To Test, Tested, Testing – a speed date with TMMi

Jacques Heide

www.ctqb.org
Agenda

- Introduction
- Testing
- TMMi framework
- Next steps
Curaçao Testing Qualifications Board

- Established in 2017 (www.ctqb.org)
- ISTQB National Board (since April 2017)
- TMMi Local Chapter (since November 2020)
CTQB Board members

- Pauline Alfonso (Chair)
- Cai Walters (Vice-Chair/Exams)
- Jacques Heide (Treasurer)
- Saida Ugueto (Secretary)
- Erik van Veenendaal (Member)
- Jay Albertoe (Member)
- Michiel Bor (Member)
Achievements (1)

- Trainings & exams
  - ISTQB: 115 certifications (69% pass rate)
  - TMMi: 14 certified professionals (100% pass score) of 1445 (1%)
- 3 TMMi Test Process Improvers
- 4 TMMi Assessors
- Workshops (free!)
  - e.g. Test Automation, Risk based testing, Requirements engineering, TMMi
- Lunch virtual meet-up’s
- Social media presence & TV interview
- Promo video
- Presence at local ISACA conferences: boot & presenters
Achievements (2)

- Many more skilled professionals
  - from business, test and development
  - over 400 participants!
- Testing is becoming a job title
- More focus on testing in organizations
- Local hero’s are emerging *and respected!*
- (Some) management awareness
  - Stays challenging!
- A gradual change in perception and mindset
Mission

To contribute to the **quality of software products** being delivered in Curaçao and its region, through **better testing** to be enabled by enhancing the **knowledge and skills** of test professionals, improve the **test process maturity** of organizations and to support the further development of the **testing profession**.
Vision

CTQB foresees an IT community in Curaçao and the region where quality in software applications is substantially increased by rigorous testing practices leading to decreasing financial, productivity, reputational, security and safety risks for individuals and organizations.
Speed dating

a process that allows single people the opportunity to meet many prospective romantic matches in one place at scheduled speed dating events. The format for such an event involves short, 3 to 10 minute face-to-face sessions with each available match, during which time both participants may discuss whatever they like.

www.wikihow.com/Speed-Date
Interesting questions

• What famous person would you most like to have dinner with?
• Liquor or beer?
• Which is your favorite sport?
• What do you like to do in your free time?
• Who is your favorite author?
• Which is your favorite car?
• What are you passionate about?
• What is your idea of the start to an ideal day?
Testing
Problemen kenmerken Doel: voorwaarde voor softwareontwikkeling.

KPN: Storing 112 zwar wettelijk verordend door wet

Duijzendge gegeven te vreugde voor softwareontwikkeling.

Geen meldingen van geheime documenten van software.

Nederlanders en Amerikanen zijn nu in staat om te communiceren via een online platform.

Dit platform biedt een grootschalig systeem voor het exchange van informatie.

De technologie Customers sloopt een ruimte van de afstandsbediening voor de klanten.
News items

737 MAX delay

Victims not informed

House foreclosures

Deadly Uber accident

Nuclear plant

911 un-accessible

Early prisoners release

Drugs shortage

Hackable older iPhones

Car recall

Fiat Chrysler roept 1,25 miljoen autos terug om softwarefout

737 MAX delay
terugkeer loopt langzaam, mogelijk vertraagd na nieuwe
softwarefout

Victims not informed
domeer揍erde 2e MAX-mogelijk vertraagd na nieuwe
softwarefout

House foreclosures

Terrorisme, witwassen, en moord zijn allemaal een
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Debugging Tactics

- Take a Walk
- Use Breakpoints
- Talk to a Rubber Duck
- Print(“Here!”)
- 1st Page of Googling
- 5th Page of Googling
- Read the Docs
- Run the Same Code Again, Hope It Magically Works Now

Original: Forrest Brazeal
Why is testing important?

