

Learn how TMM made a 96% defect detection rate possible

Japan - JSTQB カンファレンス 2010
Conference in Tokyo
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Presented by Klaus Olsen

softwaretest.dk

TMMi[®]
FOUNDATION



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Learn how TMM made a 96% defect detection rate possible

Introduction

Case story

TMMi[®] model

How you can use TMMi[®]

Future Road map of TMMi[®]

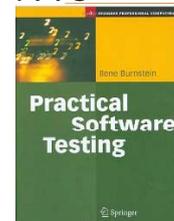
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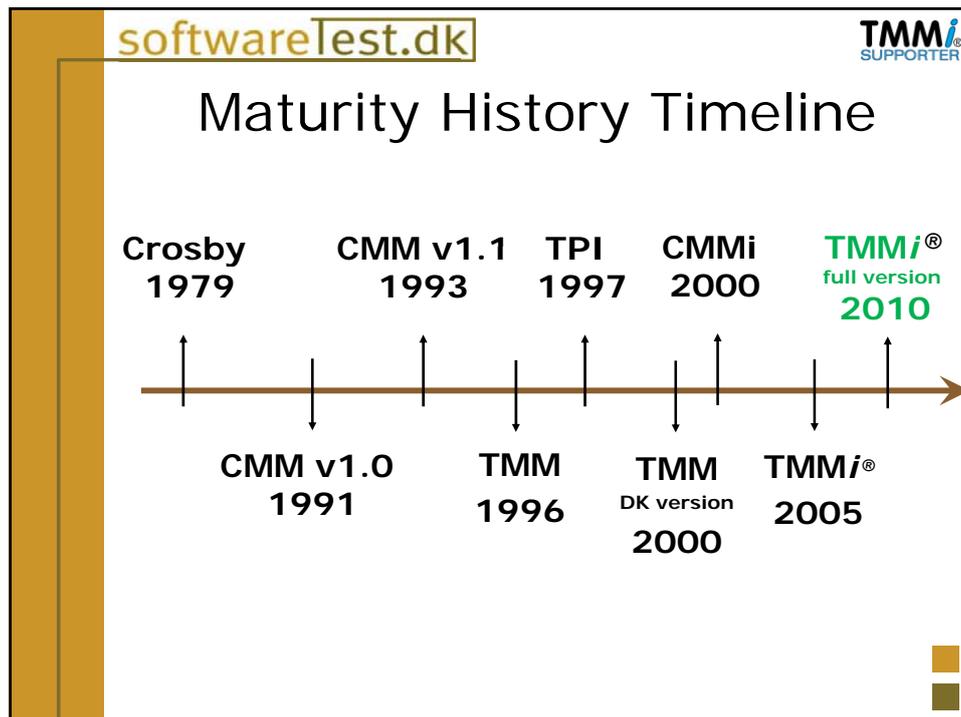
Klaus Olsen

- Klaus Olsen created the company Softwaretest.dk in 2000
- Working with software testing as main focus since 1993
- Softwaretest.dk is located in Denmark and focus is on advising, training and consulting within the area of software testing
- Klaus is representing the Danish Software Testing Board in ISTQB and he is a co-author of ISTQB Foundation and ISTQB Advanced syllabus
- Klaus is a board member in the non-profit organization TMMi® Foundation
- Klaus has previously presented at:
 - EuroSTAR '98 in Munich, Germany
 - Second World Conges on Software Quality 2000 in Yokohama, Japan
 - EuroSTAR 2001 in Stockholm, Sweden
 - Quality Week 2001 in San Francisco, USA
 - EuroSTAR '2003 in Amsterdam, Holland
 - ASTA 2007 in Seoul, Korea
 - Test 2008 in New Delhi, India
 - EuroSTAR '2008 in Haag, Holland
 - ANZTB Test2009 conference Sydney, Australia
- Contact Klaus on email klaus@softwaretest.dk

Experience with TMM

- First experience with TMM in 1997 and presentation about this at EuroSTAR '98
- TMM is developed by Illinois Institute of Technology and published in two articles in U.S. Air Force magazine Crosstalk in 1996
- Meeting with Ilene Burnstein, author of TMM, in USA in 2000
- Ilene Burnstein has described the TMM model in detail in her book:
- Several assessment of companies in Denmark and Norway during the last 10 years
- Member of TMMi® Foundation Executive





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Quality is free – Philip B. Crosby 1979

- "Quality is conformance to requirements; it is precisely measurable; error is not required to fulfil the laws of nature"
- "The cost of quality" – is the price of nonconformance with requirements
- By "defect prevention" ITT estimated that they saved more than 530 millions \$ alone in 1976!
- Numbers like these are the reason behind the quote "Quality is free" in Crosby's books

