

What's RIGHT with the CMMI?!?

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Agenda

- **Required/Expected/Informative**
- **Mapping Practices to Goals**
- **Base/Advanced Practices**
- **One Model – Two Representations**
 - Equivalent Staging
- **Using the “Constagedeous” Approach**

Required/Expected/Informative

- **Required components**
 - Specific and generic goals
 - Achieved by planned and implemented processes
- **Expected components**
 - Specific and generic practices
 - Typical implementation to achieve a goal
 - Practices as described or acceptable alternatives
- **Informative components**
 - Everything else.

Required/Expected/Informative

- **Informative Components**

- **Subpractices**

- Detailed descriptions guiding practice interpretation and implementation

- **Generic Practice Elaborations**

- Guidance on how the generic practice applies to the Process Area

- **Typical Work Products**

- Provide example outputs from a practice.

What's (Not Quite) Right with the CMMI

Instantiation Characterization

FI	<p>Fully implemented:</p> <ol style="list-style-type: none"> 1. The direct artifact is present and judged to be appropriate; 2. At least one indirect artifact and/or affirmation exists to confirm the implementation; 3. No substantial weaknesses were noted.
LI	<p>Largely Implemented:</p> <ol style="list-style-type: none"> 1. The direct artifact is present and judged to be appropriate; 2. At least one indirect artifact and/or affirmation exists to confirm the implementation; 3. One or more weaknesses were noted.
PI	<p>Partially Implemented:</p> <ol style="list-style-type: none"> 1. The direct artifact is absent or judged to be inadequate; 2. Artifacts or affirmations suggest that some aspects of the practice are implemented; 3. Weaknesses have been documented.
NI	<p>Not Implemented:</p> <ol style="list-style-type: none"> 1. Any situation not covered above.

Are typical work products really “informative?”

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Mapping Practices to Goals - CMM

SOFTWARE PROJECT PLANNING

Goal	Commitment	Ability	Activity	Measurement	Verification
1	1, 2	1, 2, 3	9, 10, 11, 12, 15	1	1, 2, 3
2	1, 2	1, 2, 3, 4	2, 5, 6, 7, 8, 13, 14	1	1, 2, 3
3	1, 2	1, 3, 4	1, 3, 4	1	1, 2, 3

SOFTWARE PROJECT TRACKING AND OVERSIGHT

Goal	Commitment	Ability	Activity	Measurement	Verification
1	1, 2	1, 2, 3, 4, 5	1, 5, 6, 7, 8, 9, 10, 11, 12, 13	1	1, 2, 3
2	1, 2	1, 2, 3, 4, 5	2, 5, 6, 7, 8, 9, 11	1	1, 2, 3
3	1, 2	1, 2, 3, 4, 5	3, 4	1	1, 2, 3

Mapping Practices to Goals - CMMI

Practice-to-Goal Relationship Table

SG 1 Develop Customer Requirements [PA157.IG101]

- SP 1.1-1 Collect Stakeholder Needs
- SP 1.1-2 Elicit Needs
- SP 1.2-1 Develop the Customer Requirements

SG 2 Develop Product Requirements [PA157.IG103]

- SP 2.1-1 Establish Product and Product-Component Requirements
- SP 2.2-1 Allocate Product-Component Requirements
- SP 2.3-1 Identify Interface Requirements

SG 3 Analyze and Validate Requirements [PA157.IG102]

- SP 3.1-1 Establish Operational Concepts and Scenarios
- SP 3.2-1 Establish a Definition of Required Functionality
- SP 3.3-1 Analyze Requirements
- SP 3.4-3 Analyze Requirements to Achieve Balance
- SP 3.5-1 Validate Requirements
- SP 3.5-2 Validate Requirements with Comprehensive Methods

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Base/Advanced Practices

- **Base practices: associated with CL1**
- **Advanced practices: associated with CL2 & CL3**
- **Some advanced practices build on base practices, others do not**
- **There are no advanced practices at CL4 or CL5.**

Base/Advanced Practices

SP 1.1-1 Collect Stakeholder Needs

Identify and collect stakeholder needs, expectations, constraints, and interfaces for all phases of the product life cycle.

