



High performance. Delivered.

Process Improvement with TMMi®

September 21st, 2010



TMMi® – why bother?

Using TMMi® to deliver value

What's next?

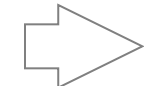






Improving processes is at the top of every CIO's agenda – but in which direction?



Through interviews with CIO's we have found that poor execution has forced companies to spend too much on maintaining old systems and too little on new systems.

	% Budget	Too Much	Too Little
Running	27%	100%	0%
Fixing	12%	100%	0%
Enhancing	17%	67%	33%
Integrating	10%	50%	50%
Building	14%	0%	100%
Testing	10%	33%	67%
Deploying	10%	0%	100%

Top Drivers

-  Legacy
-  Errors
-  M&A
-  M&A
-  Growth
-  Defects
-  Defects

Accenture High Performance Technology CIO Interview Data, 2008

Developing the Testing Maturity Model Integrated (TMMi)

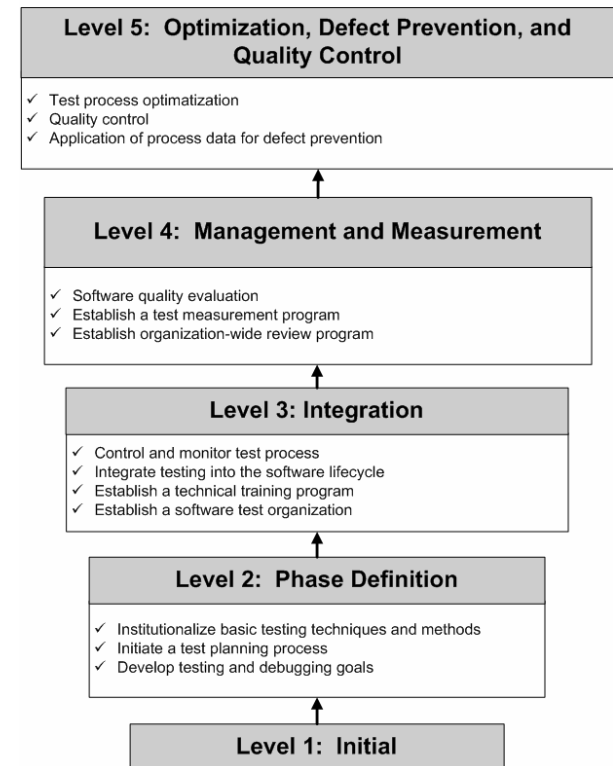
Building TMMi out of TMM and aligning it with other industry-standard models

The Testing Maturity Model (TMM):

