IS A TESTING MATURITY MODEL IN YOUR FUTURE?

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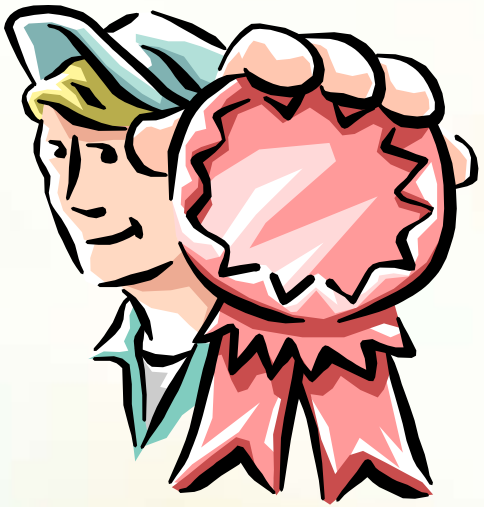
CAN A TESTING MATURITY MODEL HELP IMPROVE MY TESTING PROCESS???
YES!!!!


TODAY'S SOFTWARE SYSTEMS ARE MORE CHALLENGING TO BUILD!
POOR QUALITY SOFTWARE IS NO LONGER ACCEPTABLE!

DEFINITION OF QUALITY

Dr. W. Edwards Deming –
"Quality is the continuous improvement of all processes".

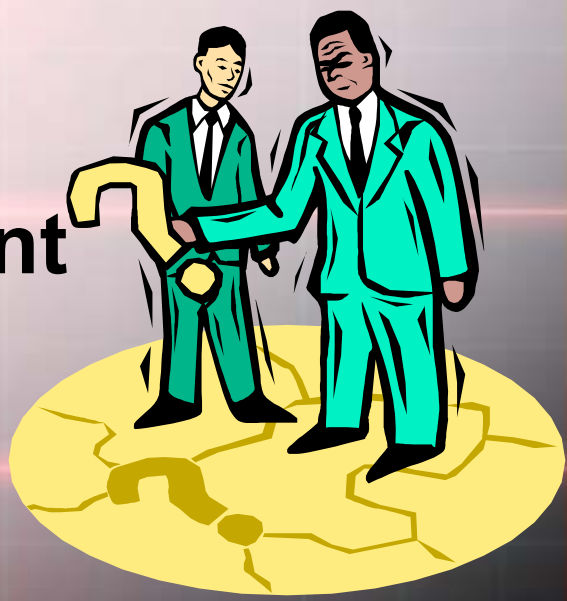



IT IS A LONG ROAD TO SUCCESSFUL PROCESS IMPROVEMENT!


EMPLOYEES ARE OFTEN AWARE THAT A PROCESS NEEDS IMPROVING BEFORE MANAGEMENT.

WHY DO I NEED TO USE A TESTING MATURITY MODEL?

- You may think you know your testing maturity, but I bet you really don't.
- A testing maturity model will help you document the current process and identify what needs improvement.

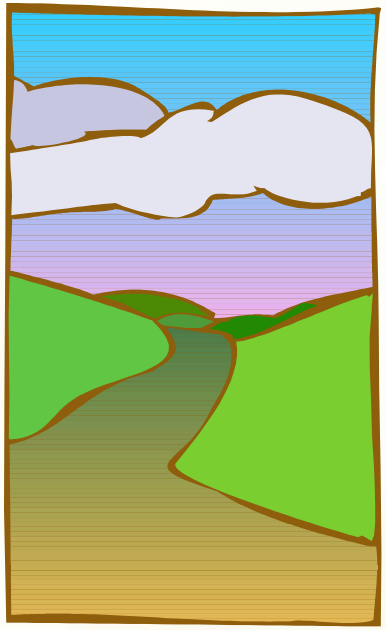


WHY DO I NEED TO USE A TESTING MATURITY MODEL?

- You can't make improvements unless you can show management that the process needs improving.
- You need a plan to help make incremental improvements.

TEST MATURITY MODEL

- Establishes a baseline for the current level of testing maturity.
- Highlights any inconsistencies between believed level of maturity and actual maturity.
- Provides a roadmap for test process improvement.



