



Over, Under, Around, and Through: Using the CMMI Continuous and Staged Representations Together to Optimize Process Improvement

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Report Documentation Page

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Some Questions

How many of you

- feel mostly positive about the CMMI?
- feel mostly negative about the CMMI?
- aren't sure how you feel about the CMMI?
- think it's way too thick?
- think it's not nearly thick enough?
- are curious about all the different models?
(SW, SE/SW, SE/SW/IPPD, SE/SW/IPPD/SS)
- aren't sure why there are two representations?
(Continuous and Staged)



A Note on Perspective

Long-time fan/advocate of CMM-based SPI.

Primary knowledge and experience is in SPI implementation.

Primary work has been with SW-CMM (staged model).

Pre-CMMI exposure to a continuous model has been relatively limited.

Not involved in CMMI development.



Basic Information

Multiple models:

- SW
- SE-SW
- SE-SW-IPPD
- SE-SW-IPPD-SS

Two representations:

- Continuous
- Staged

SE	Systems Engineering
SW	Software Engineering
IPPD	Integrated Product and Process Development
SS	Supplier Sourcing



Representation Advantages-Staged

- Provides big picture view that helps establish long-term vision
- High level priorities easier to establish
- Helps with planning and sequencing larger bodies of work
- Identifies relationships and dependencies relatively easily
- Clearly identifies major accomplishments



Representation Advantages-Continuous

- Provides greater flexibility in sequencing and priorities
- Establishes life cycle view of process area improvement
- Makes early progress and accomplishment more evident
- Lends visibility to conducting more detailed aspects of work
- Provides multiple ways for measuring and representing success



Representation Disadvantages-Staged

- Great temptation to use maturity levels as goals
- Lacks clearly visible granularity
- Large bodies of work (MLs) require substantial time to complete
- Difficult to show [early] progress and accomplishment
- Perception of failure if maturity level isn't reached



Representation Disadvantages-Continuous

- Relationships and dependencies more difficult to identify
- More difficult to establish priorities
- Breadth of work can be overwhelming and confusing
- Major accomplishments not clear



Premises of this Presentation

The availability of two representations is one of the most powerful and useful features of the CMMI.

The continuous and staged representations, used together, provide much more than either representation does by itself.

Those who use both representations to guide their work are likely to be more successful than those who use only one.