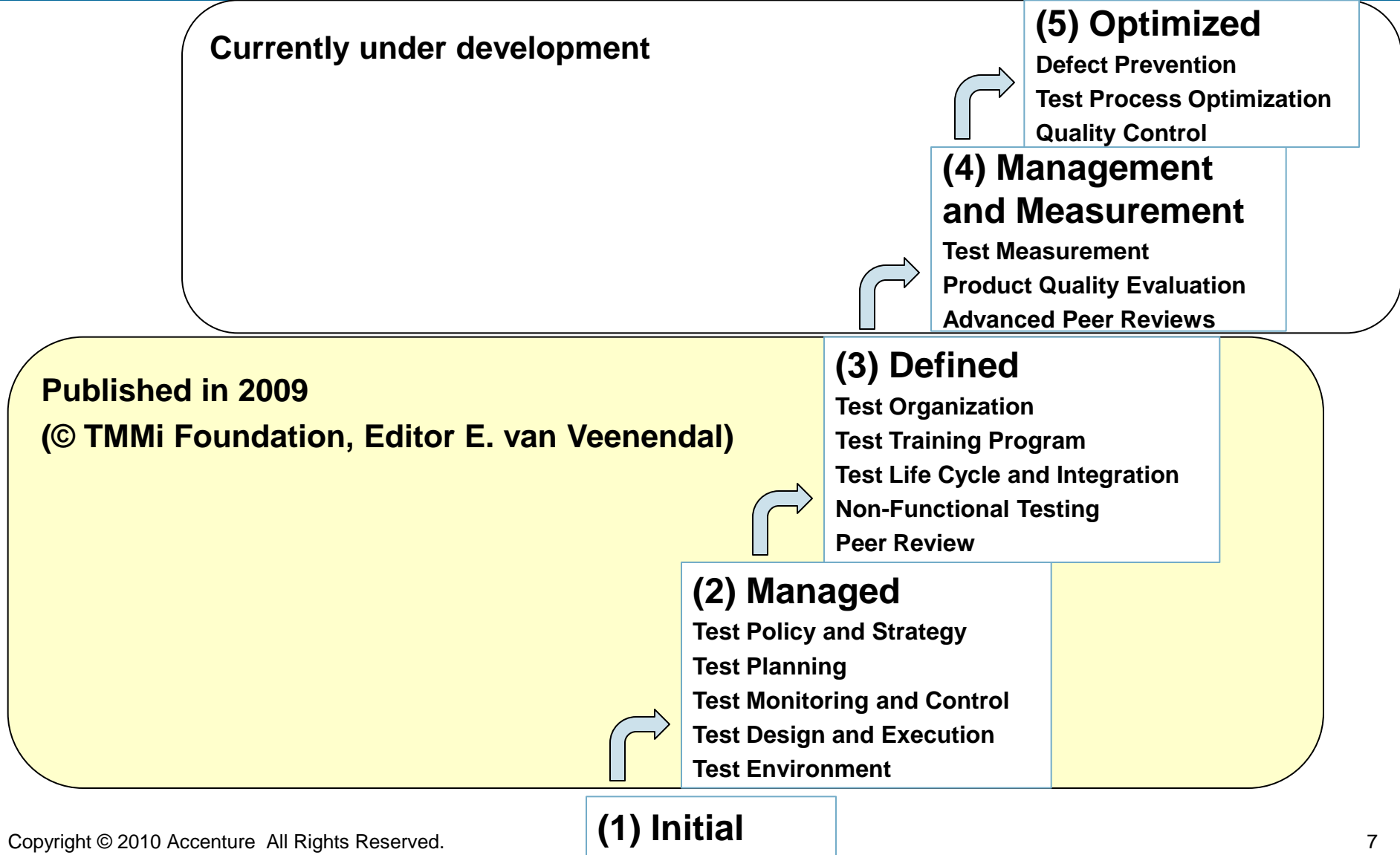
- Was developed in 1996 at the Illinois Institute of Technology
- Aims to address testing gaps in CMMI, ISO 9001, Bootstrap, and SPICE (ISO 15504)
- Takes a 5-staged approach (like CMMI) to testing maturity for organizations
- TMM Maturity **Sub-Goals** make up Maturity **Goals**, which make up the 5 TMM Test Maturity **Levels**

The Testing Maturity Model Integrated (TMMi):

- Has been created by the TMMi foundation, a non-profit making standards organization based in Ireland
- Aims to maintain and enhance TMM to define an international core TMMi Model standard
- is dedicated to improving test processes and practice



The TMMi® model is in the process of being extended to cover all 5 maturity levels



‘Initial’ 1	vs.	‘Defined’ 2
✓ At level 1, organizations struggle between testing and development/debugging, whereas at level 2, they recognize and define testing as a <i>distinct</i> discipline		
‘Defined’	vs.	‘Integrated’ 3
✓ At level 2, organizations start testing with an unpredictable starting situation, whereas at level 3, they aim to test & plan testing <i>early</i> in the SDLC		
‘Integrated’	vs.	‘Managed/Measured’ 4
✓ At level 3, organizations still focus on testing often & everywhere, whereas at level 4, they aim to <i>test less</i> by <i>management/control & quality review</i>		
‘Managed/Measured’	vs.	‘Optimized’ 5
✓ At level 4, organizations aim to reduce test effort by management & control, whereas at level 5, they aim to reduce effort by automation, statistical testing, but mostly by defect <i>prevention</i> through overall SDLC <i>process improvement</i>		

