

Test Process Improvement (TPI®)

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Discussion Outline

- **Objectives of TPI**
- **Important elements of the TPI**
- **Assessment process**
- **Questions & Answers**

Objectives



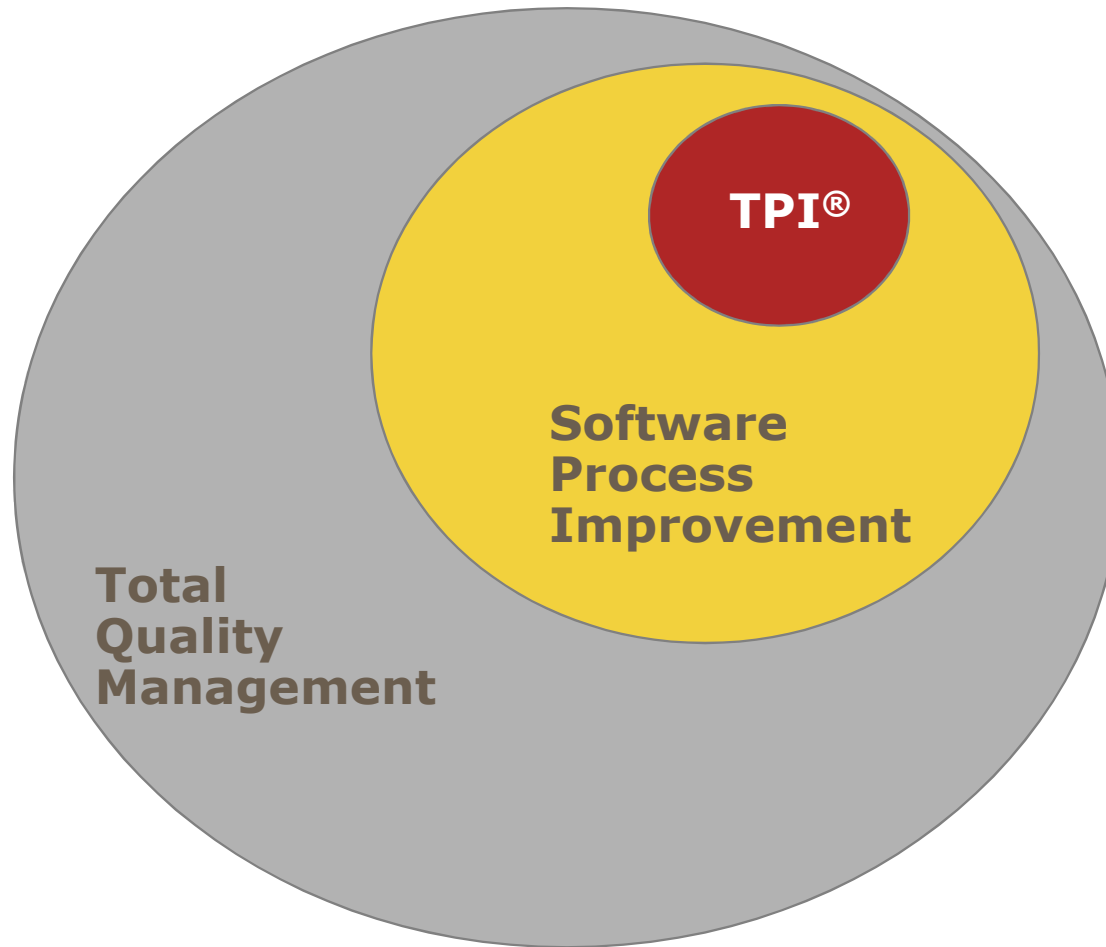
Test Process Improvement (TPI®)

Provides a model for continuous improvement of the quality and the efficiency of the testing process, related to the output of the total software process