TEST MATURITY MODELS

- **Terry Weatherill, Imago QA Ltd. compared all of the testing maturity models available.**
- **Comparison, "In The Testing Maturity Model Maze, appeared in The Journal of Software Testing Professionals, March 2001, pages 8-13.**

TEST MATURITY MODELS

- Testability Maturity Model (TMM).
- Test Organization Maturity (TOM^{tm}).
- Testing Assessment Program (TAP).
- Proposed Evaluation & Test SW-CMM Key Process Areas (SW-CMM KPA).
- Test Process Improvement (TPI).
- Software Testing Maturity Model (TMM^{SM}).

TEST MATURITY MODELS

- Terry Weatherill concluded only two were useable in their current format.
  - Software Testing Maturity Model (TMM^{SM})
  - Test Process Improvement (TPI)
- I have studied both of these and find TMM^{SM} the most useable for my clientele.

MY JUDGMENT CRITERIA

- The ease of understanding and use.
- Usability by organizations to perform their own assessment.
- The ability to provide a baseline and roadmap for improvement.
- Ability to repeat assessment to determine progress.

TESTING MATURITY MODEL (TMM^{SM})

- Developed by Ilene Burnstein, Taratip Suwannasart, and C. R. Carlson of the Illinois Institute of Technology.
- First article written on the subject in 1996.
- Designed as a companion to the Software Capability Maturity Model (SW-CMM).

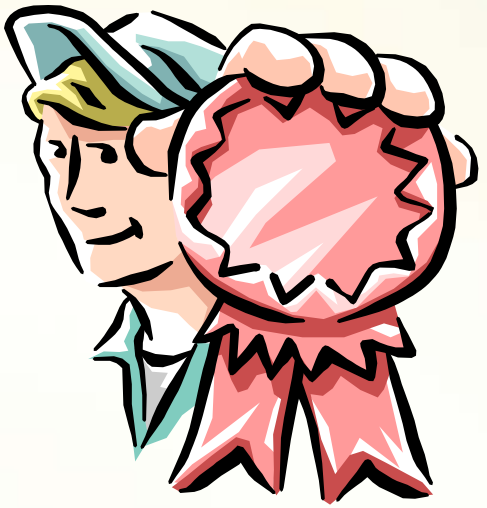
TESTING MATURITY MODEL (TMM^{SM})

- **Advantages:**
  - **Maturity levels correspond with SW-CMM.**
  - **TMM^{SM} can be easily used in conjunction with SW-CMM, CMMI, ISO–9001, and ISO/IEC Std 12207.**
  - **Simplifies the planning, implementation and monitoring of process improvements.**

TESTING MATURITY MODEL (TMM[SM])

- **Disadvantages:**
  - **Currently no book is published on the subject. (A book, Practical Software Testing: A Process-Oriented Approach, by Dr. Ilene Burnstein is in the final editing phase.)**

TESTING MATURITY MODEL (TMM[SM])



- Has 5 maturity levels:
  - Level 1 – Initial.
  - Level 2 – Phase Development.
  - Level 3 – Integration.
  - Level 4 – Management and Measurement.
  - Level 5 – Optimization, Defect Prevention, and Quality Control.

TESTING MATURITY MODEL (TMM[SM])

- Each Level, except Level 1, contains *Maturity Goals*.
- *Maturity Goals* supported by *Maturity Sub-goals*.
- Attainment of *Sub-goals* achieved by satisfying the *Activities-Tasks-Responsibilities (ATRs).*

TESTING MATURITY MODEL (TMM[SM])

- **ATRs identify specific actions that must be performed.**
- **Each action assigned to a *Critical View*:**
  - **Managers.**
  - **Developers/testers.**
  - **User/clients.**

LEVEL 1 - INITIAL

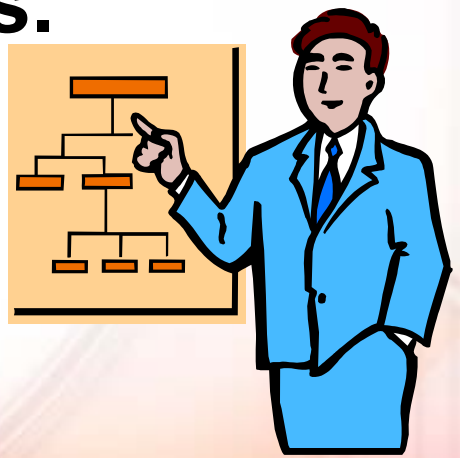
- Testing is a chaotic process.
- Ill defined and not distinguished from debugging.
- Tests are developed ad hoc after coding is complete.