The development of Maturity Levels 4 and 5 is a collaborative effort throughout the industry



TMMi Foundation Working Group for Model Development and Maintenance

Matthias Rasking (Manager)



THE HONG KONG
POLYTECHNIC UNIVERSITY
香港理工大學



Review Committee

Ca. 90 TMMi foundation members
reviewing each draft version (2 review
cycles)

Srivatsan Tiruvallur Thattai (Manager)



Cognizant



And many others...

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Market Drivers for Testing Process Improvement using TMMi®



Cycle time

- Decrease time-to-market to deliver product innovations faster than competitors

Productivity

- Accomplish more with less (judicious automation)
- Improve effectiveness of multi-site delivery or testing

Predictability

- Improve accuracy of cost and time estimates for testing phases
- Identify input constraints early and consistently
- Improve ability to meet delivery commitments consistently and reliably

Quality

- Reduce cost of poor quality
- Improve alignment of IT solutions to the needs of the business

Testing portfolio management

- Ensure investments target the right priorities
- Optimize use of testing resources across priorities

Continuous improvement

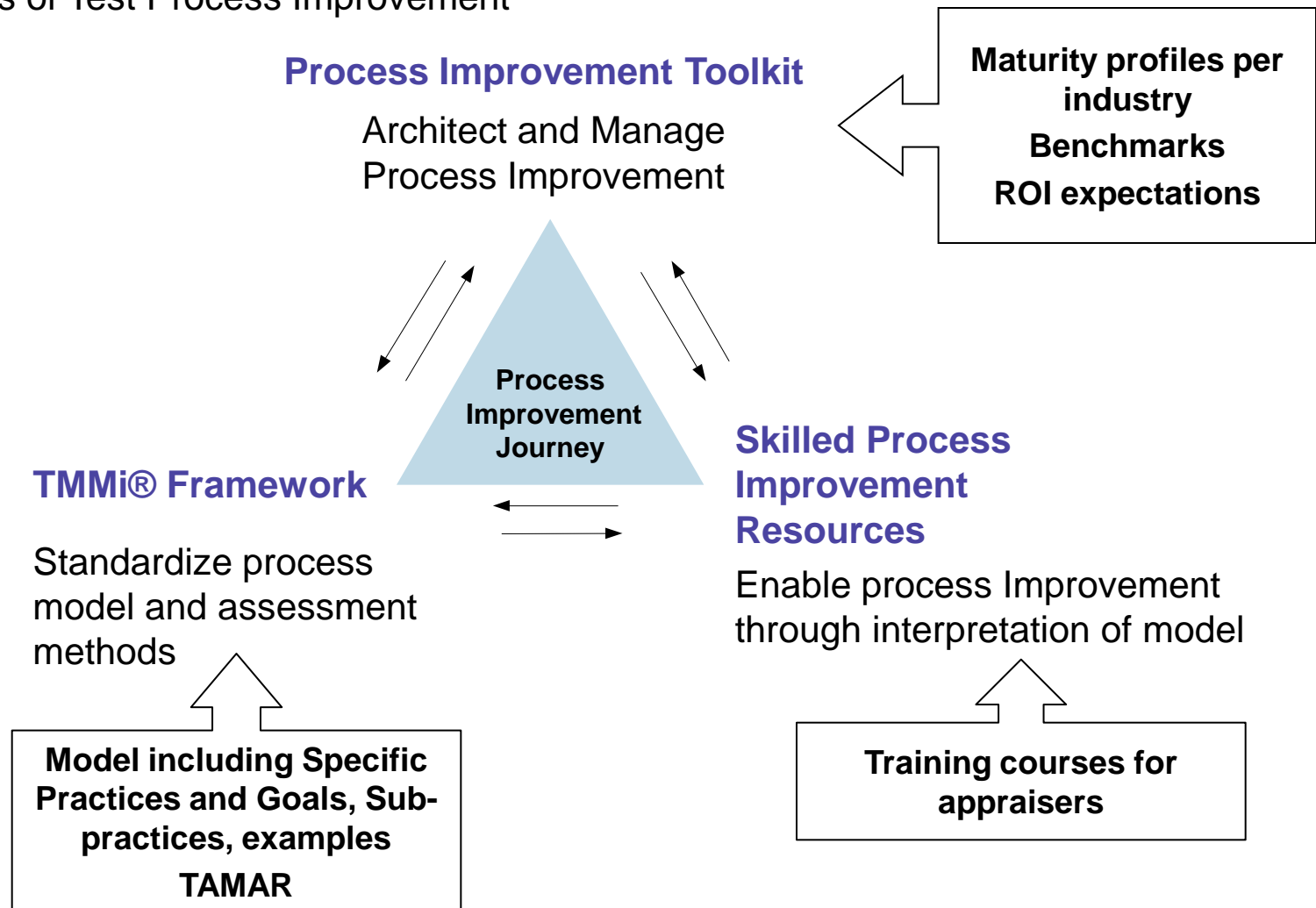
- Establish environment for continuous improvement through appropriate measurement