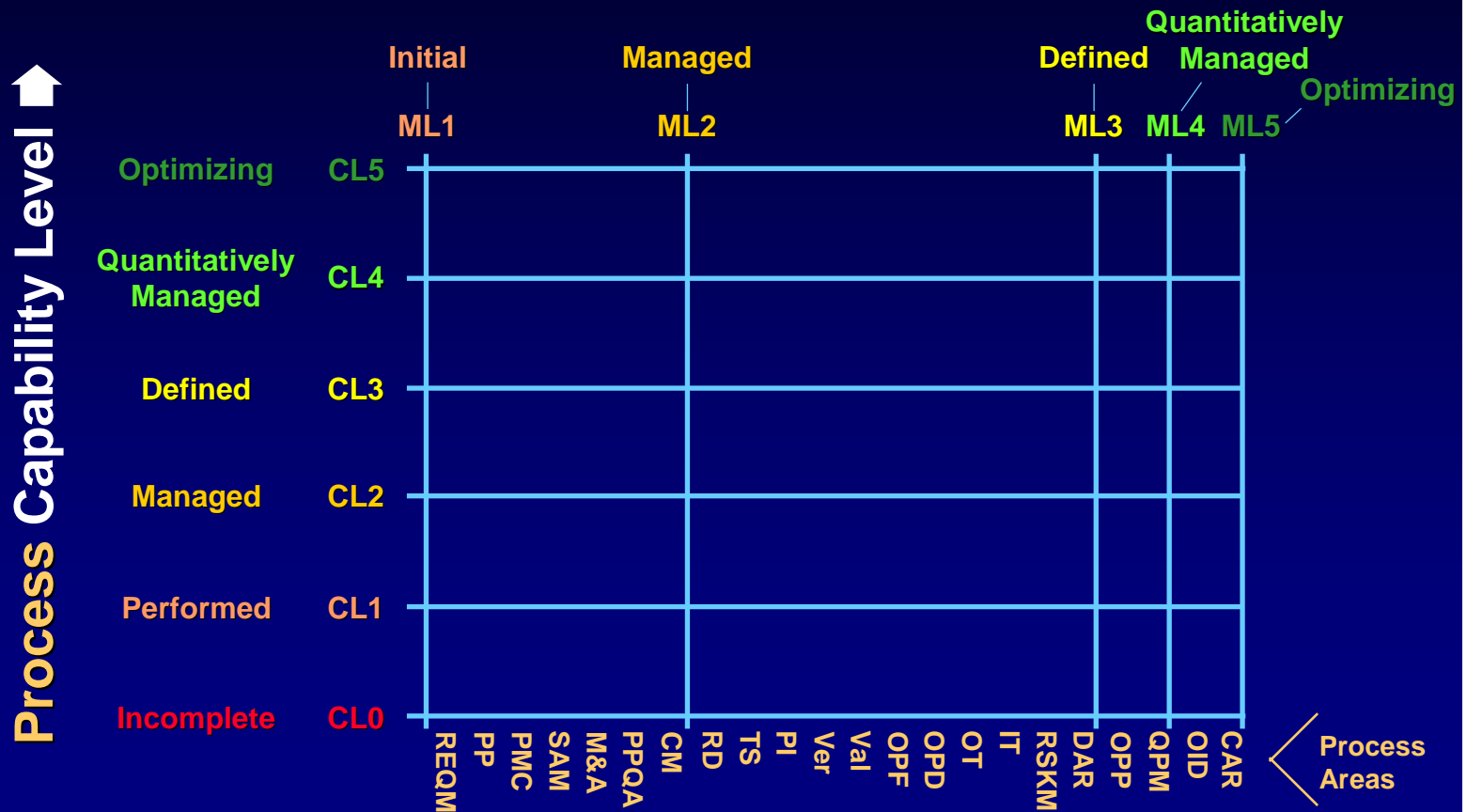
Staged Focus



The CMMI Structure

Staged Focus

Organizational Maturity Level →

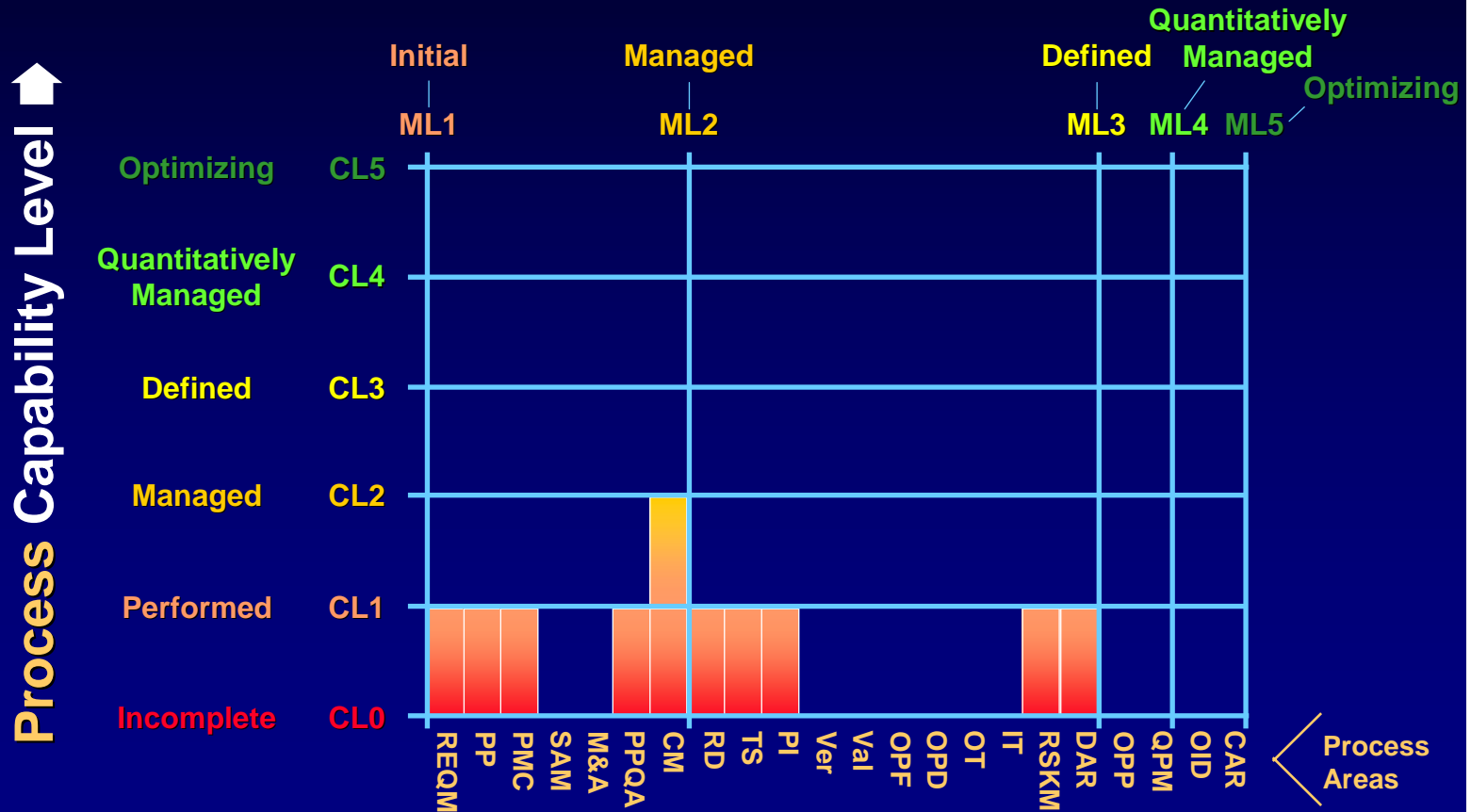




A Typical Starting Point

Staged Focus