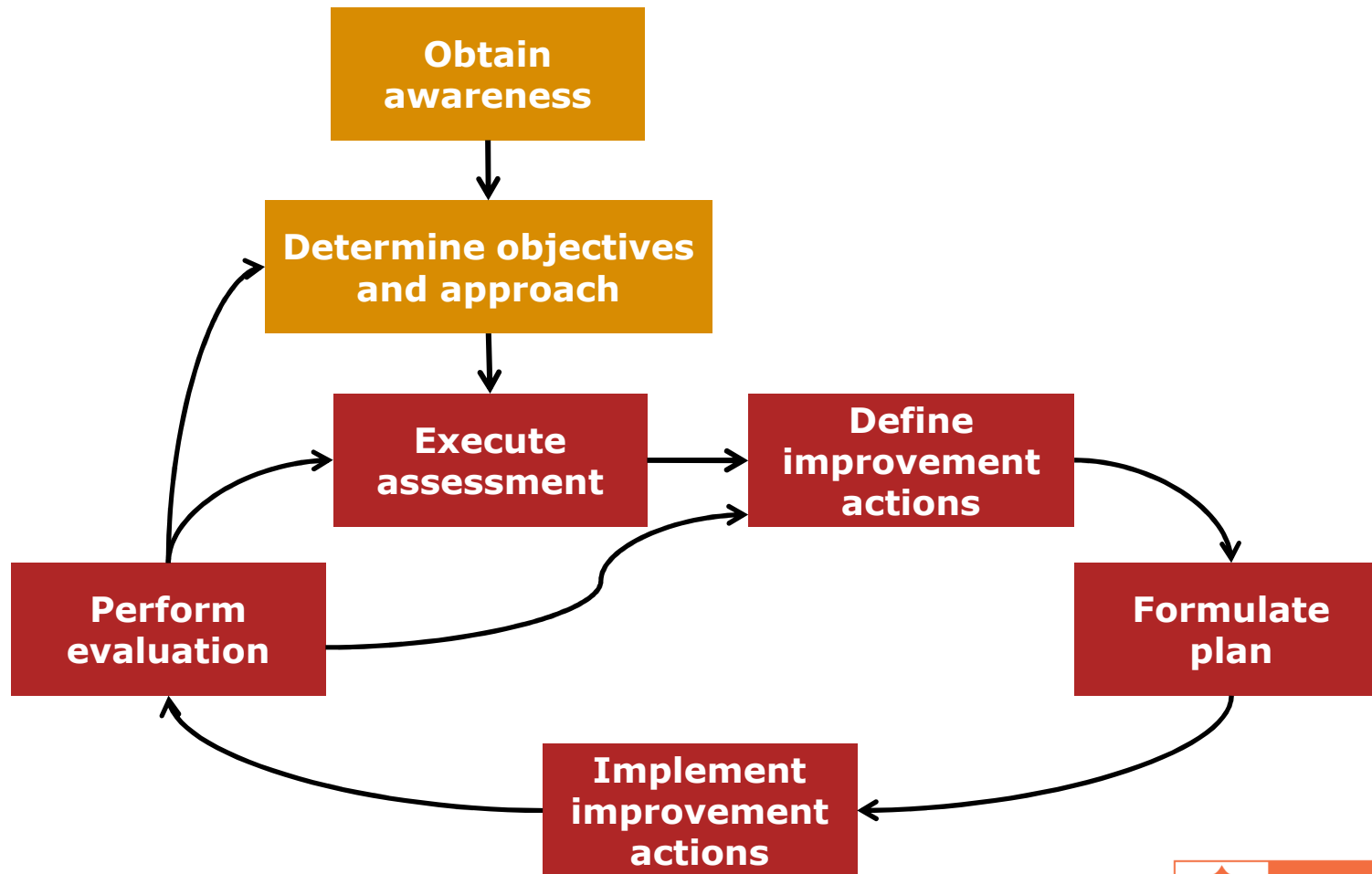
- Provides model to assess maturity
- Assesses effectiveness and efficiency of testing in the organization
 - > Quality → Insight/Coverage/Control/Timeliness
 - > Costs → Cheaper
 - > Time → Faster