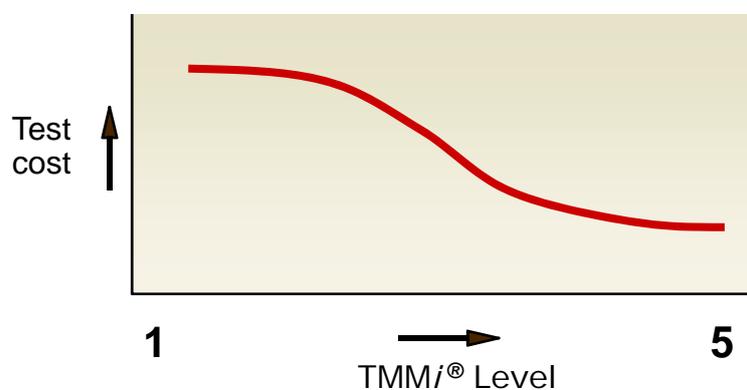
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Why Measure Maturity

Philosophy behind CMMi[®] and TMMi[®]

- There is a correlation between an organisations maturity ...
- And the quality of the software a mature organisation produce
- Higher level of maturity indicates higher level of quality in software delivered by this organisation

Test cost from TMMi[®] Level 1 to 5



If we develop **90%** correct and don't fix defects between phases

Requirement	Analyse	Design	Code
90% correct	90% correct	90% correct	90% correct

Accumulated effect per phase when 90% correct

90% correct	81% correct	72% correct	65% correct
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We need to test and locate **35%** of all defects or risk to release defects into production

If we develop **85%** correct and don't fix defects between phases

Requirement	Analyse	Design	Code
85% correct	85% correct	85% correct	85% correct

Accumulated effect per phase when 85% correct

85% correct	72% correct	61% correct	52% correct
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We need to test and locate **48%** of all defects or risk to release defects into production

Cost of test goes down when

- We start to improve the maturity of our testing, we will prevent defects from entering
- We will detect defects earlier
- We will minimize defect multiplication factor
 - 1 requirement defect becomes perhaps 3 analyse misunderstandings which becomes 7 design defects which manifest as 12 defects in source code
 - Then we need to test the software to locate those 12 defects, report them, get them fixed by developers, re-test that the defect is fixed correctly and then do some level of regression test

When are defects introduced When are defects found

Software development phase	Defects introduced	Defects found
Requirement / analyse	55 %	5 %
Design	30 %	10 %
Construction and system test	15 %	40 %
Acceptance test and production	0 %	45 %

Source:

Boehm, Barry W Software Engineering Economics
Englewood Cliffs, N.J: Prentice Hall, Hughes
DOD composite Software Error History

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Case Story only
in presentation



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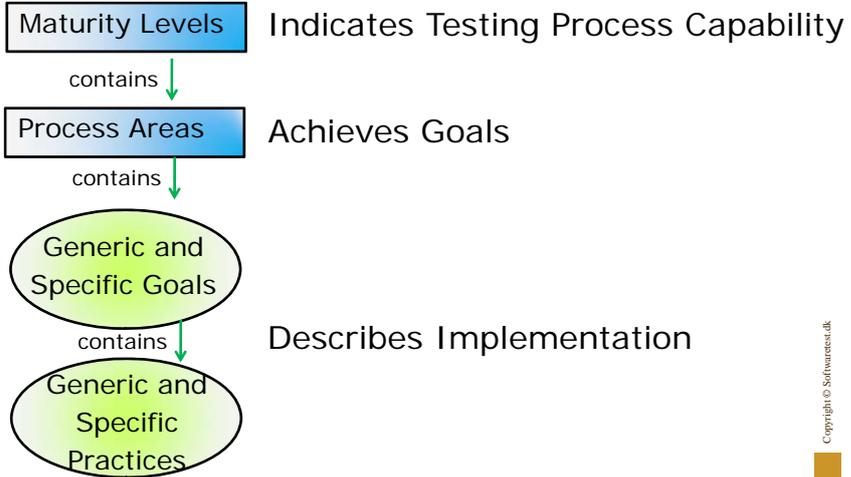
Future Road map of TMMi[®]