Organizational Maturity Level →

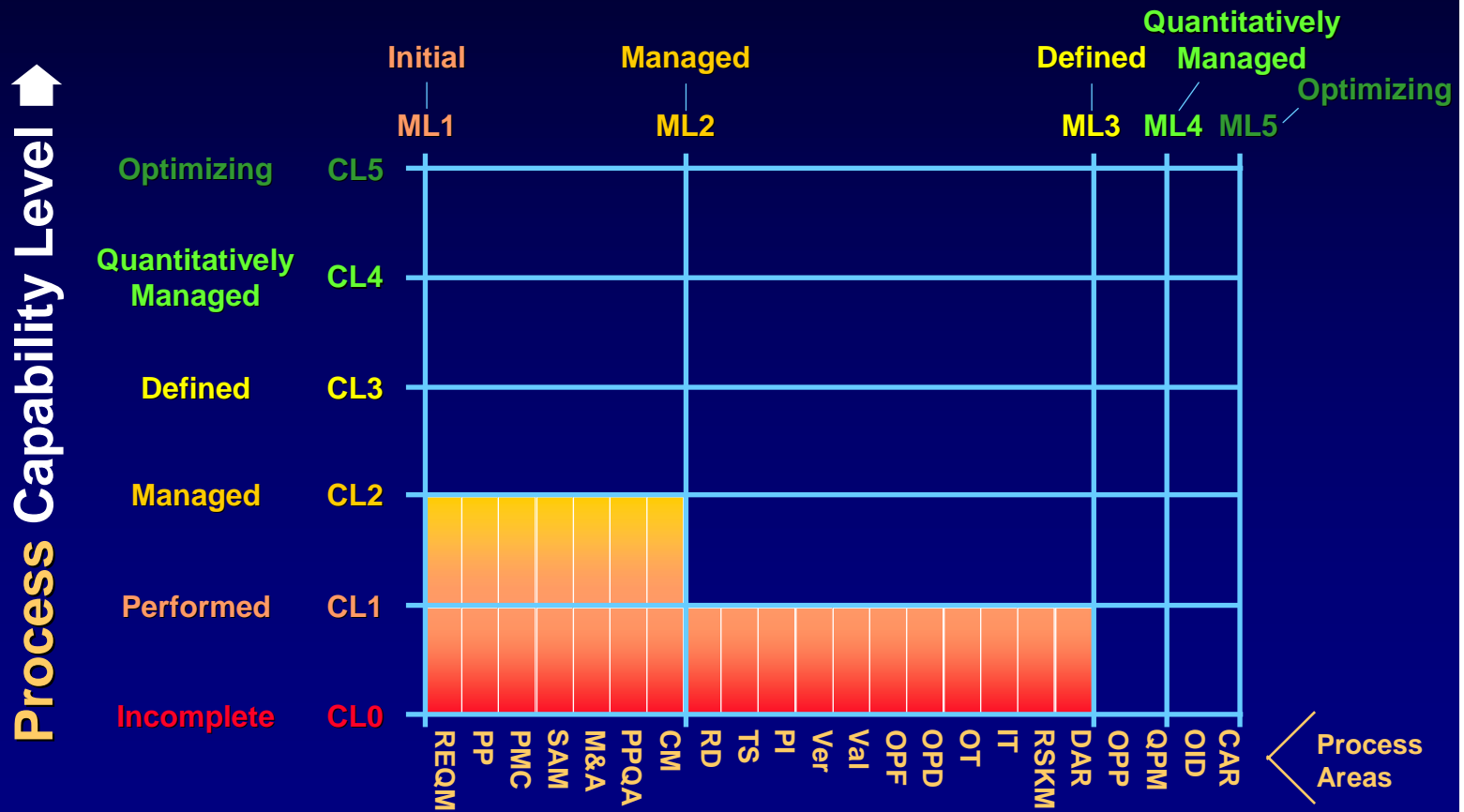




Moving to ML-2

Staged Focus

Organizational Maturity Level →

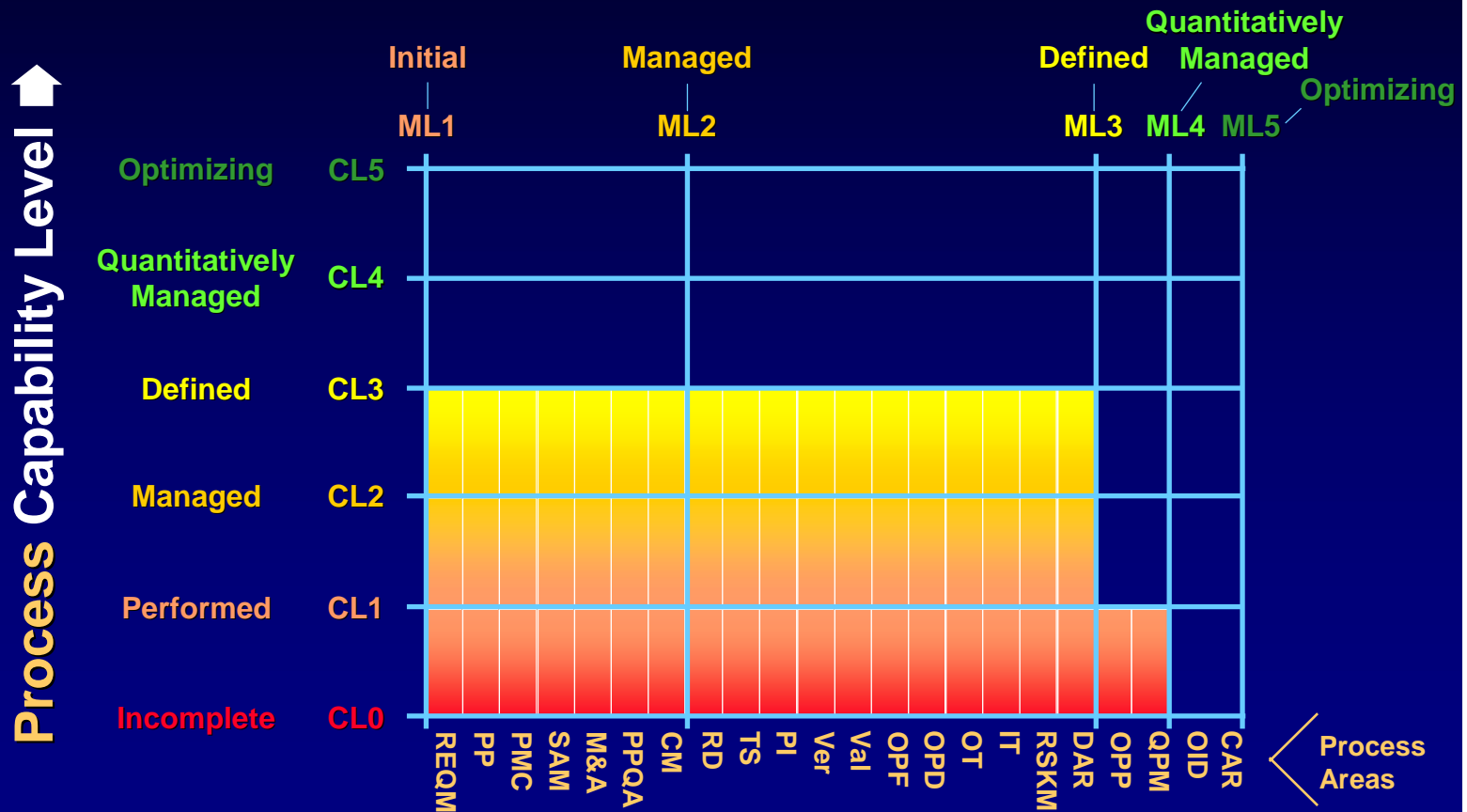




Moving to ML-3