Positioning and scope of TPI



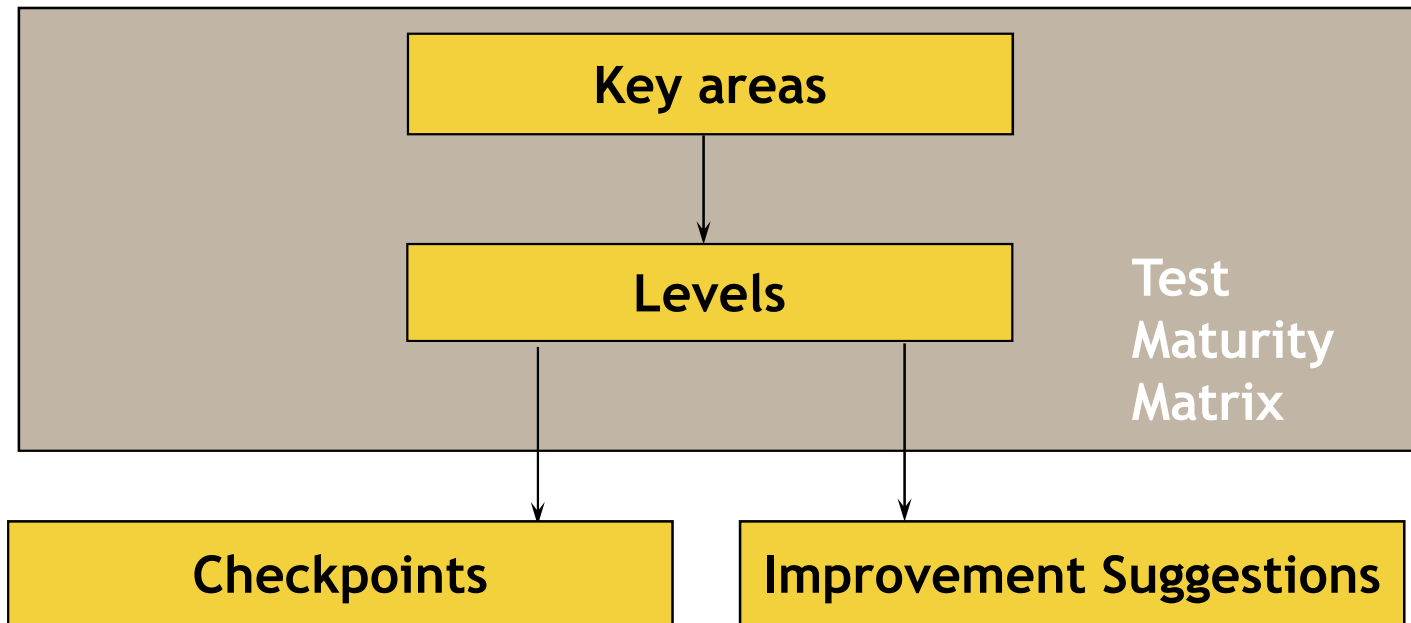
Application of the TPI Model



Elements of TPI



The TPI[®] model



Key Areas

- 1.** Test strategy
- 2.** Life-cycle model
- 3.** Moment of involvement
- 4.** Estimating and planning
- 5.** Test specification techniques
- 6.** Static test techniques
- 7.** Metrics
- 8.** Test automation
- 9.** Test environment
- 10.** Office environment
- 11.** Commitment and motivation
- 12.** Testing functions and training
- 13.** Scope of methodology
- 14.** Communication
- 15.** Reporting
- 16.** Defect management
- 17.** Testware management
- 18.** Test process management
- 19.** Evaluation
- 20.** Low-level testing

Levels

- **There are four possible levels for each key area**
 - > **A, B, C, D**
 - > **Some key areas may have less than 4**
 - > **A Lowest, D Highest**
 - > **If not an A, then not at all**
- **Higher level reflects achievements in terms of faster, cheaper, and/or better**
- **Assessed through Yes/No for each Checkpoint**

Levels - Example: Test Strategy

Level A	Single high-level test
Level B	Combined strategy for high-level tests
Level C	Combined strategy for high-level and low-level tests or evaluation
Level D	Combined strategy for all test levels and evaluation