Test Maturity Model *integrated*

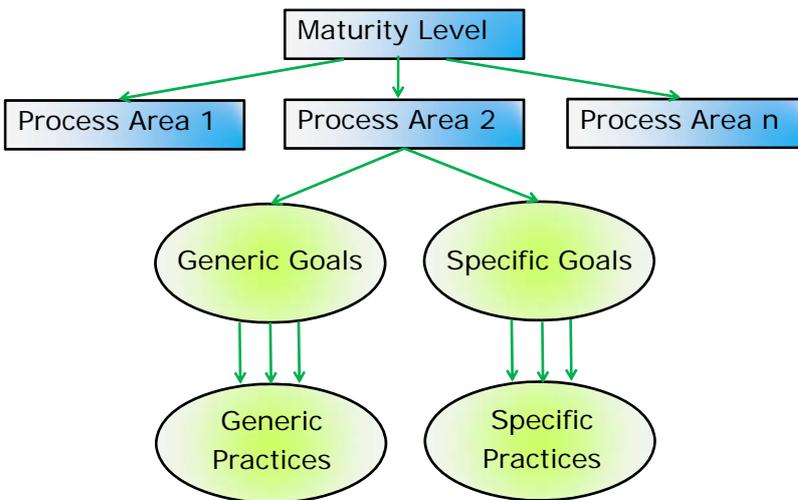
TMMi[®] Model Link

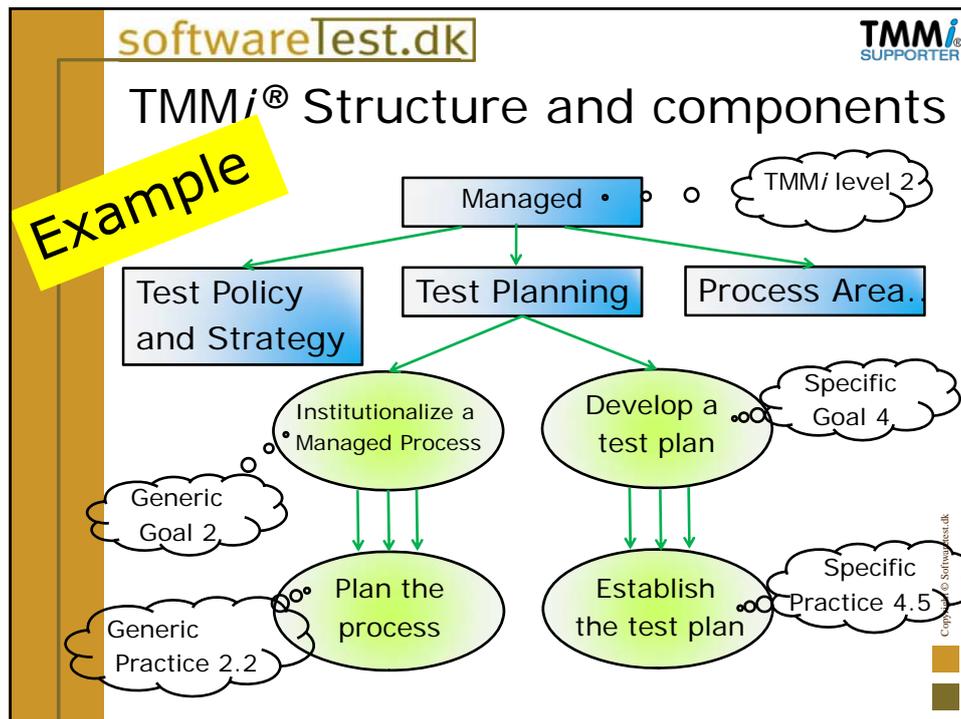
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TMMi[®] Structure and components



TMMi[®] Structure and components





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- ## Generic Goal and Practice Summary
- **GG 2 Institutionalize a Managed Process**
 - GP 2.1 Establish an organizational policy
 - **GP 2.2 Plan the process**
 - GP 2.3 Provide resources
 - GP 2.4 Assign responsibilities
 - GP 2.5 Train people
 - GP 2.6 Manage configurations
 - GP 2.7 Identify and involve relevant stakeholders
 - GP 2.8 Monitor and control the process
 - GP 2.9 Objectively evaluate adherence
 - GP 2.10 Review status with higher level management
 - **GG 3 Institutionalize a Defined Process**

