TMMi Professional

TMMi model training

Release 2.2

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Version history

This section is provided for information only.

Version	Date	Comment
0.1	08-06-2012	Initial version
0.2	26-07-2012	Updated version after review
1.0	04-08-2012	Updated after TMMi board meeting
1.1	29-05-2013	LO's numbered for traceability to exam questions
1.2	26-06-2013	LO 4.8 changed to make the wording more accurate
1.2	15-02-2016	Table of Content updated
2.0	02-01-2019	Update for the training and exam to include TMMi and Agile.
2.1	12-10-2022	Updated to align with updates in TMMi model V1.3. Reference to TMMi world-wide user survey added (LO1.3), CMMI V2 introduced (LO2.2) scope extended (LO2.7) to make more explicit the fact that TMMi is intended to be lifecycle independent and the relationship between TMMi and CMMI is now defined with for CMMI V2 (LO4.7)
2.2	14-12-2023	Reference updated to the TMMi world-wide user survey 2023 (LO 1.3)

Contents

1 Introduction

1.1 Purpose of this Document

This document defines the certification "TMMi Professional" established by the TMMi Foundation and forms the basis for the TMMi Professional model training and examination. The training is typically run as a three (or two) day TMMi model training and may also include an examination at the end. The TMMi Foundation provides this document to TMMi training providers world-wide and other stakeholders. The training providers can use it to develop a training course based on the requirements defined in this document. Training providers will determine appropriate teaching methods and produce courseware. The document will help candidates in their preparation for the TMMi Professional examination.

1.2 The TMMi Professional

The TMMi Professional qualification is aimed at anyone involved in using the TMMi model. This includes people in roles such as test process improvers, test consultants, TMMi (lead-)assessors, business stakeholders, test managers, and members of a Test Process Group. This TMMi Professional qualification is appropriate for anyone who wants an understanding of the TMMi model. Holders of the TMMi Professional Certificate will be able to demonstrate a level of knowledge required as a prerequisite to become an accredited TMMi lead-assessor or assessor.

1.3 Business Outcomes (BO)

The business outcomes provide an overview and statement of what can be expected from a TMMi Professional in terms of the added value and skills he/she will bring to the business.

The TMMi Professional is able to perform each of the following tasks:

BO1   Explain to management the business importance of test process improvement

BO2   Guide and advice an organization or project when using the TMMi model as a basis for their test process improvement, both in traditional sequential lifecycle environment as Agile context.

BO3   Providing support in the interpretation and understanding of the TMMi model, including the relationship of the TMMi to the CMMI model

BO4   Act as a co-assessor in informal TMMi assessments

BO5   Participate in programs for improving the test process within an organization or project and can identify critical success factors

1.4 Level of Detail

The level of detail in this document aims at internationally consistent teaching and examination. In order to achieve this goal, the document consists of
- learning objectives for each TMMi Professional knowledge area
- describing the cognitive learning outcome and mindset to be achieved
- expected course time to be spent
- references to sources.

Compared to other certification and training syllabi (e.g., ISTQB, IREB) this document is much more compact since it does not contain the actual content to support the learning objectives. The Learning objectives are based on already existing documents (see section "1.5 Sources") that in fact define the supporting content. These sources should be perceived as being external part of this document.

1.5 Sources

The major sources to support the TMMi Professional model training referenced in this document are:
- Test Maturity Model integration (TMMi), Release 1.3 (2022), TMMi Foundation (www.TMMi.org)
- The Little TMMi – Objective-Driven Test Process Improvement (2011), E. van Veenendaal and J.J. Cannegieter, UTN Publishing (www.utn.nl)
- TMMi in the Agile world, Version 1.4 (2020), E. van Veenendaal (ed.), TMMi Foundation (www.tmmi.org)
- TMMi World-Wide User Survey, V1.1 (2021), TMMi Foundation (www.tmmi.org)

2 Learning Objectives

2.1 Cognitive Levels of Learning

The expected cognitive levels of learning are defined by means of learning objectives. Learning objectives are indicated for each topic and classified as follows:
o   K1: remember
o   K2: understand
o   K3: apply
o   K4: analyze

Each topic in the document will be examined according to the learning objective for it.