Compliance/Certification

- Achieve a TMMi® rating or other certification (i.e. ISO, eSCM)

TMMi®-based standards are a key component combined with resources and tools

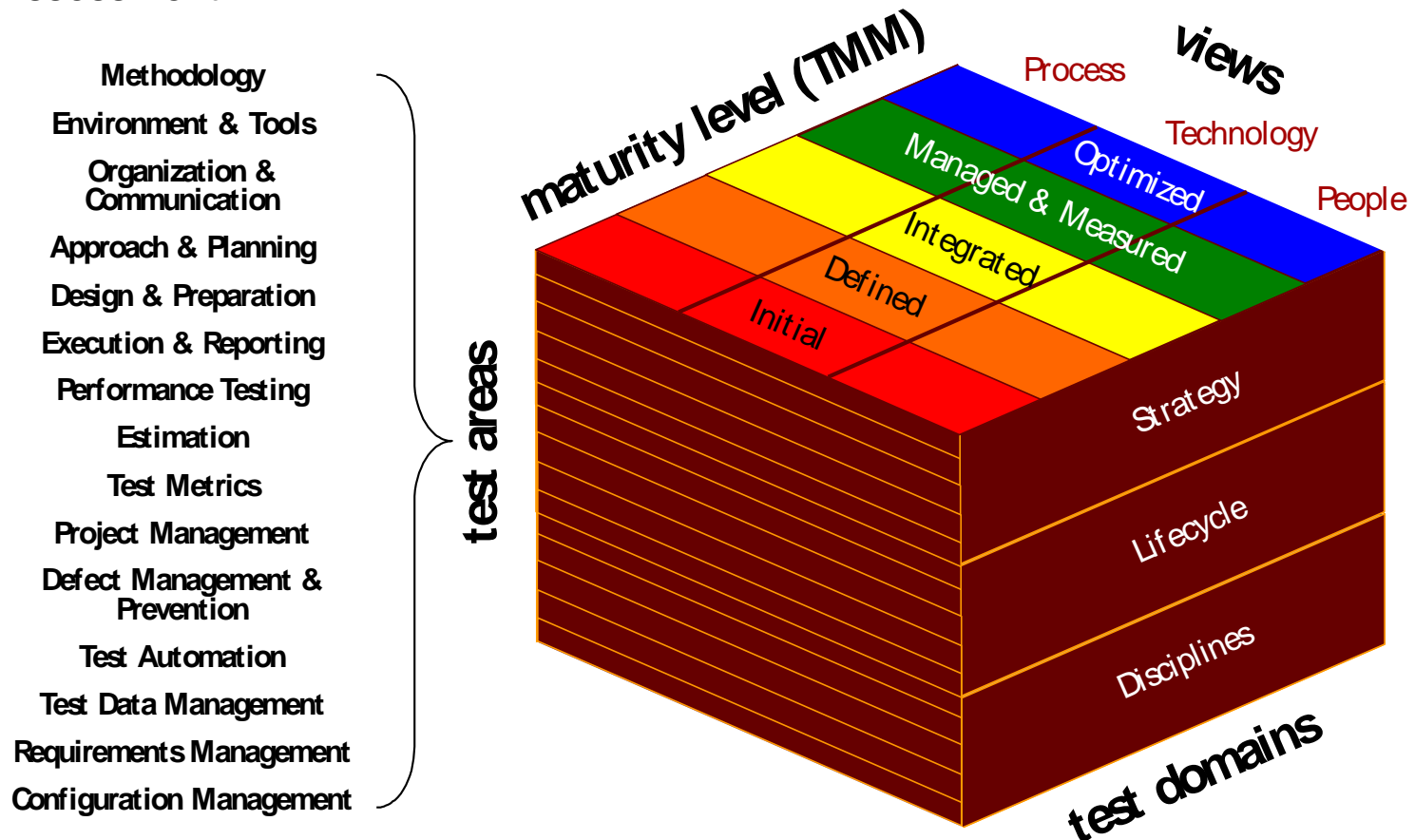
Components of Test Process Improvement



A full TMMi assessment structure needs to cover all levels, domains and practice areas



Accenture's patent-pending Test Assessment framework addresses the need for uniform Test Process Assessment



Report assessment results and improvement recommendations



Delivering the message to the client may be even more important than delivering the assessment

- The Test Assessment Framework helps to report the assessment results and improvement recommendations
- However, phrasing the right message for the client requires additional effort and scrutiny.
- As in any transformational change initiative, getting the buy-in of stakeholders and their commitment for improvement is crucial. Therefore every assessment needs to stress the achievable benefits and the change impact to the organization.

Domain	Test Area	Rating															
		Initial (0-1)			Defined (1-2)			Integrated (2-3)			Managed & Measured (3-4)			Optimized (4-5)			
		Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	
Test Strategy	Methodology																
	Environment & Tools																
	Organization & Communication																
Test Lifecycle	Approach & Planning																
	Design & Preparation																
	Execution & Reporting																
Testing Disciplines	Performance Testing																
	Estimation																
	Test Metrics																
	Project Management																
	Defect Management & Prevention																
	Test Automation																
	Test Data Management																
	Requirements Management																
Configuration Management																	

US Insurer

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Configuration Management																	

Dutch Utilities

Domain	Test Area	Rating															
		Initial (0-1)			Defined (1-2)			Integrated (2-3)			Managed & Measured (3-4)			Optimized (4-5)			
		Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	
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Assessment results need to be delivered in a concise, actionable format



Make it easy for the organization to action the changes

CLIENT EXAMPLE

Results of As-Is Analysis

Test Strategy – 3. Organization & Communication		1.90
Organization & Structure		
22	Rate the extent with which the Test Strategy identifies required test skills and maps these to available/ required people	3 (Good)
23	Rate the proficiency with which the organization fosters and builds cross-functional test teams with dedicated functional, technical, development and QA resources	2 (Beginning)
24	Rate the organization's proficiency at using a metric(s) to measure resource job satisfaction levels	1 (Awareness)
Communication & Participation		
25	Rate the effectiveness of intergroup communications between the testing organization and the other key groups on the project/program. This includes the identification, tracking, and resolution of intergroup issues (e.g. incompatible schedules, technical risks, etc.)	3 (Good)
26	Rate the extent to which the Test Strategy identifies overall communication requirements including required meetings, status communications, and other communications essential to a successful testing initiative (e.g. defect management meetings)	2 (Beginning)
27	Rate the level of involvement of testing people across all stages of the SDLC	2 (Beginning)
Training		
28	Rate the extent to which the Test Strategy identifies overall test training needs	2 (Beginning)
29	Rate the effectiveness of training & learning for the following topics: <ul style="list-style-type: none"> • Establishment of a technical training program to improve testing skills • Formal development of training plans & course materials • Training for all key processes / techniques that must be carried out to deliver a successful testing engagement • Use of measurements to determine the quality and effectiveness of the training program and course materials 	1 (Awareness)
		1 (Awareness)
		2 (Beginning)
		N/A