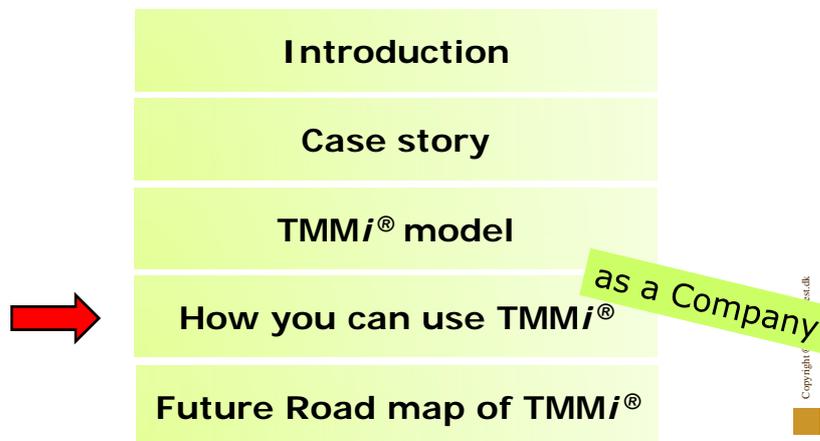
Only applicable at TMMi level 3

 - GP 3.1 Establish a defined process
 - GP 3.2 Collect improvement information
- Page 37 and 38 in version 2.0 of TMMi® Framework with level 3
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Specific Goal and Practice Summary

- SG1 Perform a product risk assessment
- SG2 Establish a test approach
- SG3 Establish test estimates
- **SG4 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**
- SG5 Obtain commitment to the test plan

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How you can utilise TMMi[®]

as a Company

*If you don't know where you are,
a map won't help*

Watts Humphrey

*TMMi[®] provides the framework for an
assessment of your company's now situation*

*If you don't know where you want to go,
then any road will do*

*TMMi[®] provides a map of improvement
possibilities from level 2 to level 5*

How you can utilise TMMi[®] II

as a Company

1. Start by using the TMMi[®] model to locate your GPS position on the TMMi[®] Model

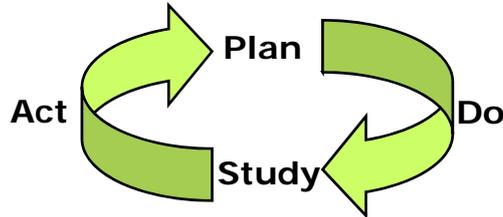


2. Once you know where you are, use the TMMi[®] model as a reference for where you want to go



How you can utilise TMMi® III

as a Company



- **Study** by measuring your companies test maturity level, through an assessment
- **Act** by identifying the weakest areas in your company when using the TMMi® Model
- **Plan** by creating a test improvement plan based on the TMMi® Model
- **Do** by implementing the identified task from Act and Plan above

Example Action Plan Proposal

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Primary Goal	Purpose	Action	Priority	Owner
Testing Goals	Clarify and describe the framework	<p>Split the current document Test Policy and Strategy into two documents.</p> <p>Clarify xxx's Test Policy and communicate it extensively, now as a one page document.</p> <p>Clarify xxx's Test Strategy including goal for each test phase (test level) and non-functional requirements, in order to make these clear, measurable and easy to communicate.</p> <p>Get Test Policy and Test Strategy approved by management and secure ownership in order to achieve the goal in each project.</p>	1	

Example

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How you can use TMMi® as a Tester

Future Road map of TMMi®

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How you can utilise TMMi[®]

as a Tester

- Athletics go on training camps in order to prepare for competition
- 90% to 95% of their time are spent on training
- 5 to 10% of their time are competition
- They create a plan for their season:
 - Which competition will they participate in
 - When must their shape be at the best
 - When do they need their peak performance

How you can utilise TMMi[®] II

as a Tester

- As IT people we are in competition 90% to 95% of our time
- Most of our time is spend on developing and testing new software
- A couple of times each year, like today, we participate in a conference or training course
- But then the next day we are right back to competition again

How you can utilise TMMi[®] III

- If you work with software testing use the TMMi[®] Model as an inspiration to improve the way you work with software testing

as a Tester

"Make practice a part of every project and measure and observe your own work.

You cannot stand still, so you should treat every project as a way to build talent, rather than merely treating your talent as a way to build projects."



Watts Humphrey

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Future Road map of TMMi[®]

The TMMi® Foundation

- Independent reference model development as trusted anchor for enterprise process improvement
- Integrate existing company-driven initiatives into best of breed Reference Model
- Establish basis for international test assessment standards
- Provide standard, robust Assessment Benchmarking Accreditation & Certification
- Develop public industry benchmarking data



TMMi® Foundation Objectives

- * The TMMi® Foundation are developing:
 - A **TMMi® Model** with 5 levels of maturities
 - A standard **TMMi® Assessment Model** that can be used in isolation or in support of wider Process Assessment models and is either staged or continuous.
 - **Assessment Method** Accreditation & Audit Framework for TMMi® in accordance with SEI ARC Guidelines/ISO15504 and the process to certify commercial assessment methods against the standard model.
 - Certification and training/examination process, procedures and standards for formal, public **accreditation of Assessors and Lead Assessors** and the on-going management
 - An independently managed data repository to support TMMi® assessment method accreditation, assessor and assessment certification/validation and validated assessment data and certificates.