Test Maturity Matrix

Key Areas	Key area / Scale	0	1	2	3	4	5	6	7	8	9	10	11	12	13
	1	Test strategy		A					B				C		D
2	Life-cycle model		A			B									
3	Moment of involvement			A				B				C		D	
4	Estimating and planning				A							B			
5	Test specification techniques		A		B										
6	Static test techniques					A		B							
7	Metrics						A			B			C		D
8	Test automation				A							C			
9	Test environment														C
10	Office environment														
11	Commitment and motivation												C		
12	Test functions and training				A			B				C			
13	Scope of methodology					A						B			C
14	Communication			A		B							C		
15	Reporting		A			B		C					D		
16	Defect management		A				B		C						
17	Testware management			A			B				C				D
18	Test process management		A		B								C		
19	Evaluation							A			B				
20	Low-level testing					A		B		C					



Test Maturity Matrix - Progression

Key Areas	Key area / Scale	0	1	2	3	4	5	6	7	8	9	10	11	12	13	
	1	Test strategy		A					B				C		D	
	2	Life-cycle model		A			B									
	3	Moment of involvement			A				B				C		D	
	4	Estimating and planning				A							B			
	5	Test specification techniques		A		B										
	6	Static test techniques					A		B							
	7	Metrics						A			B			C		D
	8	Test automation				A				B			C			
	9	Test environment				A				B						C
	10	Office environment				A										
	11	Commitment and motivation		A				B						C		
	12	Test functions and training				A			B			C				
	13	Scope of methodology											B			C
	14	Communication			A		B							C		
	15	Reporting		A			B		C					D		
	16	Defect management		A				B		C						
	17	Testware management			A			B				C				D
	18	Test process management		A		B								C		
	19	Evaluation							A			B				
20	Low-level testing					A		B		C						

Optimized

Efficient

Controlled

Project → **Organization**



Checkpoints

- **Over 200 in TPI Model – by Key Area**
- **Fixed decisions points**
- **Used to assess the level of the Key Area**
 - > **To achieve a level you must meet each checkpoint for that level**
- **Assessed through:**
 - > **Interviews**
 - > **Audits of project deliverables**
 - > **Assessment of process documentation**

Checkpoints - Example: Test Strategy

Level A	Product risk analysis performed, based on business and technical risks, operational use, and operational management.
	Differentiation of test depth, depending on risks.
	One or more test specification techniques are used, based on the required test depth.
	Strategy is considered for retests.
	Test Specification Techniques Level A is met
	Commitment and motivation Level A is met



Improvement Suggestions

- **Detailed lists to draw from in TPI model**
 - > **Each Level for each Key Area is supplied with improvement suggestions**
- **Improvement actions can be defined in terms of desired higher levels**