LEVEL 1 - INITIAL

- Objective of testing is to show software works.
- Lacks trained staff, resources or tools.
- Software often released without quality assurance.

LEVEL 2 – PHASE DEVELOPMENT

- Testing separate from debugging.
- Phase after coding.
- Primary goal of testing is to show software meets specifications.
- Basic testing techniques and methods are in place.

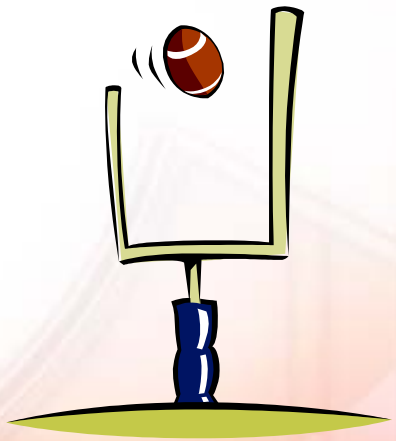


TMM LEVEL 2 GOALS

2.1 Develop testing and debugging goals and policies.

2.2 Initiate a test planning process.

2.3 Institutionalize basic testing techniques and methods.



TMM/CMM LEVEL 2 COMPARISON

TMM Level MG	SW-CMM Level KPA
2 Test Planning	**2 Requirements Management (S)**
Testing/debugging	**Project Planning (S)**
Policies/goals	**Configuration Management (S)**
Basic Testing Techniques/methods	
	3 Software product engineering (P) (particularly activities 5, 6, 7 except for independent test group, TMM level 3, statistical testing usage profiles, TMM Level 4, and managing and controlling TMM Level 3)
MG, Maturity Goal	KPA, Key Process Area; (S), Supporting role; (P), Parallel role

TMM/CMMI LEVEL 2 COMPARISON

TMM Level MG	CMMI-SE/SW Level KPA
2 Test Planning	**2 Requirements Management (S)**
Testing/debugging	**Project Planning (S)**
Policies/goals	**Configuration Management (S)**
Basic Testing Techniques/methods	
	3 Requirements Development (S)
	Validation (P)
	Risk Management (S)
MG, Maturity Goal	KPA, Key Process Area; (S), Supporting role; (P), Parallel role

TMM/ISO LEVEL 2 COMPARISON

TMM Level	ISO-9001 Areas	ISO/IEC 12207 Areas
2	4.10 (Test)	5.3.7 Software Test Only
		5.3.8 Software Integration
		5.3.11 System Quality Testing
		5.3.13 Software Acceptance Support
		6.5 Validation Process

LEVEL 3 - INTEGRATION

- Testing integrated into entire life cycle.
- Test objectives are based on requirements.
- Test organization exists.
- Testing recognized as a professional activity.

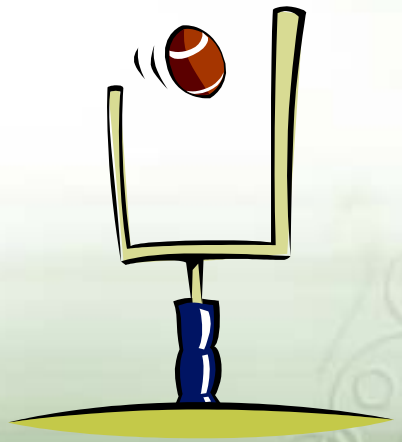
TMM LEVEL 3 GOALS

3.1 Establish a test organization.

3.2 Establish a technical training program.

3.3 Integrate testing into the software life cycle.

3.4 Control and Monitor the Testing Process.



TMM/CMM LEVEL 3 COMPARISON

TMM Level MG	SW-CMM Level KPA
3 Control/monitor Test	**2 Project tracking/oversight (S)**
Integration of Test	
Test Training	**3 Organization Process Focus (S) (apply to test process/test group)**
Test Organization	**Training (S,P)**
	Intergroup coordination (S,P)
	SQA (S)
MG, Maturity Goal	KPA, Key Process Area; (S), Supporting role; (P), Parallel role