Staged Focus

Organizational Maturity Level →

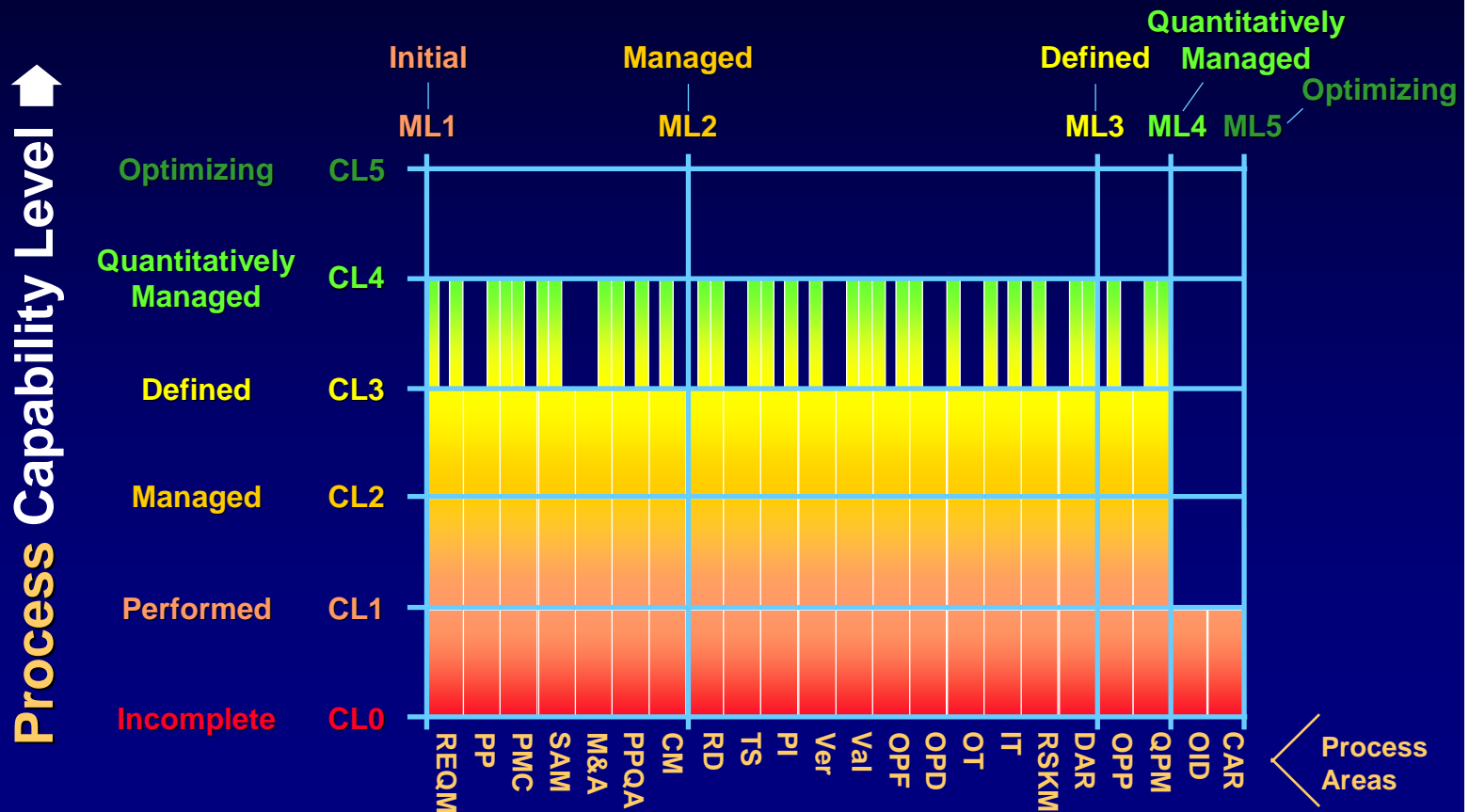




Moving to ML-4

Staged Focus

Organizational Maturity Level →

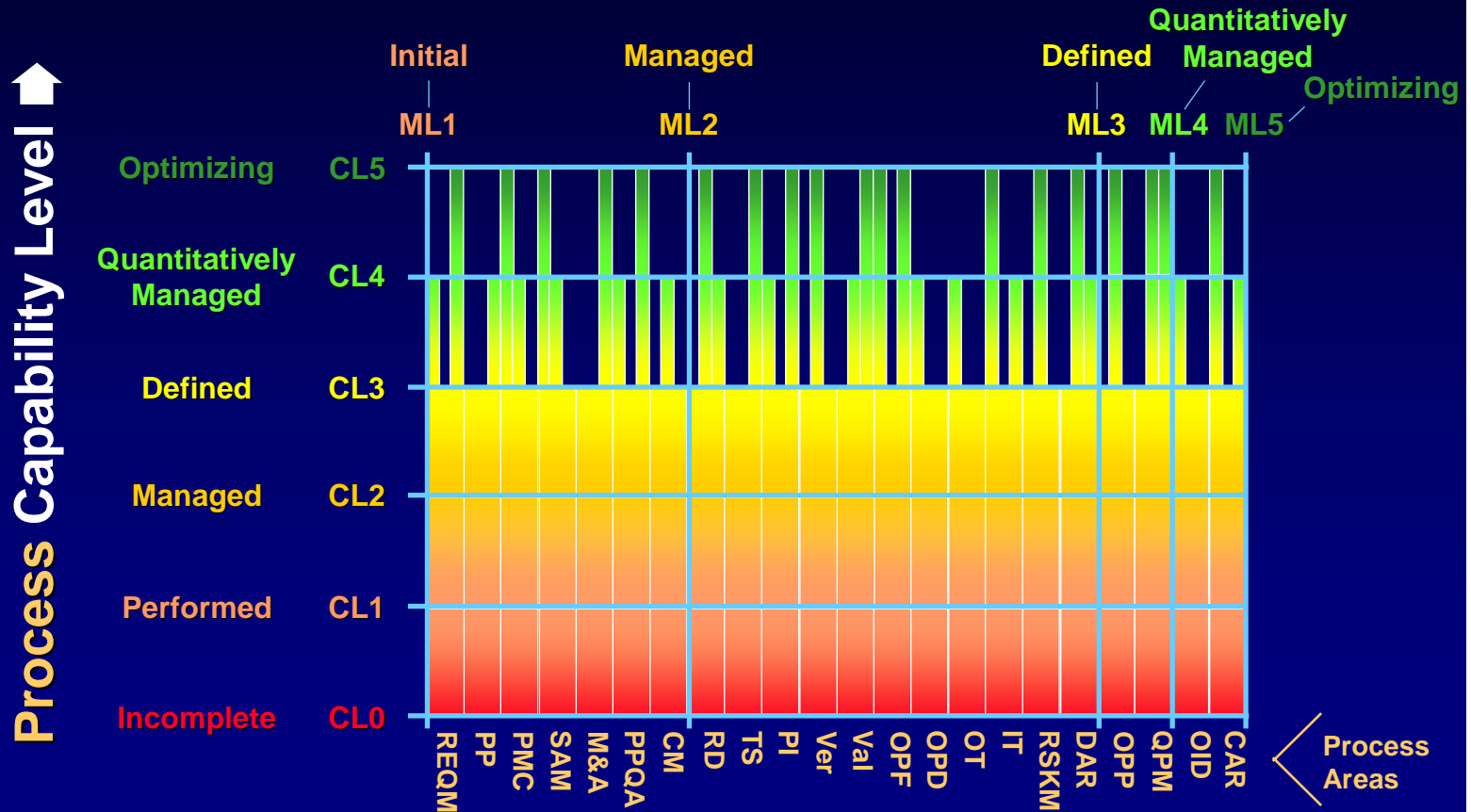




Moving to ML-5

Staged Focus

Organizational Maturity Level →





Staged Supported by Continuous

In summary, the continuous representation provides additional de facto granularity in support of a staged-focus initiative:

- as a guide for detailed “tactical” planning
- to demonstrate intermediate progress short of “PA” or “ML”
- for allaying concerns and building support among key stakeholders



Continuous Focus

Thinking It Through



The CMMI Structure

Continuous Focus

Process Areas

Process Capability Level ↑

		Process Management	Project Management	Engineering	Support
Optimizing	CL5				
Quantitatively Managed	CL4				
Defined	CL3				
Managed	CL2				
Performed	CL1				
Incomplete	CL0	OPF OPD OT OPP OID	pp PMC SAM IT	RSKM QPM REQM RD TS PI Ver Val	CM PPQA M&A DAR CAR



An Approach for the Uninformed

Continuous Focus

Process Capability Level ↑

Process Areas

		Process Management				Project Management				Engineering				Support									
Optimizing	CL5																						
Quantitatively Managed	CL4																						
Defined	CL3																						
Managed	CL2																						
Performed	CL1																						
Incomplete	CL0																						
		OPF	OPD	OT	OPP	OID	pp	PMC	SAM	IT	RSKM	QPM	REQM	RD	TS	PI	Ver	Val	CM	PPQA	M&A	DAR	CAR



Some Observations on Structure

Continuous Focus

Process Areas

Process Capability Level ↑

		Process Management	Project Management	Engineering	Support
Optimizing	CL5				
Quantitatively Managed	CL4				
Defined	CL3				
Managed	CL2				
Performed	CL1				
Incomplete	CL0				
		OPF	pp	REQM	CM
		OPD	PMC	RD	PPQA
		OT	SAM	TS	M&A
		OPP	IT	PI	DAR
		OID	RSKM	Ver	CAR
			QPM	Val	
Basic/Advanced		B B B	B B B		B B B
Maturity Level		3 3 3	2 2 2		2 2 2
		A A	A A		A A
		4 5	3 3		3 5



Thinking It Through₁

Continuous Focus

Process Areas

Process Capability Level ↑

		Process Management	Project Management	Engineering	Support
Optimizing	CL5				
Quantitatively Managed	CL4				
Defined	CL3				
Managed	CL2		PP, PM, SAM	REQM	CM, M&A
Performed	CL1		PP, PM, SAM	REQM	CM, M&A
Incomplete	CL0		PP, PM, SAM	REQM	CM, M&A
		OPF, OPD, OT, OPP, OIID	PP, PM, SAM	IT, RSKM, QPM, REQM, RD, TS, PI, Ver, Val	CM, PPQA, M&A, DAR, CAR
Basic/Advanced		B B B A A	B B B A A A		B B B A A
Maturity Level		3 3 3 4 5	2 2 2 3 3 4	2 3 3 3 3 3	2 2 2 3 5



Thinking It Through₂

Continuous Focus

Process Capability Level ↑

Process Areas

		Process Management	Project Management	Engineering	Support
Optimizing	CL5				
Quantitatively Managed	CL4				
Defined	CL3				
Managed	CL2				
Performed	CL1				
Incomplete	CL0				
		OPF OPD OT OPP OID	pp PMC SAM IT RSKM QPM	REQM RD TS PI Ver Val	CM PPQA M&A DAR CAR
Basic/Advanced		B B B A A	B B B A A A		B B B A A
Maturity Level		3 3 3 4 5	2 2 2 3 3 4	2 3 3 3 3 3	2 2 2 3 5