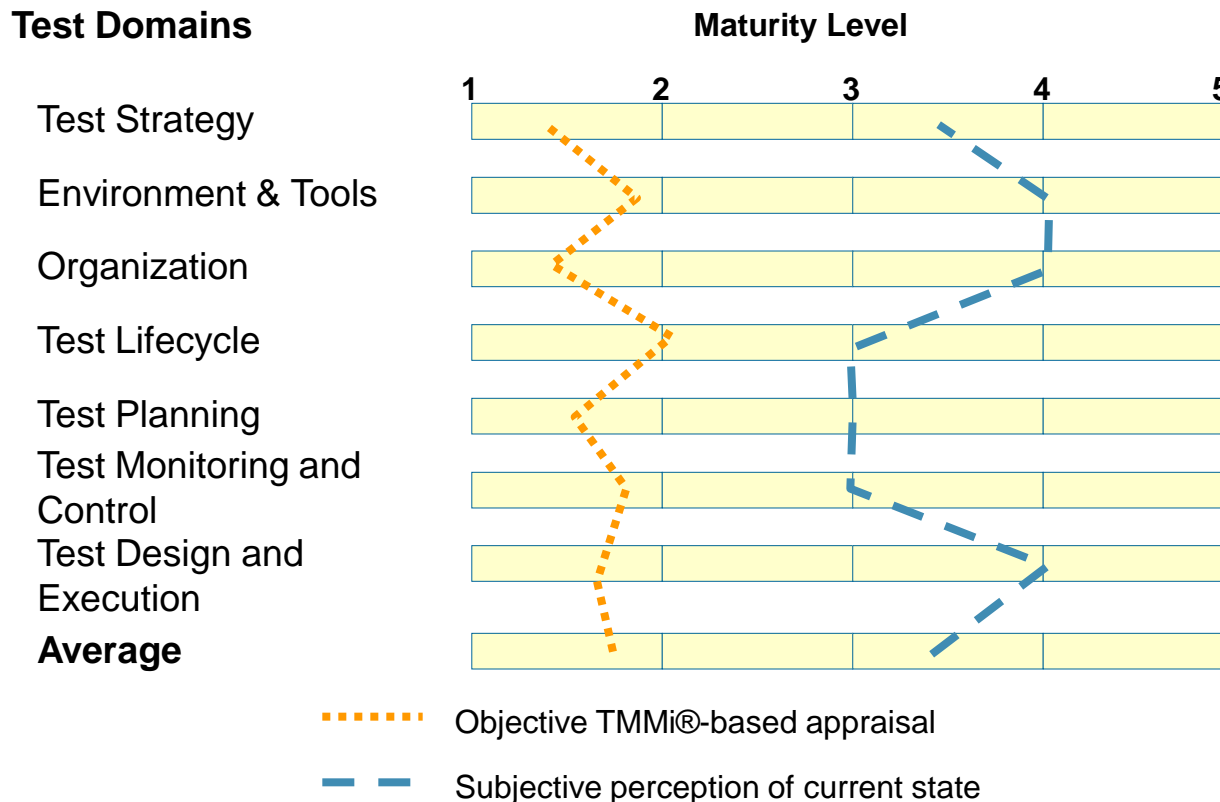
Findings

Recommendation	Priority
Ensure Trained Testers are Driving Functional Test: Enable trained Testers to conduct SIT, but include functional SME's for review and other activities requiring business input.	A
Involve Testing people early: Involve Test Lead and team in project activities upstream to testing to assist with Requirements Identification and Design Reviews.	B
Develop Comprehensive Training Plans: Ensure that Testing Team members are well-trained in the testing processes and tools so that management has confidence that each team will provide a standard level of output quality.	B

Astonishing differences lie between perceived process maturity and fact-based results

Even with a standardized process definition the different goals at each level need to be transparent for stakeholders to have realistic expectations.