Level 1: Remember (K1)
The candidate will recognize, remember and recall a term or concept.
Keywords: Remember, retrieve, recall, recognize, know, list, describe

Level 2: Understand (K2)
The candidate can select the reasons or explanations for statements related to the topic, and can summarize, compare, classify, categorize and give examples for the testing concept.
Keywords: Summarize, generalize, abstract, classify, compare, map, contrast, exemplify, interpret, translate, represent, infer, conclude, categorize, construct models

Level 3: Apply (K3)
The candidate can select the correct application of a concept or technique and apply it to a given context.
Keywords: Implement, execute, use, follow a procedure, apply a procedure

Level 4: Analyze (K4)
The candidate can separate information related to a procedure or technique into its constituent parts for better understanding, and can distinguish between facts and inferences. Typical application is to analyze a document, software or project situation and propose appropriate actions to solve a problem or task.
Keywords: Analyze, organize, find coherence, integrate, outline, parse, structure, attribute, deconstruct, differentiate, discriminate, distinguish, focus, select

Note that in the TMMi Professional model training the Learning objectives are limited to K1 and K2. The application of the model, e.g., during a TMMi assessment, which implies higher K-levels (e.g., K3 and K4) is addressed in the TMMi assessor and lead-assessor training. The TMMI professional model training is limited to the theoretical understanding of the model only.

2.2 Learning Objectives

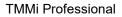### 2.2.1 Context of Test Improvement

Total course time: 60 minutes

LO 1.1   [K2]   Provide examples of the typical business reasons for test improvement.
LO 1.2   [K2]   Understand the different aspects of testing that can be improved
LO 1.3   [K2]   Summarize typical costs and benefits of the TMMi

Main source: "The Little TMMi" chapter 1, TMMi World-Wide User Survey 2023

2.2.2 Introduction to the TMMi Model

Total course time: 70 minutes

LO 2.1   [K2]   Summarize the structure of the CMMI (V1.3) process improvement model
LO 2.2   [K2]   Understand the aspects of the CMMI model (V2) with testing-specific relevance
LO 2.3   [K2]   Compare the suitability of CMMI for test process improvement to the TMMi model developed specifically for test process improvement
LO 2.4   [K2]   Compare the continuous and staged representation including their strengths and weaknesses

LO 2.5 [K1] List the sources, e.g., TMM, used during the development of the TMMi model
LO 2.6 [K2] Understand the evolution of the testing process as described by Gelperin and Hetzel
LO 2.7 [K1] Describe the scope of the TMMi model, including the fact that TMMi is intended to be lifecyle independent

Main source: "The TMMi model" chapters1 and 3

2.2.3 TMMi Maturity Levels

Total course time: 60 minutes

LO 3.1 [K2] Summarize the TMMI maturity levels and process areas
LO 3.2 [K2] Explain the TMMi maturity levels

Main source: "The TMMi model" chapter 2

2.2.4 Structure of the TMMi

Total course time: 70 minutes

LO 4.1 [K2] Summarize the components of the TMMi model
LO 4.2 [K2] Explain the difference between a required, expected and informative component
LO 4.3 [K2] Categorize the components of the TMMi model by type (required, expected, informative)
LO 4.4 [K2] Summarize the generic goals of the TMMi model
LO 4.5 [K2] Understand the two levels of institutionalization related to the generic goals GG2 and GG3
LO 4.6 [K1] Recognize the generic practices of both GG2 and GG3
LO 4.7 [K2] Summarize the relationship between TMMi and CMMI (V2)