What can you do?

- Join the Foundation as an individual member – it is free of charge – just write an email to membership@tmmifoundation.org
- Join as a sponsor and support the Foundation which is a non-profit organisation
- Read more about the model at www.tmmifoundation.org



Currently the The TMMi[®] Foundation are working with the following organizations to grow recognition of the TMMi[®] Model on a global scale

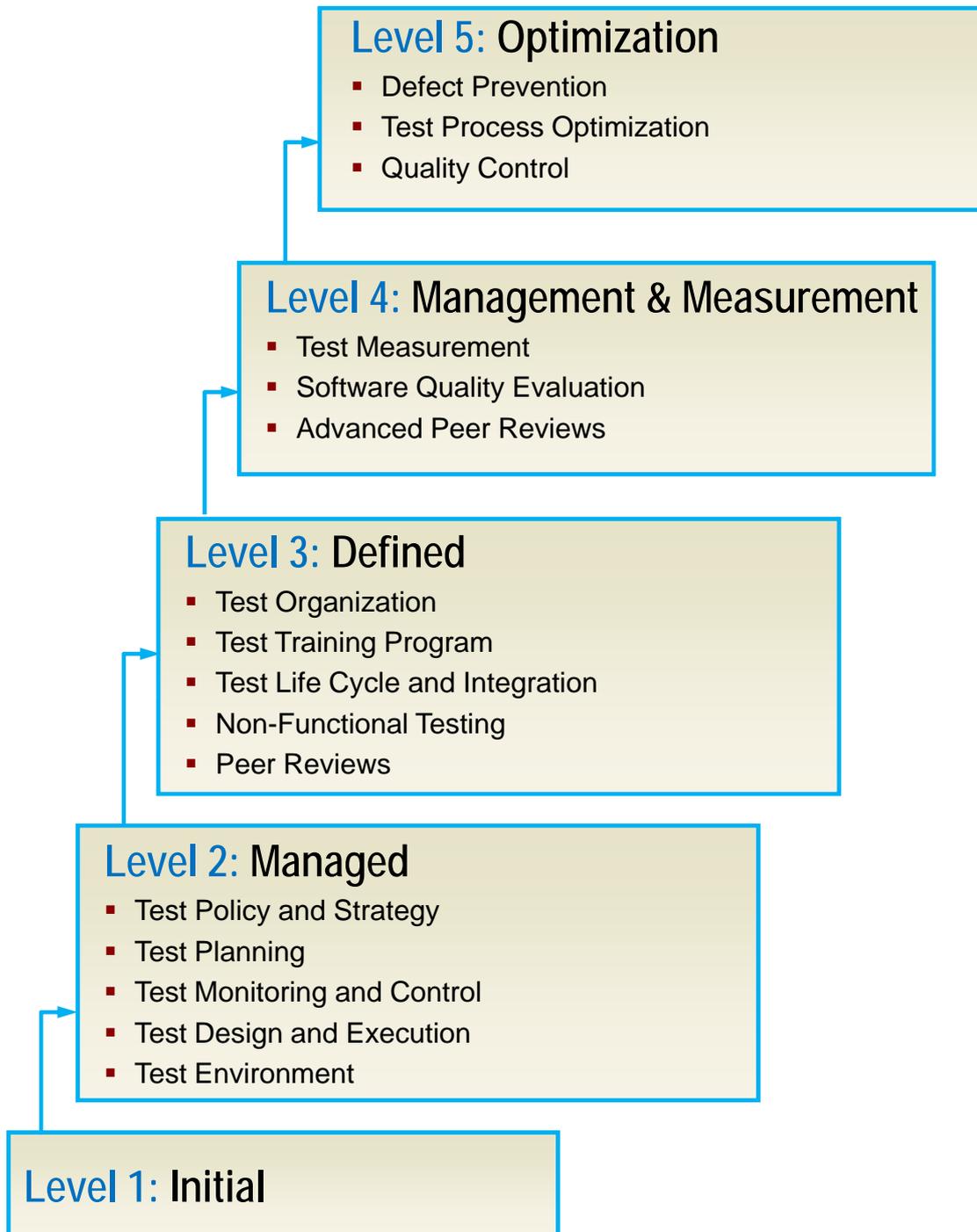


Thank you



Contact Klaus
by email at klaus@softwaretest.dk

Test Maturity Model Integration, TMMi[®]



TMMi[®] maturity levels and process areas