TMM/CMMI LEVEL 3 COMPARISON

TMM Level MG	CMMI-SE/SW Level KPA
3 Control/monitor Test	**2 Project Monitoring and Control (S)**
Integration of Test	**SQA (S)**
Test Training	**Organizational Training (S,P)**
Test Organization	**Organization Process Focus (S) (apply to test process/test group)**
MG, Maturity Goal	KPA, Key Process Area; (S), Supporting role; (P), Parallel role

TMM/ISO LEVEL 3 COMPARISON

TMM Level	ISO-9001 Areas	ISO/IEC 12207 Areas
3	4.2 Quality Systems	6.3 Quality Assurance
	4.18 Training	7.4 Training Process

LEVEL 4 - MANAGEMENT & MEASUREMENT

- Testing is a measured and quantified process.
- Reviews at all development phases are now recognized as tests.
- Products tested for quality attributes, such as, reliability, usability, and maintainability.

LEVEL 4 - MANAGEMENT & MEASUREMENT

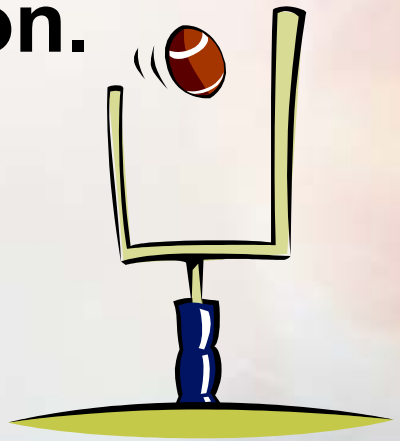
- Test cases are collected and recorded in a test data base for reuse and regression testing.
- Defects are logged and given severity level.

TMM LEVEL 4 GOALS

4.1 Establish an organization-wide review program.

4.2 Establish a test measurement program.

4.3 Software Quality Evaluation.



TMM/CMM LEVEL 4 COMPARISON

TMM Level MG	SW-CMM Level KPA
4 Software Quality Evaluation	**3 Peer Reviews (S,P)**
Test Measurement	
Review Program	**4 Software Quality Management (P)**
MG, Maturity Goal	KPA, Key Process Area; (S), Supporting role; (P), Parallel role

TMM/CMMI LEVEL 4 COMPARISON

TMM Level MG	CMMI-SE/SW Level KPA
4 Software Quality Evaluation	**3 Verification (S,P)**
Test Measurement	
Review Program	**4 Measurement and Analysis (S,P)**
MG, Maturity Goal	KPA, Key Process Area; (S), Supporting role; (P), Parallel role

TMM/ISO LEVEL 4 COMPARISON

TMM Level	ISO-9001 Areas	ISO/IEC 12207 Areas
4	4.10 Inspection	6.4 Verification
	4.12 Inspection, Test Status	6.6 Joint Review Process
	4.16 Quality Records	6.8 Problem Resolution
	4.20 Statistical Techniques	

LEVEL 5- OPTIMIZATION, DEFECT PREVENTION, & QUALITY CONTROL

- Testing is defined and managed.
- Testing costs and effectiveness can be monitored.
- Testing can be fine-tuned and continuously improved.
- Defect prevention and quality control are practiced.

LEVEL 5- OPTIMIZATION, DEFECT PREVENTION, & QUALITY CONTROL

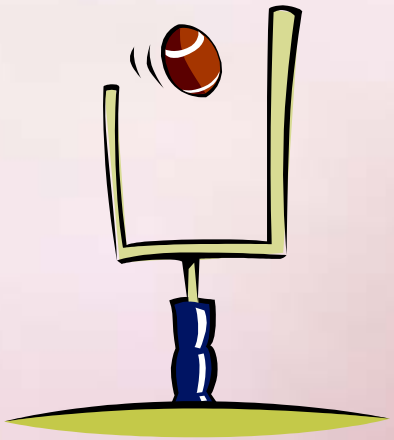
- Automated tools a primary part of testing process.
- Tools provide support for test case design and defect collection and analysis.
- Test-related metrics also have tool support.
- Process reuse is practiced.