• Context
  • Digital revolution
  • Digital transformation

• Reliance
  • Software/apps are very important
  • We can’t function/live without certain apps

• Efficiency & cost control
Bugs
Testing = Risk Management

- Test Planning, Product Risk Assessment to:
  - **Identify** the product risks
  - **Analyze** the product risks
    - Risk = f (Impact, Likelihood)

- Test cases are designed and execute to:
  - **Mitigate** the product risk

- Test Management
  - **Monitor** and **report** on product risks
Software test types

• Unit tests
• Integration tests
• Functional tests
• End-to-end tests
• Acceptance testing
• Performance testing
• Smoke testing
• Exploratory testing
Common testing challenges

- Increasing business importance
- Digital transformation
- Increasing code size and complexity
- Technology advancement
- Systems-of-systems
- Variety of devices, OS’s, browsers
- Security vulnerabilities
- Outsourcing
- Time-to-market critical
- Number of defects hardly decrease
- Artificial Intelligence
Improvement & success

Success = \sum f(\text{People, Process, Tools})

Hero culture

ISTQB

Test Automation

TMMi® Test Process
Test improvement

Content based models
Test Maturity Model Integration
TMMi

• A freely available software quality and test maturity model named Test Maturity Model integration, (the TMMi® Model). This model has been confirmed to be the number one model for test process improvement in the world.

• Knowledge certification called TMMi Professional and TMMi test process improver to demonstrate an understanding of the model and provide visibility for leading professionals in the field of test process improvement. Recognized training providers deliver TMMi Professional training world-wide.

• A path and training to become an accredited TMMi Assessor and/or Lead Assessor.

• A TMMi Assessment Method (TAM) under license, for use by accredited TMMi Assessors and Lead Assessors, to enable formal and informal assessments to be undertaken.

• A framework for organizations to build their own assessment method; the TMMi Assessment Method Application Requirements (TAMAR)
TMMi Foundation

- TMMi Foundation (2005)
  - Developed the TMMi standard, based on CMMi
  - Framework for TMMi assessments

- TMMi model published in 2010
  - ISTQB, IEEE, CMMI, best practices
  - Available in English, Chinese, French, Spanish, Portuguese, etc.

- Independent model

- *World leading model* for test process improvement
  - Confirmed by IEEE
TMMi process areas

priorities and focus the test improvement process

± 6 months

± 9 months

LEVEL 5: OPTIMIZATION
- Defect Prevention
- Test Process Optimization
- Quality Control

LEVEL 4: MEASURED
- Test Measurement
- Product Quality Evaluation
- Advanced Reviews

LEVEL 3: DEFINED
- Test Organization
- Test Training Program
- Test Lifecycle and Integration
- Non-Functional Testing
- Peer Reviews

LEVEL 2: MANAGED
- Test Policy and Strategy
- Test Planning
- Test Monitoring and Control
- Test Design and Execution
- Test Environment

LEVEL 1: INITIAL
<table>
<thead>
<tr>
<th>Level</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Initial</td>
<td>Ad hoc</td>
</tr>
<tr>
<td>2</td>
<td>Repeatable</td>
<td>No formal processes descriptions</td>
</tr>
<tr>
<td>3</td>
<td>Defined</td>
<td>Processes standardized &amp; documented</td>
</tr>
<tr>
<td>4</td>
<td>Managed</td>
<td>Processes understood, embedded, measured</td>
</tr>
<tr>
<td>5</td>
<td>Optimized</td>
<td>Continuous improvement by active feedback</td>
</tr>
</tbody>
</table>
TMMi framework content

• Improvement maturity 5-levels model: initial, managed, defined, measured, optimized
• Process areas, goals, practices and sub practices
• Assessment framework to identify testing strengths, risks and best practices
• Detailed guideline for test improvements
• Examples & suggestions
• Career path: certified test process improver, accredited (lead) assessor
• Alignment with and contributing to ISO 29119 Software and systems engineering — Software testing — Part 1: Concepts and definitions
TMMi structure

- Maturity Level
  - Process Area
    - Specific Goal
      - Specific Practice
        - Sub-practice
    - Generic Goal
      - Generic Practice

Numbers:
- Maturity Level: 5
- Process Area: 16
- Specific Goal: 50
- Specific Practice: 173
- Sub-practice: 845
- Generic Goal: 32
- Generic Practice: 192
Process area goals

- **Required: Goals**
  - Must be achieved to satisfy a process area

- **Expected: Practices**
  - Describe what an organization will typically implement to achieve a required component

- **Informative: Sub-practices, Examples, Typical work products, Elaborations**
  - Provide details to help organizations get started to achieve expected and required components
TMMi level 2 Managed (1)

- Test Policy and Strategy
- Test Planning
- Test Monitoring and Control
- Test Design and Execution
- Test Environment
TMMi level 2 Managed (2)