Improvement - Example: Test Strategy

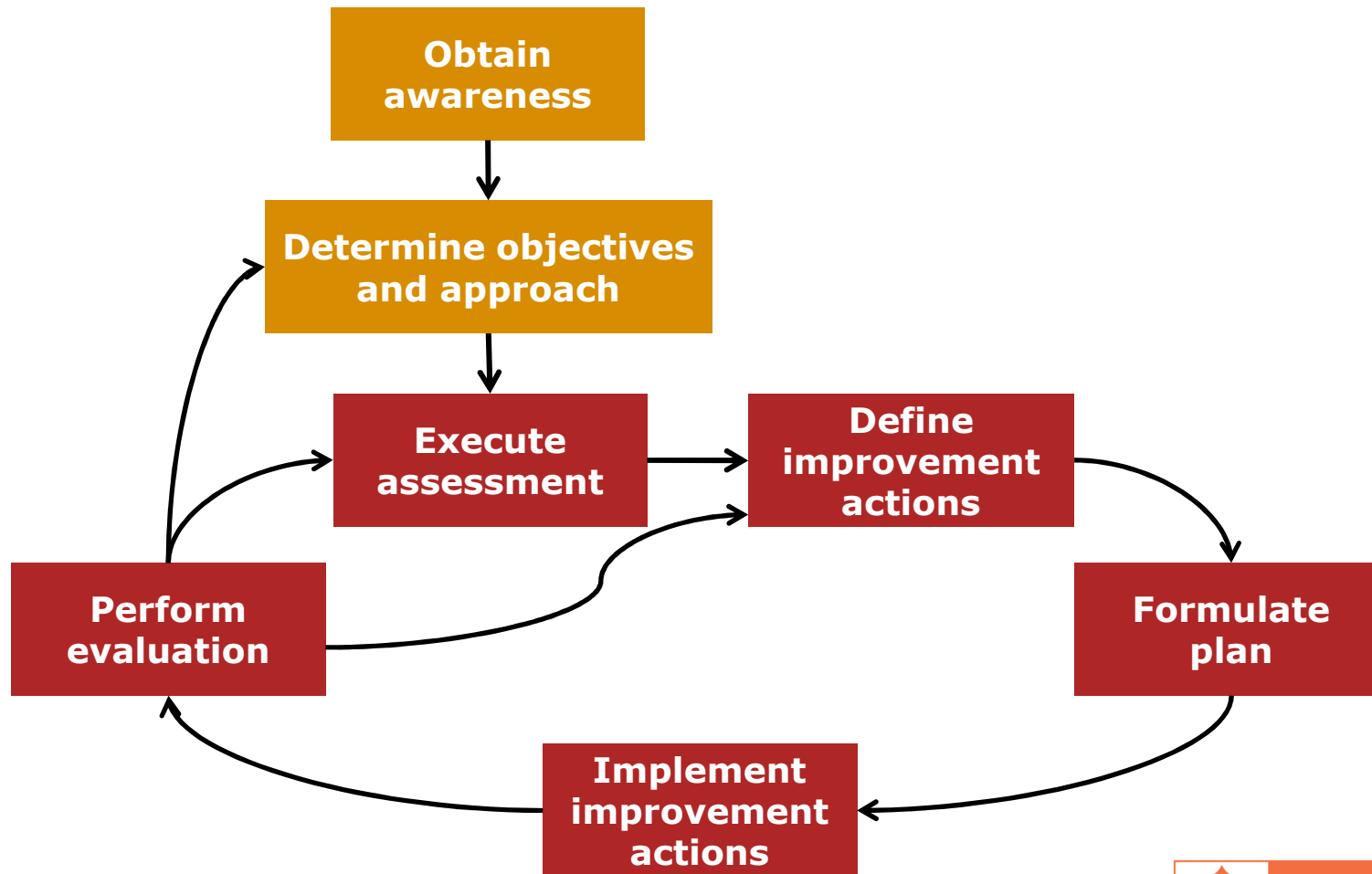
Level A	Create awareness of risks involved when a Test Strategy is not used.
	Involve various stakeholders in determining a test strategy.
	Analyze and assign relative priorities for various components, based on risk.
	Define and maintain a set of regression tests for validating future releases.
	Establish and conduct a formal Test Strategy process.
	For retesting, define criteria for deciding the appropriate level of retests.