TMM LEVEL 5 GOALS

5.1 Defect prevention.

5.2 Quality Control.

5.3 Test Process Optimization.



TMM/CMM LEVEL 5 COMPARISON

TMM Level MG	SW-CMM Level KPA
5 Test Process Optimization	**3 Organizational Process Definition (S,P)**
Quality Control	
Defect Prevention	**4 Quantitative Process Management (S,P)**
Test Organization	
	5 Defect prevention (P)
	Technology Change Management (S,P)
	Process Change Management (S,P)
MG, Maturity Goal	KPA, Key Process Area; (S), Supporting role; (P), Parallel role

TMM/CMMI LEVEL 5 COMPARISON

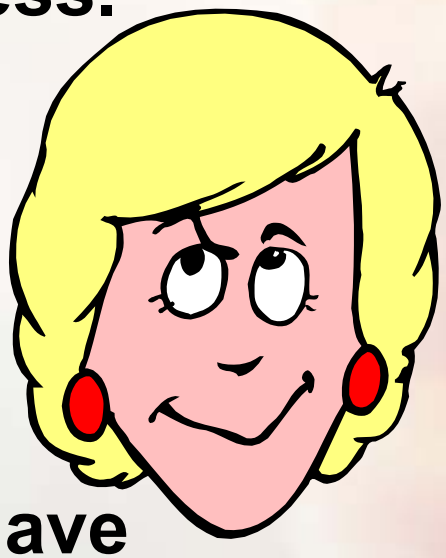
TMM Level MG	CMMI-SE/SW Level KPA
5 Test Process Optimization	**3 Organizational Process Definition (S,P)**
Quality Control	
Defect Prevention	**4 Quantitative Project Management (S)**
Test Organization	**Organizational Process Performance (S,P)**
	5 Organizational Innovation & Deployment (S)
	Causal Analysis & Resolution (P)
MG, Maturity Goal	KPA, Key Process Area; (S), Supporting role; (P), Parallel role

TMM/ISO LEVEL 5 COMPARISON

TMM Level	ISO-9001 Areas	ISO/IEC 12207 Areas
5	4.14 Defect Prevention	7.1 Management Process
		7.2 Infrastructure Process
		7.3 Improvement Process

HOW DO I USE IT?

- Secure management support to perform the assessment.
- Assess your current testing process.
- Document your current maturity level.
- Develop and implement an improvement plan.
- Repeat the assessment to demonstrate that improvements have been made.