- Testing is separated from debugging
- Test levels clearly defined – defined test strategy
- Mgt. view: A life cycle phase that follows coding
- It is planned, but late in the lifecycle
- Thorough progress tracking and reporting
- Test design techniques are in place (e.g., ET)
- Some reviews to address early defects
- Is the product built as specified by the requirements?
Example of process area 2.2 test planning

SG 1: Perform a Product Risk Assessment
- SP 1.1: Define product risk categories and parameters
- SP 1.2: Identify product risks
- SP 1.3: Analyze product risks

SG 2: Establish a Test Approach
- SP 2.1: Identify items and features to be tested
- SP 2.2: Define the test approach
- SP 2.3: Determine entry criteria
- SP 2.4: Determine exit criteria
- SP 2.5: Determine suspension and resumption criteria

SG 3: Establish Test Estimates
- SP 3.1: Establish a top-level work breakdown structure
- SP 3.2: Define test lifecycle
- SP 3.3: Determine estimates for test effort

SG 4: Develop a Test Plan
- SP 4.1: Establish the test schedule
- SP 4.2: Plan for test staffing
- SP 4.3: Plan stakeholder involvement
- SP 4.4: Identify test project risks
- SP 4.5: Establish the test plan

SG 5: Obtain Commitment to Plan
- SP 5.1: Review test plan
- SP 5.2: Reconcile work and resource level
- SP 5.3: Obtain test plan commitments

the key to successful test planning is in upfront thinking!
Example of process area 2.2 test planning

SG 1: Perform a Product Risk Assessment
- Lightweight e.g., risk-poker, mind-mapping

SG 2: Establish a Test Approach
- Like a poster on the project wiki
- Exit criteria part of Definition of Done
- NO entry/exit test levels within iteration

SG 3: Establish Test Estimates
- Planning Poker with tester involved and test issues / tasks addressed

SG 4: Develop a Test Plan
- Ordering of (test) tasks, release/iteration priorities, staffing discussion
- Activities largely still relevant

SG 5: Obtain Commitment to the Test Plan
- Release and iteration planning is a team-effort
TMMi level 3 Defined (1)

- Test Organization
- Test Training Program
- Test Life cycle and Integration
- Non-Functional Testing
- Peer Reviews

Early involvement
Institutionalization
TMMi level 3 Defined (2)

- Focus on **institutionalization**
- **Early involvement** of testing
- Defined test life cycle integrated in the dev. life cycle, e.g. test planning starts early
- Processes are defined, used and maintained across the organization (not per project)
- Testing is recognized as a profession
- Testing also considers non-functional test types
- Peer reviews performed (early defect finding)
TMMi level 3 Defined (3)
TMMi level 4 Measured

- Test Measurement
- Product Quality Evaluation
- Advanced Reviews
TMMi level 5 Optimized

- Defect Prevention
- Quality Control
- Test Process Optimization
TMMi benefits

- Enhanced product quality
- Reduced product risks
- Reduced number of defects

- Achieved TMMi certification
- Achieved standard compliance

Product Quality: 88%

Test Efficiency: 77%

- Increased test productivity
- Accelerated software delivery
- Reduced project costs

Compliance: 84%

People: 77%

- Improved test engineering discipline
- Improved team morale
Statistics

Test predictability increased by 70%
Number of test tools tools from 10 to 6
Higher product risk coverage (now at 80%)
DDP increase from 60 to 70% at system testing

Time-to-market reduction by 7%
DDP at system level improved by 22%
Development cycle from 3 months to 1 month
Reduced cost of external testers by 10%

DDP to production improved by 30%
Test estimation now 95% accurate
Test efficiency improved by 25%
Regression test cycle from 4 hours to 30 minutes
Where?

Test Levels
- Unit / Component Testing: 39%
- Component Integration Testing: 54%
- System Testing: 88%
- System Integration Testing: 96%
- User Acceptance Testing: 85%
- Operational Acceptance Testing: 42%

Test Types
- Functional Testing: 93%
- Regression Testing: 88%
- Performance Testing: 83%
- Usability Testing: 53%
- Reliability Testing: 49%
- Security Testing: 46%

Sectors
- 37%
- 30%
TMMi evaluated by users/participants

- Objective driven
- ISTQB related
- Well-founded
- Clear priorities
- Self-assessments
- Freely available
- Agile-ready
- Open community
- Continuous development (→ 1.3 soon, 2.0 in couple of years)
Next steps
Further reading
Promote ISTQB career path
Promote local tester career path
Get started!