Process of Assessment



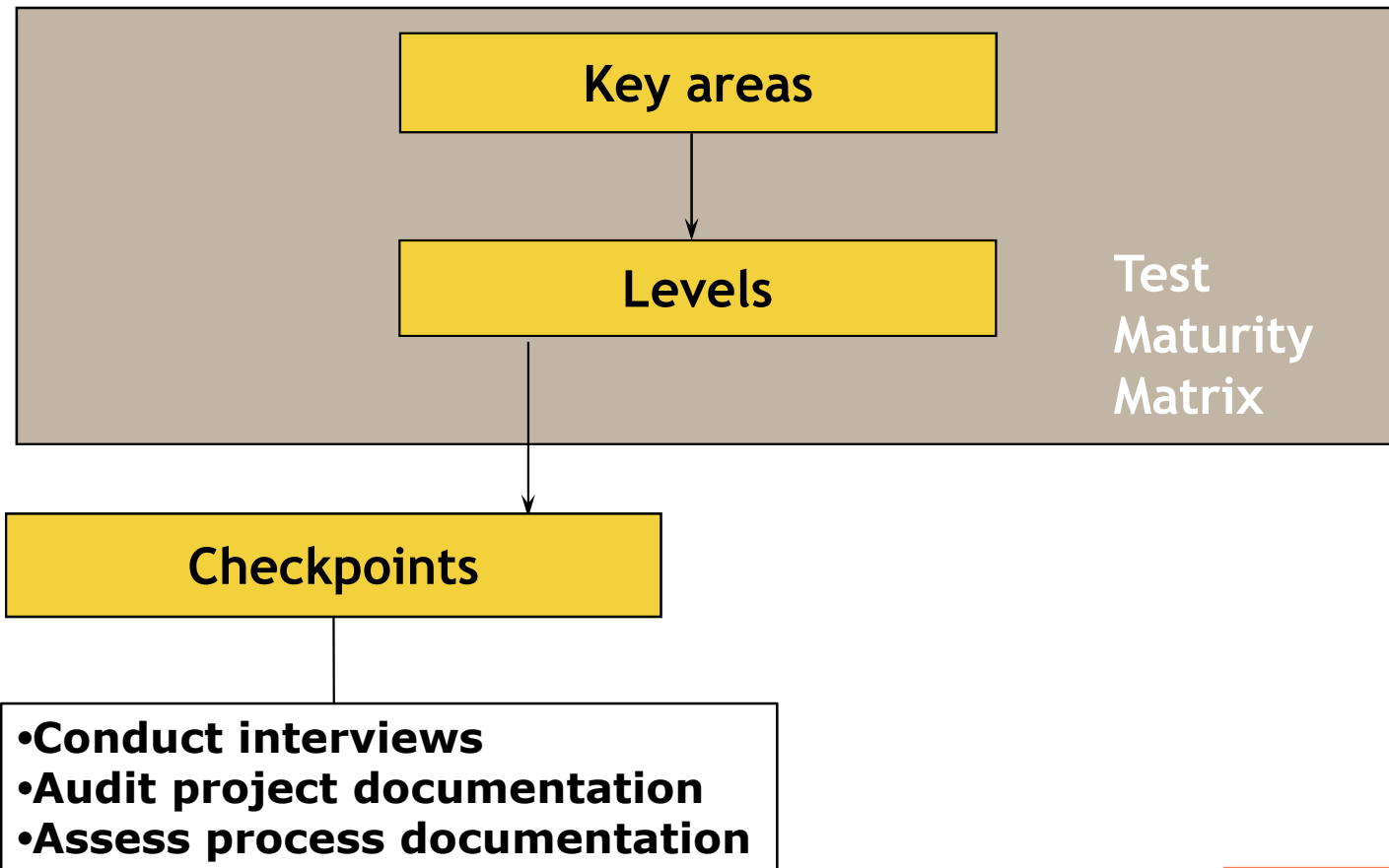
Application of the TPI Model



Determine objectives & approach

- **Agree on what should be accomplished**
- **Design the experiment**
 - > **Block or segregate by systems area**
 - > **Block for roles**
 - > **Block by project size**
- **Identify team members to be involved**
- **Identify representative projects**
- **Inventory appropriate documentation**

Execute assessment



TMM - Example - “As-is”