ILLUSTRATIVE



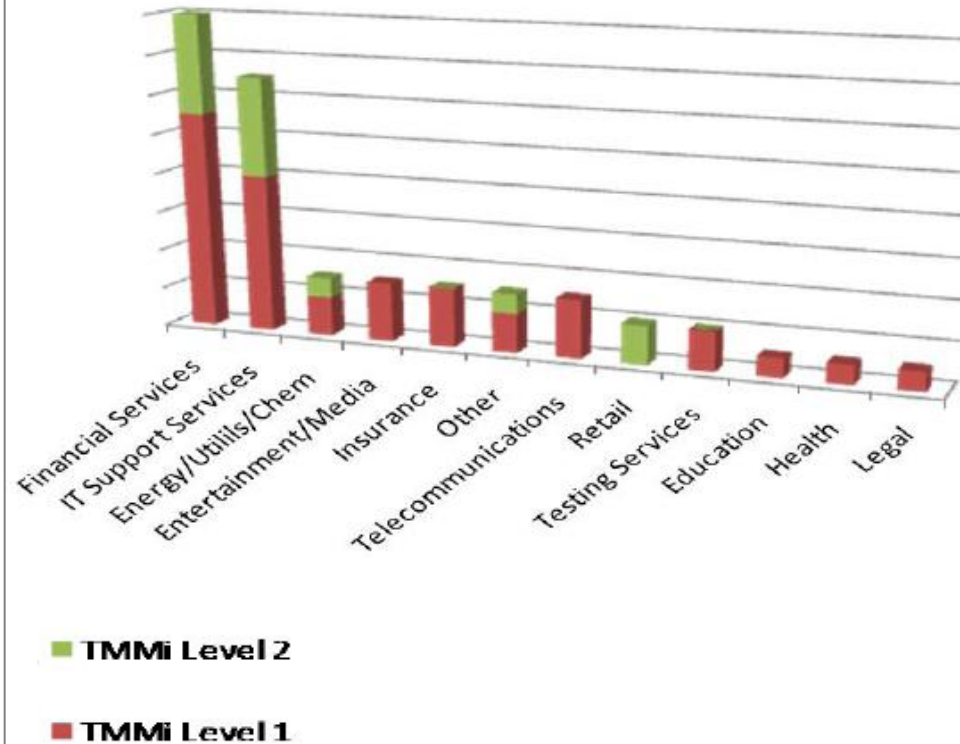
How could this happen?

- **Understanding of the process itself:** Depends heavily on the knowledge and experience of the person being asked about process performance to adequately assign a maturity level. This is very similar to estimating project efforts – unless you very clearly define the scope in terms of deliverables and expected process steps, the estimate will always depend on the viewpoint of the estimator.
- **Filtered information on process performance:** Depending on the level of stakeholders it could potentially be a problem that the information they are getting on process performance is being filtered by their direct reports. They might get isolated issue reports and “lessons learned” accounts on processes not working, but due to the following problem and the inclination of their direct reports to report everything as green (or maximum yellow/orange, but never red) they might not have the full picture and are therefore more biased, too optimistic or over-confident.
- **Lack of verifiable, measurable process performance:** Many organizations simply do not have the means to objectively evaluate process performance and rather stick to individual opinions and process examples.
- **Insufficient appraisal information:** Depending on the experience of the appraisal team, the preparation done for the appraisal and the time available, the appraisal might be based on very selective evidence and therefore not show the whole picture of process performance.