- Two-day training in TMMi model
  - High-level syllabus
  - Defined business and learning objectives
- Recognized training provider in the market
- Exam to become certified TMMi Professional

- One hour exam, 40 questions, 26 to Pass
  - 4 options per question
  - by topic according to time spent
TMMi professional

- Explains to management the **business importance** of test process improvement

- **Guides and advices** 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

- Provides support in the **interpretation and understanding** of the **TMMi model**, including the relationship of the TMMi to the CMMI model

- Acts as a **co-assessor** in informal **TMMi assessments**

- Participates in **programs for improving the test process** within an organization or project
TMMi test process improver

- **A super certificate** for TMMi consultants
  - No additional exams are needed
  - Life-time certificate (no re-certification)

- **Knowledge and skills in the areas of:**
  - TMMi and test process improvement (hold TMMi Professional)
  - Testing (two certificates beyond ISTQB Foundation)
  - Assessments (various options)

- Can use the official logo and listed on the public register at TMMi website
TMMi test process improver

- is able to initiate and manage a test improvement project, and successfully implement TMMi based improvements in an organization or project.
- has **advanced knowledge and skills** in the areas of testing, TMMi, process improvement and assessments.
- can use the **associated logo**, e.g., as a email signature, to show their achievement to their stakeholders and the market
- is a **career step** for those involved in test consultancy and test process improvement.
- can show an organization’s **stakeholders** and to the **market** that (s)he has the expertise to perform TMMi based test process improvement activities successfully
Ideal improvement model
CBCS guideline based on TMMi in 2023?
Ambition

- Perform an TMMi quick scan (assessment) by accredited TMMi assessors
- Improve testing practice by certified TMMi test process improvers
- Prepare for Central Bank guideline
Role of assessments

- How good (mature) is your process?
  - strengths and weaknesses
- Find the specific areas that need to be improved
- Identify & define specific recommendations
- Determine achievement TMMi maturity level
- Benchmarking
- Result to be used as a selection criteria for suppliers
Type of assessments

- **Self evaluation**
  - may be brainstorm based
  - to start test improvement effort
- **Quick-scan**
- **Informal assessment**
  - strengths and weakness
  - less rigorous
- **Formal assessment**
  - to determine the maturity status
Final message
Be part of the trend (1)

Number of TMMi certified organisations

39% growth rate 2021!

56% growth rate Q1/Q2 2022!
Be part of the trend (2)

1,445
CERTIFIED PROFESSIONALS

222
CERTIFIED ORGANIZATIONS

2,724
MEMBERS

27
LOCAL CHAPTERS
Be part of the trend (2)

Certified TMMi test process improvers
• Erik van Veenendaal
• Jacques Heide
• Cai Walters

Accredited TMMi assessors
• Erik van Veenendaal
• Jacques Heide
• Lizmari Fecunda-Manuela
• Pauline Alfonso

Register TMMi test process improver - TMMi
Accredited Assessors - TMMi
Easy-peasy?

**Challenges Experienced**

Which challenges have been experienced throughout the test process improvement activities?

- Inconsistent processes across teams: 54%
- Lack of skills/experience with TMMi: 43%

**Advice to others**

Based on your experiences, what advice would you offer to others planning to conduct test process improvement utilizing TMMi?

- Involve testers when defining processes: 76%
- Ensure you interpret the model: 61%
Getting started Monday

1. Test policy
   Management commitment (to quality)

2. Define test improvement as a project
   Commit resources and effort

3. Maturity of the organization
   Requirements engineering, project planning, configuration management, etc.
Training

• **Introduction Test Maturity Model integration (TMMi)** (on-line) October, 4th *(free of charge)*
• **Agile Testing** (on-line) (november)
• **TMMi Professional** (on-line) (november/december)
• ISTQB Foundation in software testing (Januari 2022)

[www.curacaotesteevents.org](http://www.curacaotesteevents.org) or [www.ctqb.org](http://www.ctqb.org)
Answer to dating questions

- What famous person would you most like to have dinner with? **Author of TMMi**
- Liquor or beer? **Heineken & Blue Curaçao**
- Which is your favorite sport? **Testing**
- What do you like to do in your free time? **Read about TMMi**
- Who is your favorite author? **Erik van Veenendaal**
- Which is your favorite car? **Tesla, if it has been thoroughly tested and bug free**
- What are you passionate about? **Test improvement**
- What is your idea of the start to an ideal day? **Daily standup**
Curaçao TMMi local chapter
Q&A