Main source: "The TMMi model" chapter 3

2.2.5 TMMi model

Total course time: 270 minutes

LO 5.1 [K2] Summarize the TMMi level 2 process areas (Test Policy and Strategy, Test Planning, Test Monitoring and Control, Test Design and Execution and Test Environment) and specific goals
LO 5.2 [K1] Recognize the specific practices of the TMMi level 2 process areas (Test Policy and Strategy, Test Planning, Test Monitoring and Control, Test Design and Execution and Test Environment)
LO 5.3 [K2] Summarize the TMMi level 3 process areas (Test Organization, Test Training, Test Lifecycle and Integration, Non-Functional Testing and Peer Reviews) and specific goals
LO 5.4 [K1] Recognize the specific practices of the TMMi level 3 process areas (Test Organization, Test Training, Test Lifecycle and Integration, Non-Functional Testing and Peer Reviews)
LO 5.5 [K2] Summarize the TMMi level 4 process areas (Test Measurement, Software Quality Evaluation, Advanced Reviews) and specific goals
LO 5.6 [K1] Recognize the specific practices of the TMMi level 4 (Test Measurement, Software Quality Evaluation, Advanced Reviews) process areas
LO 5.7 [K2] Summarize the TMMi level 5 process areas (Quality Control, Defect Prevention and Test Process Optimization) and specific goals
LO 5.8 [K1] Recognize the specific practices of the TMMi level 5 process areas (Quality Control, Defect Prevention and Test Process Optimization)

Main source: "The TMMi model" – chapter 3

2.2.6 TMMi in an Agile context

Total course time: 60 minutes

LO 6.1 [K2] Understand how TMMi can be used in an Agile context, and how the two can complement each other
LO 6.2 [K2] Understand the difference doing test process improvement in an Agile context compared to doing this in a traditional context

LO 6.3 [K2] Explain with examples how the TMMi level 2 process areas, goals and practices should be interpreted and can be used in an Agile context

LO 6.4 [K2] Explain with examples how the TMMi level 3 process areas, goals and practices should be interpreted and can be used in an Agile context

LO 6.5 [K2] Understand how the process areas and practices at TMMi levels 4 and 5 can be used in an Agile context

Main source: "TMMi in the Agile world"

2.2.7 TMMi Assessments

Total course time: 60 minutes

LO 7.1 [K2] Explain the role of assessments with the overall improvement process
LO 7.2 [K2] Compare informal assessments to formal assessment
LO 7.3 [K2] Summarize the generic assessment process

Main source: "The Little TMMi" chapter 4

2.2.8 Implementing TMMi

Total course time: 70 minutes

LO 8.1 [K2] Summarize the activities of the initiating phase of the improvement framework
LO 8.2 [K2] Summarize the key elements of a test policy
LO 8.3 [K2] Summarize the activities of the diagnosing phase of the improvement framework
LO 8.4 [K2] Summarize the activities of the establishing phase of the improvement framework
LO 8.5 [K2] Summarize the activities of the acting phase of the improvement framework
LO 8.6 [K2] Summarize the activities of the learning phase of the improvement framework

Main source: "The Little TMMi" chapter 5

3   The Examination

3.1   Exam Structure

The TMMi Professional examination will be based on this document. The format of the examination is multiple-choice. Exams may be taken as part of a training course or independently (e.g., an on-line exam at an examination center or in a public exam). Completion of a training course is not a pre-requisite for the exam.

The examination shall comprise 40 multiple-choice questions. The number of points available in an examination is 40. Each correctly answered question is worth one point. The time allowed for the examination is 60 minutes, if given in the candidate's native language. If the candidate's native language is not the examination language, the time allowed is 75 minutes. A score of at least 65% (26 or more points) is required to pass.

3.2   Questions distribution

The exam questions will be largely distributed over the topics (see section Learning Objectives) according the following table:

	Number of Questions
Context of Test Improvement	3
Introduction to the TMMi model	4
TMMi Maturity levels	3
Structure of the TMMi	4
TMMi model	14
TMMi in an Agile context	4
TMMi assessments	4
Implementing TMMi	4
Total	40

4 Training Providers

The TMMi Professional recognized training providers have committed themselves to provide trainings complying with this document. These trainings are also suited to prepare the participants for the TMMi Professional examinations. There is no formal accreditation process for training providers. At recognition, the training providers commit themselves to offering trainings in line with the TMMi Professional document. The training provider will agree to devote at least the times defined in this document to the various subject areas of the TMMi Professional training. The training provider will carry out the training in such a way that after the training course a participant is able to pass the TMMi Professional examination.

The mutual obligations between TMMi Foundation and a training provider will be stipulated by contract. The contract is valid three years at a time. Per contract the TMMi Foundation may conduct on-site audits on the TMMi Professional model training being performed. Depending on the number of trainings conducted per year, a fee for the recognition is to be paid to TMMi Foundation. Recognized training providers will be listed on the TMMi Foundation website and can request on-site examinations.