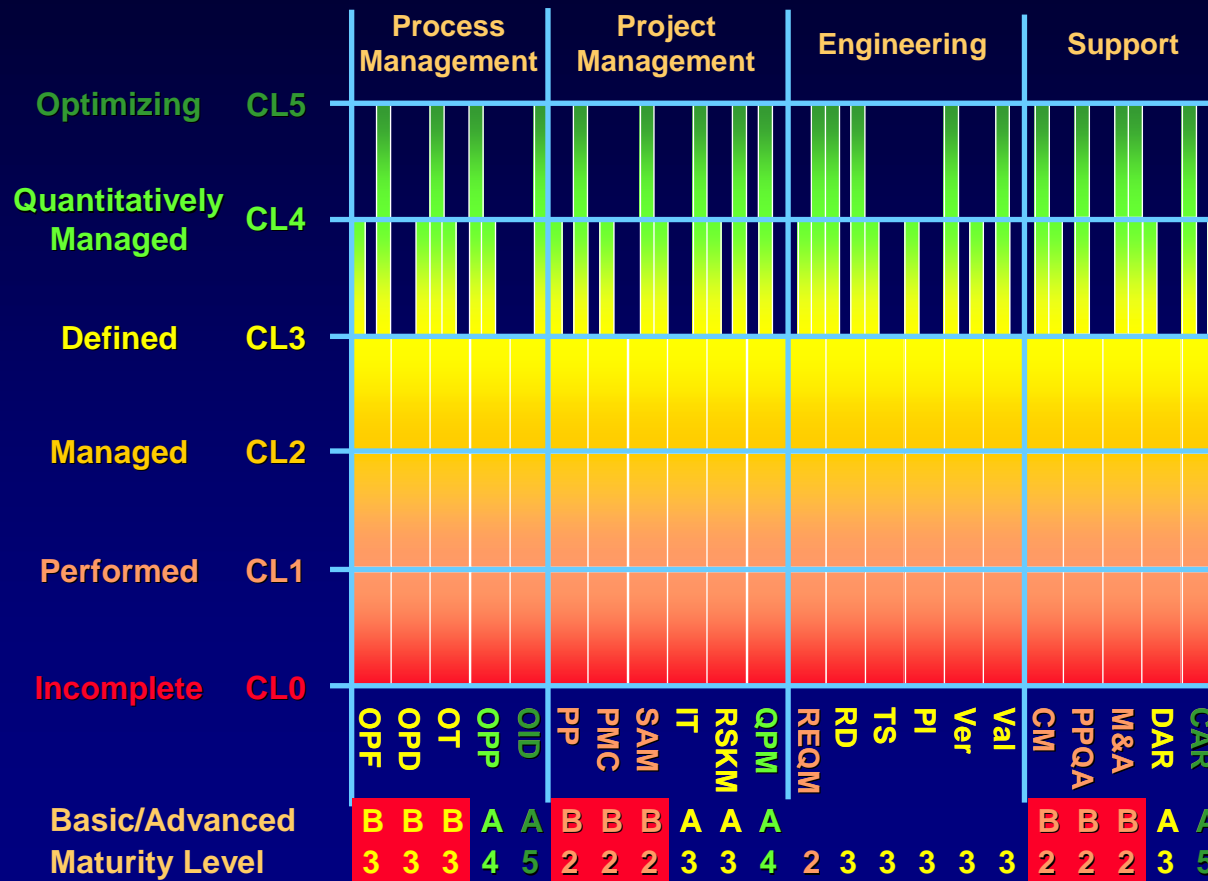


Thinking It Through₃

Continuous Focus

Process Capability Level ↑

Process Areas





Continuous Focus

Starting with Engineering

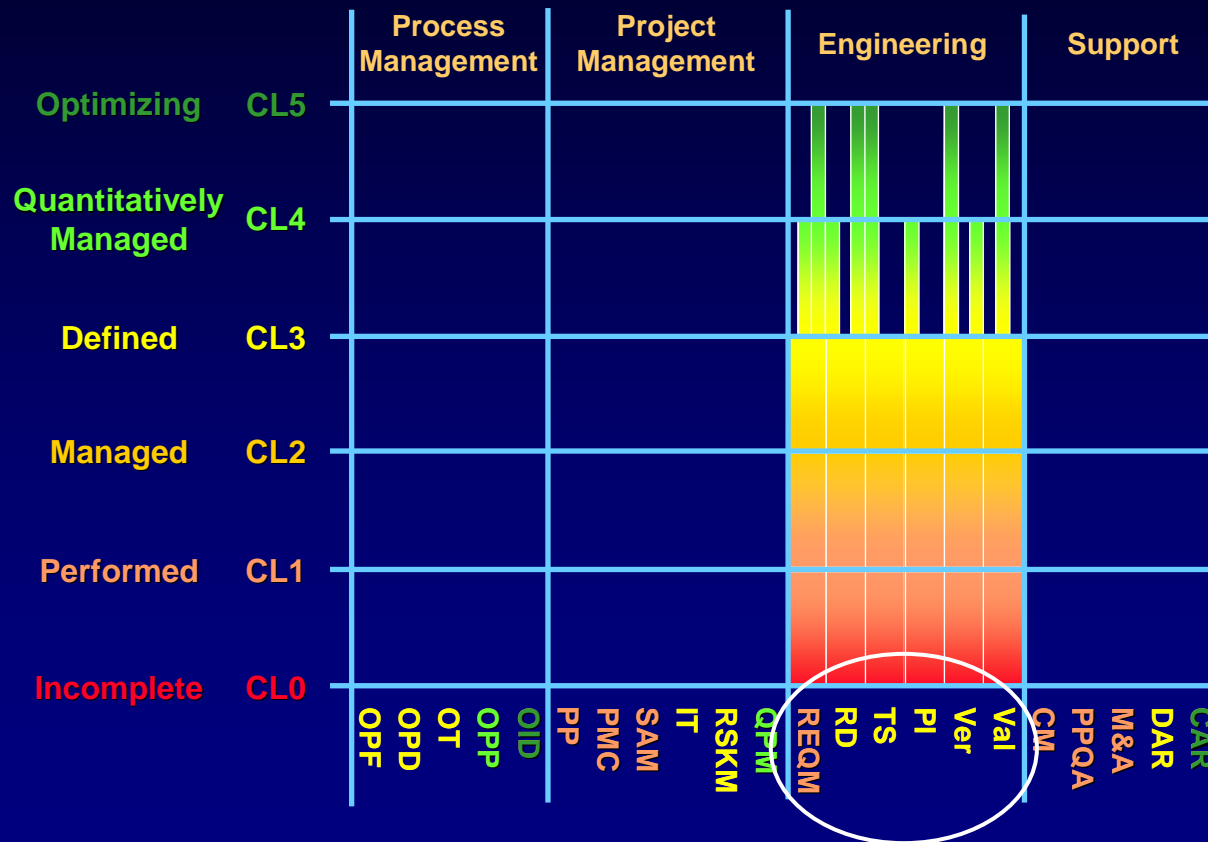


Starting with Engineering: Concept 1.0

Continuous Focus

Process Capability Level ↑

Process Areas





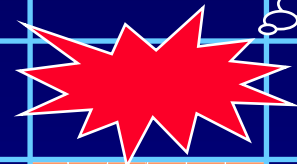
Starting with Engineering: Concept 1.0

Continuous Focus

Process Capability Level ↑

Process Areas

		Process Management	Project Management	Engineering	Support
Optimizing	CL5				
Quantitatively Managed	CL4				
Defined	CL3				
Managed	CL2				