The basic activity addresses the receipt of requirements that a customer provides to define what is needed or desired. These requirements may or may not be stated in technical terms.

SP 1.1-2 Elicit Needs

Elicit stakeholder needs, expectations, constraints, and interfaces for all phases of the product life cycle.

Eliciting goes beyond collecting requirements by proactively identifying additional requirements not explicitly provided by customers. Additional requirements should address the various product life-cycle activities and their impact on the product.

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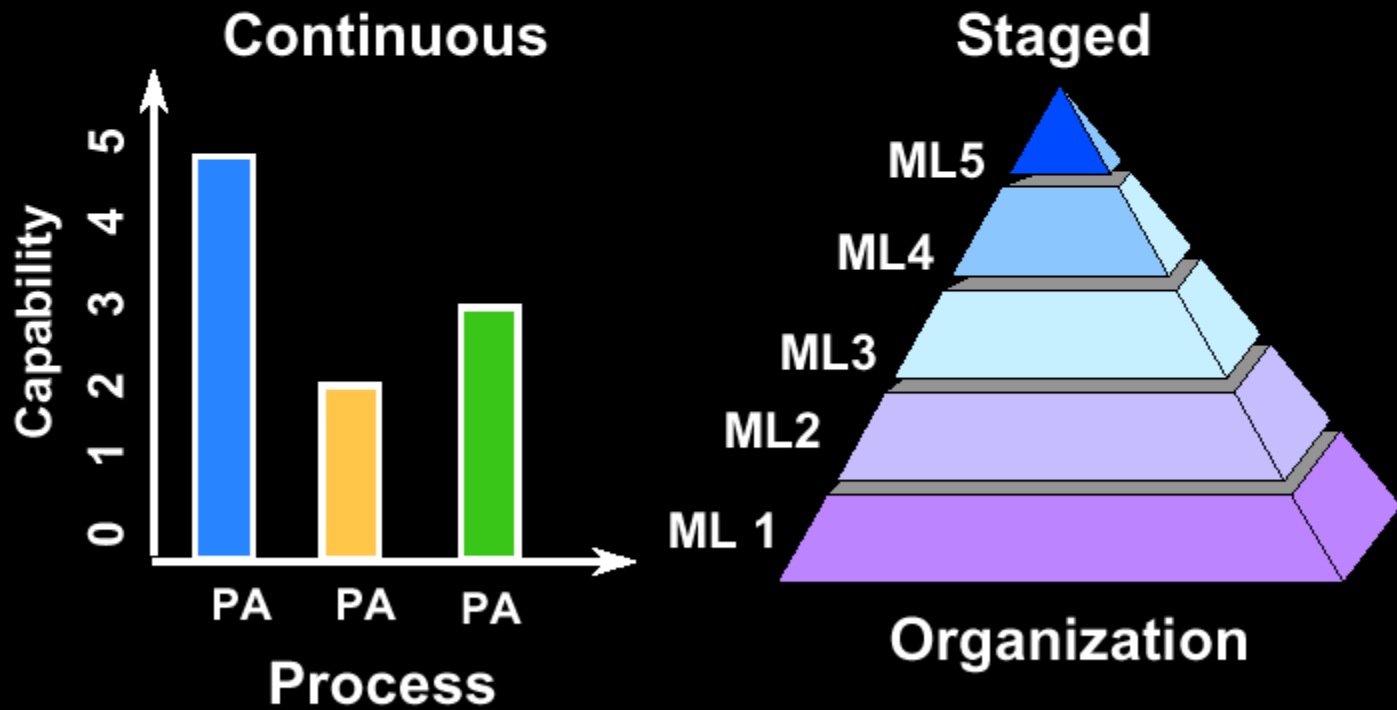
- Required/Expected/Informative
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One Model, Two Representations

- **Staged Representation**
 - Same as CMM for Software
 - Prescriptive ordering of improvement areas
 - Organizational Change Model
 - “Maturity Levels” – group of process areas
- **Continuous Representation**
 - Same as System Engineering CMM
 - Basic vs. advanced process areas
 - “Capability Levels” – each process area individually.