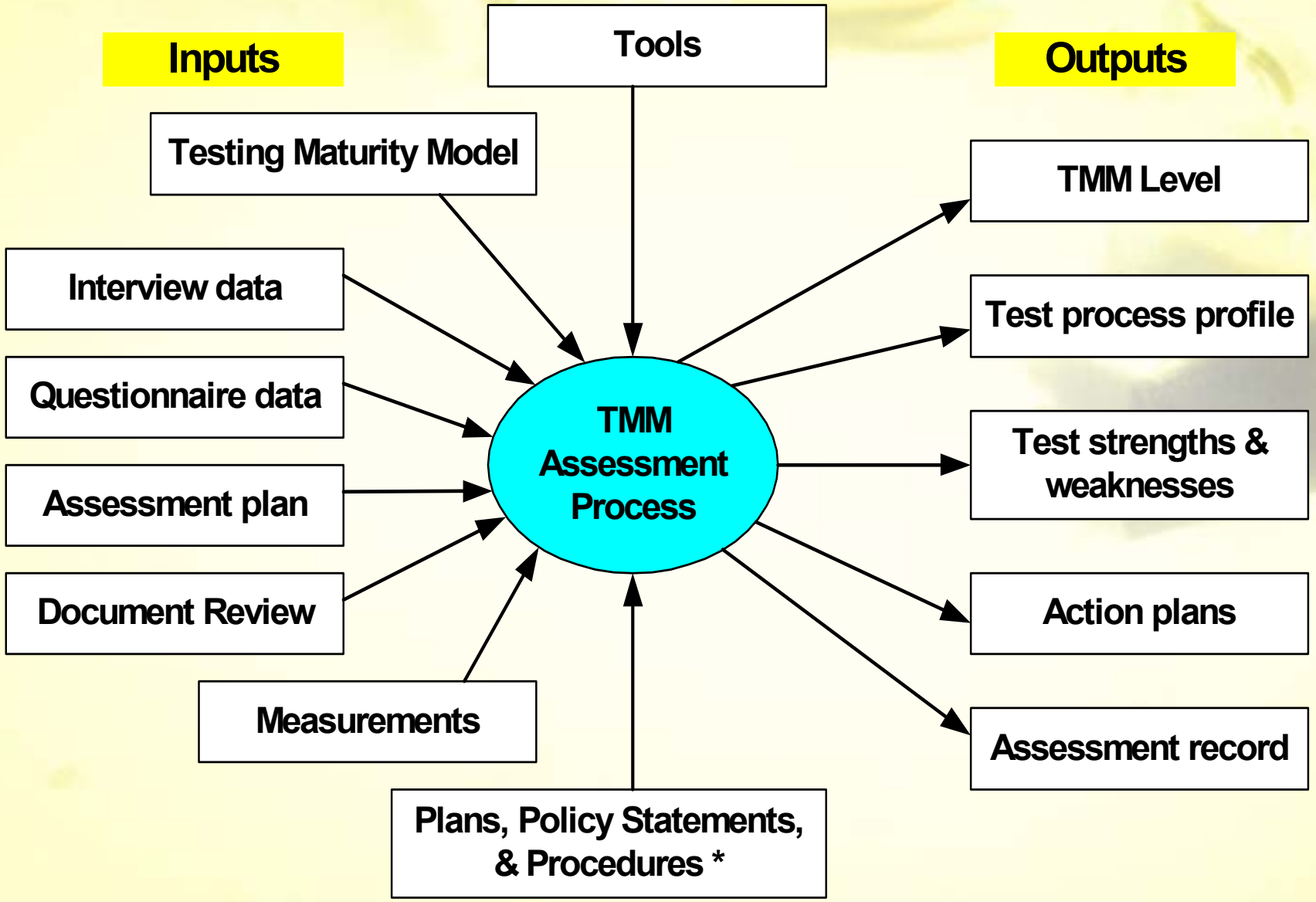


CAN WE ASSESS OUR MATURITY ON OUR OWN?

- YES, but it might be best to hire a consultant to lead you through it the first time.
- In order for the process to be successful, the organization must feel ownership.
- You may want to have an independent assessment to validate your findings.

WHAT WILL THE ASSESSMENT ACCOMPLISH?

- Baseline the current testing maturity.
- Identify testing processes that need improvement.
- Identify testing processes that could be adopted company-wide.
- Provide documentation to support the findings to management.


Inputs
Tools
Outputs
Testing Maturity Model
Interview data
Questionnaire data
Assessment plan
Document Review
Measurements
Plans, Policy Statements, & Procedures *
TMM Assessment Process
TMM Level
Test process profile
Test strengths & weaknesses
Action plans
Assessment record

* PLANS, POLICIES & PROCEDURES

- Test
- Quality Assurance
- Configuration Management
- Training
- Project Management
- Review & Inspection
- Process Improvement

WHAT TOOLS WILL BE USED IN THE ASSESSMENT?

- Presentations by organizations being assessed.
- Questionnaire.
- Personal Interviews.
- Document reviews.
- Documenting the current testing process.