	Key area / Scale	0	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Test strategy		A					B				C		D	
2	Life-cycle model		A			B									
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8	Test automation				A				B			C			
9	Test environment				A				B						C
10	Office environment				A										
11	Commitment and motivation		A				B						C		
12	Test functions and training				A			B			C				
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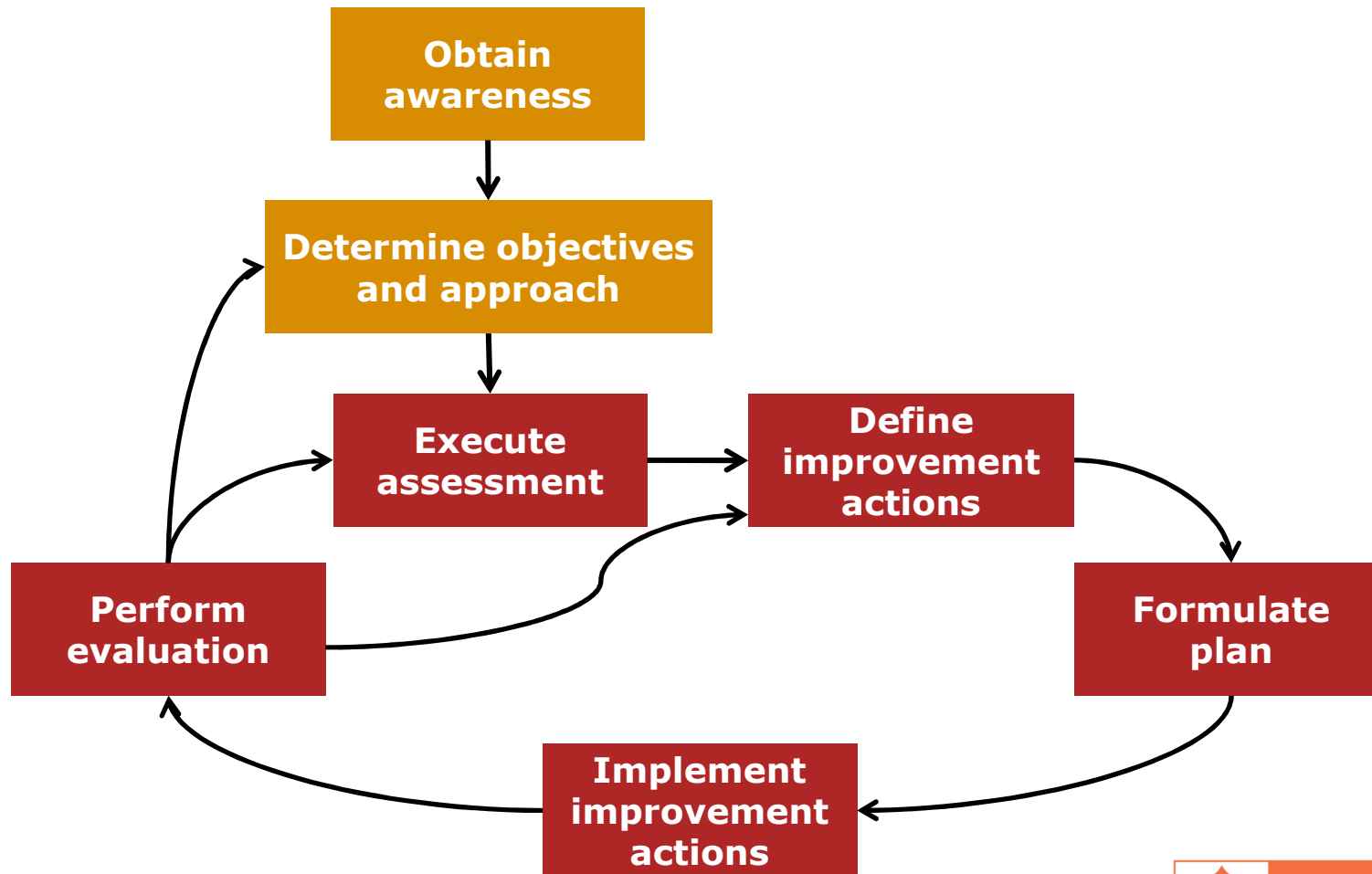
TMM - Example - “To-Be”

	Key area / Scale	0	1	2	3	4	5	6	7	8	9	10	11	12	13
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9	Test environment				A				B						C
10	Office environment				A										
11	Commitment and motivation		A				B						C		
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Define improvement actions

- **Review goals for each Key Area**
- **Use TPI improvement actions as guide**
- **Consider organization-specific needs**

Application of the TPI Model



Questions & Answers