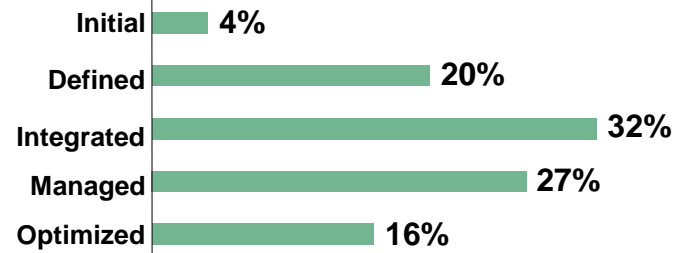
This mis-perception of maturity is often a problem when surveying the industry

Excerpts of survey results on test process maturity

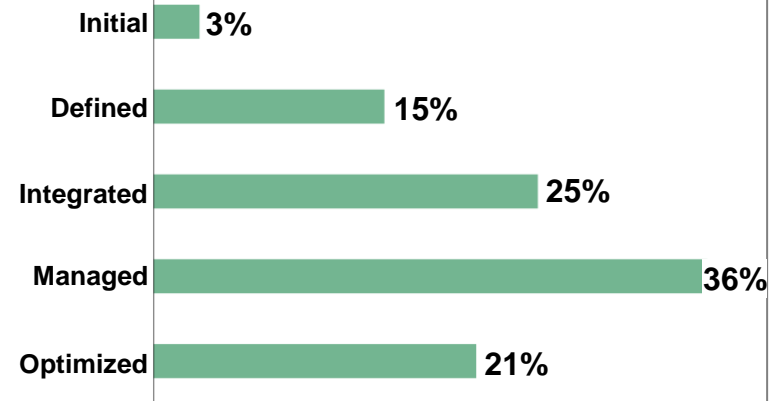
Industry Sectors



“At which maturity level would you rate your current software testing operation / organization?” (n=201)



“Please rate the effectiveness of your test environment management process.” (n=190)



Source: Survey of over 100 respondents. Conducted by Experimentus Ltd., 2009

Source: Online survey of 201 US IT decision makers. Conducted by Forrester Consulting on behalf of Accenture.

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A process improvement journey needs to be based on clear value levers and achievable goals

Even with a standardized process definition the different goals at each level need to be transparent for stakeholders to have realistic expectations.

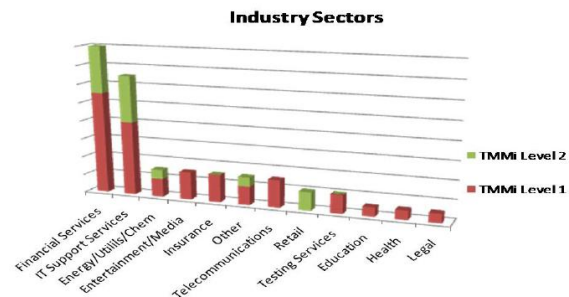
ROI expectations

- Setting a baseline to measure actual process improvement ROI is difficult – especially for Testing
- For CMM/CMMi, the SEI can measure time between levels and key cost and benefit indicators
- Due to the many interdependencies between the testing domain and the overall SDLC the influence of testing-specific improvements are more difficult to measure – but not impossible

Benchmark comparison

- When asking un-initiated IT executives regarding their process improvement goals, their answer will always be “somewhere at the top of the scale)
- These expectations are difficult to overcome if reference data does not exist
- For CMM/CMMi, the SEI can create industry maturity profiles – a first survey by Experimentus has been conducted

Category	Range	Me
Years engaged in process improvement	1 – 0	



- It is important to provide a common, industry-supported and open standard for Test Process maturity and improvement.
- The development of the TMMi framework is a collaborative effort that is still ongoing.
- Through your feedback and comments the framework will get better and more widely accepted.
- When using the TMMi framework to conduct assessments, make sure you understand the objectives of the stakeholders.
- Understand the stakeholder's current perception of testing proficiency and build on strengths you have identified to gain buy-in to the improvement journey.