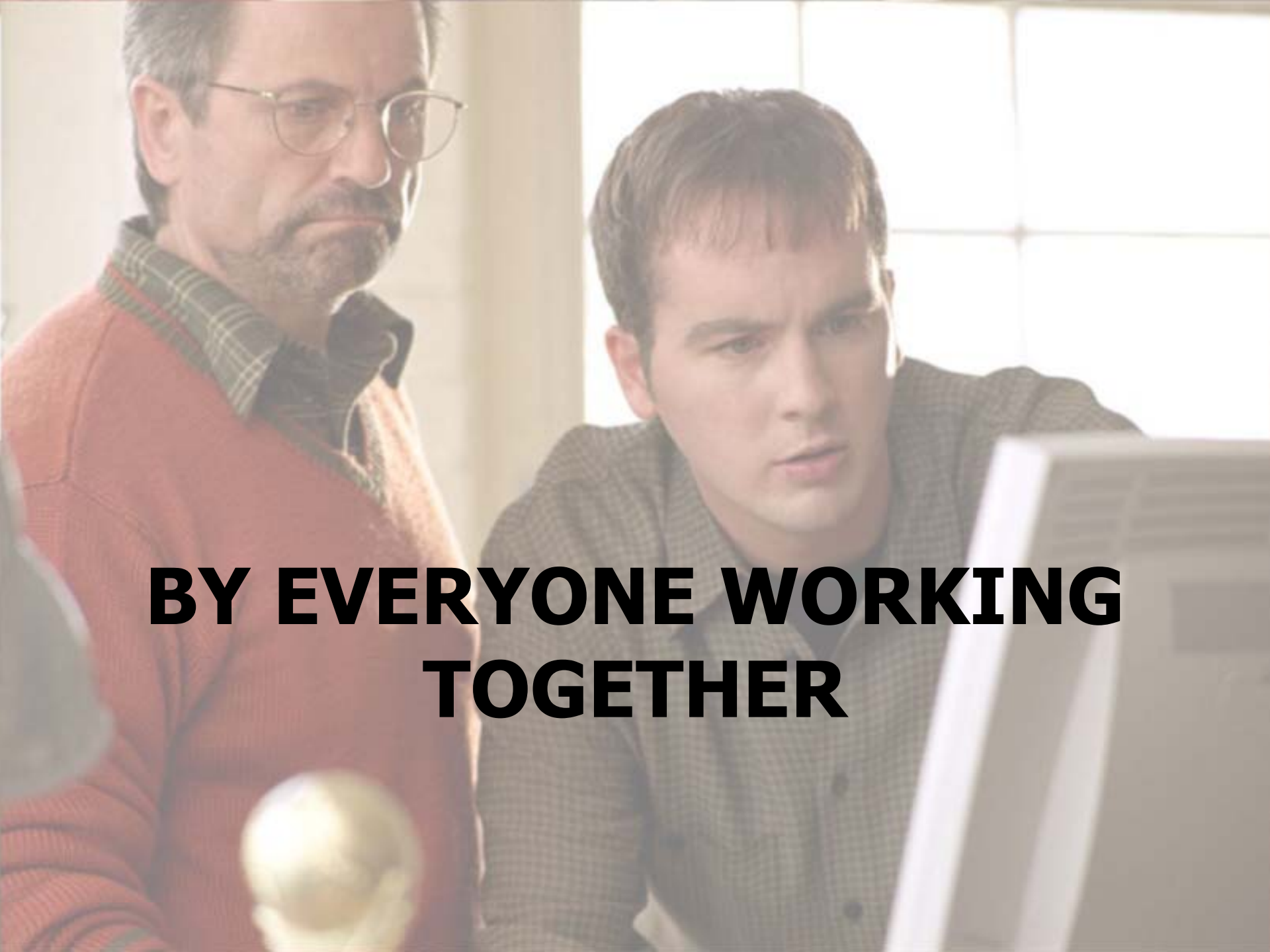
TEST MATURITY MODEL REVIEW

- Establishes a baseline for the current level of testing maturity.
- Highlights any inconsistencies between believed level of maturity and actual maturity.
- Provides a roadmap for test process improvement.


CONSIDER USING A
TESTING MATRUITY MODEL
TO IMPROVE YOUR
TESTING PROCESS.


IT IS A LONG ROAD TO
SUCCESSFUL CHANGE!


YOU SUCCEED BY TAKING
IT ONE STEP AT A TIME!


BY EVERYONE WORKING
TOGETHER


YOU CAN SOAR TO NEW HEIGHTS!

FYI

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