Comparing Model Representations



Equivalent Staging – ML2

Name	Abbr	ML	CL1	CL2	CL3	CL4	CL5
Requirements Management	REQM	2	Target Profile 2				
Measurement and Analysis	MA	2					
Project Monitoring and Control	PMC	2					
Project Planning	PP	2					
Process and Product Quality Assurance	PPQA	2					
Supplier Agreement Management	SAM	2					
Configuration Management	CM	2					

Equivalent Staging – ML3

Name	Abbr	ML	CL1	CL2	CL3	CL4	CL5
Requirements Management	REQM	2	Target Profile 2				
Measurement and Analysis	MA	2					
Project Monitoring and Control	PMC	2					
Project Planning	PP	2					
Process and Product Quality Assurance	PPQA	2					
Supplier Agreement Management	SAM	2					
Configuration Management	CM	2					
Decision Analysis and Resolution	DAR	3	Target Profile 3				
Product Integration	PI	3					
Requirements Development	RD	3					
Technical Solution	TS	3					
Validation	VAL	3					
Verification	VER	3					
Organizational Process Definition	OPD	3					
Organizational Process Focus	OPF	3					
Integrated Project Management (IPPD)	IPM	3					
Risk Management	RSKM	3					
Integrated Supplier Management	ISM	3					
Organizational Training	OT	3					
Integrated Teaming	IT	3					
Organizational Environment for Integration	OEI	3					

Staged Equivalence - 1

Process Mgt:	Staged at ML:	Assessed at Capability Level:	Engineering:	Staged at ML:	Assessed at Capability Level:
OPF	3	4	ReqM	2	5
OPD	3	2	RD	3	3
OT	3	2	TS	3	3
			PI	3	2
Project Mgt:			Ver	3	1
PP	2	3	Val	3	0
PMC	2	4			
SAM	2	2	Support:		
IPM	3	0	CM	2	3
RskM	3	1	PPQA	2	4
IT	3	2	MA	2	2
ISM	3	4	DAR	3	1
			OEI	3	0

Staged Equivalence - 2

Process Mgt:	Staged at ML:	Assessed at Capability Level:	Engineering:	Staged at ML:	Assessed at Capability Level:
OPF	3	4	ReqM	2	5
OPD	3	2	RD	3	3
OT	3	2	TS	3	3
			PI	3	2
Project Mgt:			Ver	3	1
PP	2	3	Val	3	0
PMC	2	4			
SAM	2	2	Support:		
IPM	3	0	CM	2	3
RskM	3	1	PPQA	2	4
IT	3	2	MA	2	1
ISM	3	4	DAR	3	1
			OEI	3	0

Staged Equivalence - 3

Process Mgt:	Staged at ML:	Assessed at Capability Level:	Engineering:	Staged at ML:	Assessed at Capability Level:
OPF	3	4	RM	2	5
OPD	3	3	RD	3	3
OT	3	3	TS	3	3
			PI	3	4
Project Mgt:			Ver	3	3
PP	2	3	Val	3	3
PMC	2	4			
SAM	2	2	Support:		
IPM	3	3	CM	2	3
RskM	3	3	PPQA	2	4
IT	3	4	MA	2	3
ISM	3	3	DAR	3	3
			OEI	3	3

Staged Equivalence - 4

Process Mgt:	Staged at ML:	Assessed at Capability Level:	Engineering:	Staged at ML:	Assessed at Capability Level:
OPF	3	3	RM	2	3
OPD	3	3	RD	3	3
OT	3	3	TS	3	3
			PI	3	3
Project Mgt:			Ver	3	4
PP	2	3	Val	3	4
PMC	2	3			
SAM	2	3			
IPM	3	3	Support:		
RskM	3	4	CM	2	3
IT	3	3	PPQA	2	4
ISM	3	3	MA	2	3
			DAR	3	3
			OEI	3	3

