. The internal structure of TMMi is rich in testing practices that can be learned and applied in a systematic way to support a quality testing process to be improved in incremental steps. There are five levels in TMMi that prescribe the maturity hierarchy and the evolutionary path to test process improvement. Each level has a set of process areas that an organization must implement to achieve maturity at that level. The process areas for each maturity level of TMMi are shown in Figure 1.

**Figure 1: TMMi maturity levels and process areas**
Lifecycle models

A main underlying principle of the TMMi is that it is a generic model applicable to various life cycle models and domains. Goals and practices as defined by the TMMi have shown to be applicable with both sequential and iterative life-cycle models, including Agile. Note that within TMMi, only the goals are mandatory, the practices are not. TMMi is freely available on the web site of the TMMi Foundation www.tmmi.org.

The model has amongst others been translated in Spanish, French and Chinese. TMMi is also available in published book format [4], [5].

Assessments

Aligned with TMMi model, the TMMi foundation published the TMMi Assessment Method Application Requirements (TAMAR) defining the requirements for TMMi assessment methods. Within TAMAR two types of TMMi assessments are defined: formal and informal. Formal assessments are used to formally rate (parts of) an organization on a certain TMMi level. Informal assessments are less rigorous, take less time and you can't rate the maturity level of an organization. In practice many organizations perform so-called quick scans to get an indication of the test maturity for certain process areas and identify recommendations.

TMMi Documents

In addition the TMMi reference model and TAMAR, the TMMi foundation has published many useful documents, all freely available on the TMMi website: www.tmmi.org for example.

• TMMi in the Agile World, how to use TMMi in an Agile context.
• TMMi and DevOps, how TMMi can support a DevOps implementation.
• TMMi: Professional training syllabus which forms the basis for the TMMi Professional model training and subsequent examination.

All these documents can be downloaded from https://www.tmmi.org/tmmi-documents/.

How to use TMMi

With TMMi, organizations can have their test processes objectively evaluated by accredited (lead) assessors, improve their test processes, and even have their test processes and organization formally certified when they comply with the requirements. At the time of writing 220 organizations are formally certified worldwide. However, it is generally considered that the number of informal assessments performed and user of the TMMi model is much higher. Assessors are stating to do many more informal assessments and quick scans compared to formal assessments. Unfortunately, numbers for this statement are still missing.

Body of knowledge

TMMi can be used for much more than just for assessments purpose. Most organizations are using TMMi for their internal test improvement process and do not even care about certification. At a closer look the TMMi model it is a very well-structured set of goals, practices and elaborations. The knowledge of many well know test specialists are incorporated in the model. Test professionals can use this body of knowledge by determining what they want to improve and use the TMMi model to identify useful practices on how to implement and achieve these improvement goals. [6]

TMMi Professional

It’s also possibly for test professionals and consultant to become certified for their TMMi knowledge. A full certification scheme is available called TMMi Professional. This way consultants can show their knowledge of test process improvement in general and TMMi in particular. They can distinguish themselves this way in the marketplace.

Benefits and adoption of TMMi

All in all, TMMi is perceived as a complete and useful set of tangible assets that can be used in different ways for test process improvement. But how about the adoption of TMMi? In this context the TMMi Foundation has publish different figures and facts. At the time of writing this article almost 1500 professionals have been certified, the TMMi foundation has over 2700 members, there are 27 local chapters and, as already mentioned, 220 organizations have been formally certified against the model. And all numbers are rising! In 2021 the number of formal TMMi assessment has shown a growth rate of 39% and the number of TMMi professional exams grew with 7%. [1]

IEEE uptake study

There has also been research, published in IEEE Software, concerning the uptake of test process improvement models [3]. Based on this research the conclusion can be drawn that TMMi (including its predecessor TMM) is today by far the mostly used model for test process improvement. Recently a paper has been published in IEEE dedicated to TMMi only, thereby showing the importance and acceptance of TMMi in the scientific software quality and testing community [7].

TMMi Survey

Today there is more evidence that implementing TMMi is beneficial for organizations. In 2021 the TMMi Foundation and some university researchers designed and conducted an international user survey (8). All previously TMMi assessed organizations were invited. A high return rate of 64% resulted in a confidence level of 85% meaning that the real value is within about 5% of measured value.

The survey revealed the three reasons to start a TMMi implementation are: 1) to enhance software quality, 2) to increase testing productivity and 3) to reduce product risk.

The top reported benefits using TMMi are (see figure 2) 1) enhanced product quality: 88% (including reduce product risk, 2) Enhanced compliance: 84%, 3) Enhanced efficiency: 77% and 4) enhanced people aspect: 77%.

Another interesting outcome is the agile adoption amongst the TMMi user. 78% of the TMMi users are using TMMi in an Agile setting.

Figure 2: Ration of respondents which reported different benefits of adopting TMMi
Getting involved in TMMi

One can draw the conclusion that TMMi is not only a complete and useful model for assessing and improving test processes, but today there is also verified evidence that implementing TMMi adds value to the organizations using it. This brings us to the last question: how to become a part of the TMMi community. The first way is to use the model where it is made for: improving your test process!

As mentioned the model and all the other TMMi documents are freely downloadable from the TMMi website www.tmmi.org. In case you don't want an assessor or consultant helping you, use it in a more context driven way to improve your own processes! [6]. But of course, you can ask for support from a TMMi assessor or consultant. The accredited (lead) assessors, certified test process improvers and training providers are all listed on the TMMi website. And of course, you can also become an accredited (lead) assessor, certified test process improver or training provider.

Finally, you can also become active in the TMMi Foundation, there are different working groups active to improve TMMi and developed more useful TMMi assets.

Spanish TMMi Local Chapter

But maybe the best way to start getting involved with TMMi for you is to contact the Spanish TMMi chapter (the local representation for the TMMi Foundation).

More information see https://www.qaspain.es/ Or buy and read Pequeño TMMi – Mejora del Proceso de Prueba Guiada por Objetivos [2].

REFERENCES:


About the authors

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