Staged Equivalence - 5

Process Mgt:	Staged at ML:	Assessed at Capability Level:	Engineering:	Staged at ML:	Assessed at Capability Level:
OPF	3	0	RM	2	2
OPD	3	0	RD	3	0
OT	3	0	TS	3	0
			PI	3	0
Project Mgt:			Ver	3	0
PP	2	2	Val	3	0
PMC	2	2			
SAM	2	2			
IPM	3	0	Support:		
RskM	3	0	CM	2	2
IT	3	0	PPQA	2	2
ISM	3	0	MA	2	2
			DAR	3	0
			OEI	3	0

Staged Equivalence - 6

Process Mgt:	Staged at ML:	Assessed at Capability Level:	Engineering:	Staged at ML:	Assessed at Capability Level:
OPF	3	2	RM	2	2
OPD	3	1	RD	3	1
OT	3	0	TS	3	1
			PI	3	1
Project Mgt:			Ver	3	2
PP	2	2	Val	3	2
PMC	2	2			
SAM	2	2			
IPM	3	0	Support:		
RskM	3	1	CM	2	2
IT	3	0	PPQA	2	2
ISM	3	0	MA	2	2
			DAR	3	0
			OEI	3	0

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Using the Constagedeous Approach

- **Staged Representation**
 - Management and customers love it: 1 simple number
 - Organizational Change Model
- **Continuous Representation**
 - Different organizations have different needs/pain
 - Finer level of planning and tracking improvements
 - There are 14 process areas at maturity level 3!
- **Hybrid Approach**
 - Use Staged to establish long range goal
 - Used Continuous to plan, execute, and track

Maturity Level 2 Example

	Staged at	1/1/03						
	Maturity	MSA	1Q04	2Q04		3Q04	4Q04	
	Level	Act	Plan	Plan	Act	Plan	Plan	Act
Project Mgt:								
PP	2	2	2	2		2	2	
PMC	2	1	1	2		2	2	
SAM	2	0	1	1		2	2	
Engineering:								
RM	2	1	2	2		2	2	
Support:								
CM	2	2	2	2		2	2	
PPQA	2	2	2	2		2	2	
MA	2	0	0	1		1	2	

Maturity Level 3 Example

	Staged at	1/1/04												
	Maturity	MSA	1Q04	2Q04	3Q04	4Q04	1Q05	2Q05	3Q05	4Q05				
	Level	Act	Plan	Plan	Act	Plan	Plan	Act	Plan	Plan	Act	Plan	Plan	Act
Process Mgt:														
OPF	3	1	1	2		2		2	3		3	3		
OPD	3	0	1	1		2		2	2		3	3		
OT	3	1	1	1		2		2	2		3	3		
Project Mgt:														
PP	2	2	2	2		3		3	3		3	3		
PMC	2	1	1	2		2		3	3		3	3		
SAM	2	0	1	1		2		2	3		3	3		
IPM	3	0	0	0		1		1	1		2	3		
RskM	3	1	1	1		1		1	2		2	3		
ISM	3	0	0	0		1		1	2		2	3		
Engineering:														
RM	2	1	2	2		2		3	3		3	3		
RD	3	1	2	2		2		2	3		3	3		
TS	3	1	1	1		1		1	2		2	3		
PI	3	1	1	1		1		2	2		2	3		
Ver	3	1	1	1		1		2	2		3	3		
Val	3	0	0	1		1		2	2		3	3		
Support:														
CM	2	2	2	2		2		3	3		3	3		
PPQA	2	2	2	2		3		3	3		3	3		
MA	2	0	0	1		2		2	2		3	3		
DAR	3	0	0	0		1		1	2		2	3		

Questions?

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