Performed	CL1				
Incomplete	CL0	OPF OPD OT OPP OID	pp PMC SAM IT	QPM RSKM REQM RD TS PI Ver Val	CM PPQA M&A DAR CAR





The Generic Practice Hurdle

Generic Practice

- 2.6 Manage Configurations
- 2.7 Identify and Involve Relevant Stakeholders
- 2.8 Monitor and Control the Process
- 2.9 Objectively Evaluate Adherence

Related Process Area(s)

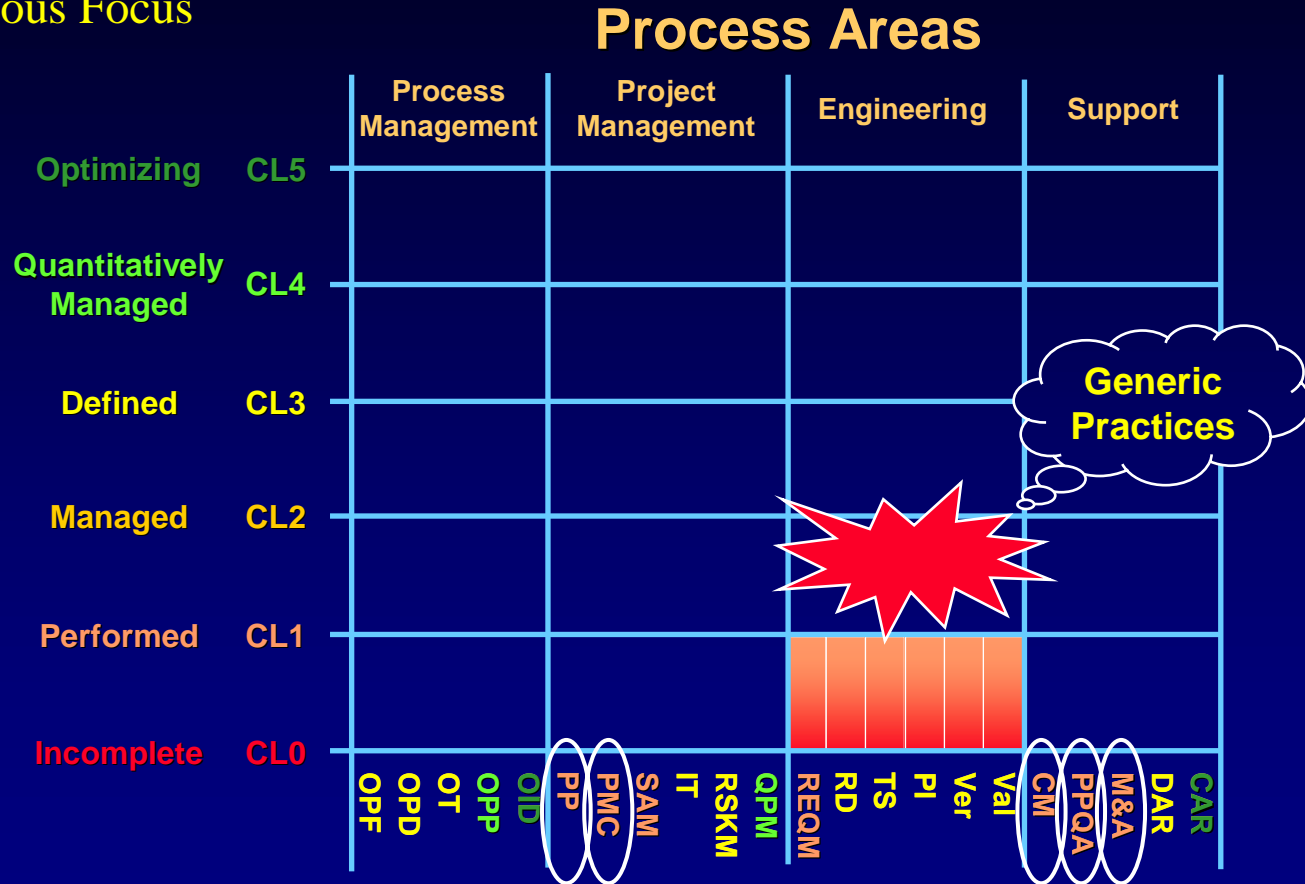
- Configuration Management
- Project Planning
- Measurement and Analysis
- Project Monitoring and Control
- Process and Product Quality Assurance



Starting with Engineering: Concept 1.01

Continuous Focus

Process Capability Level ↑

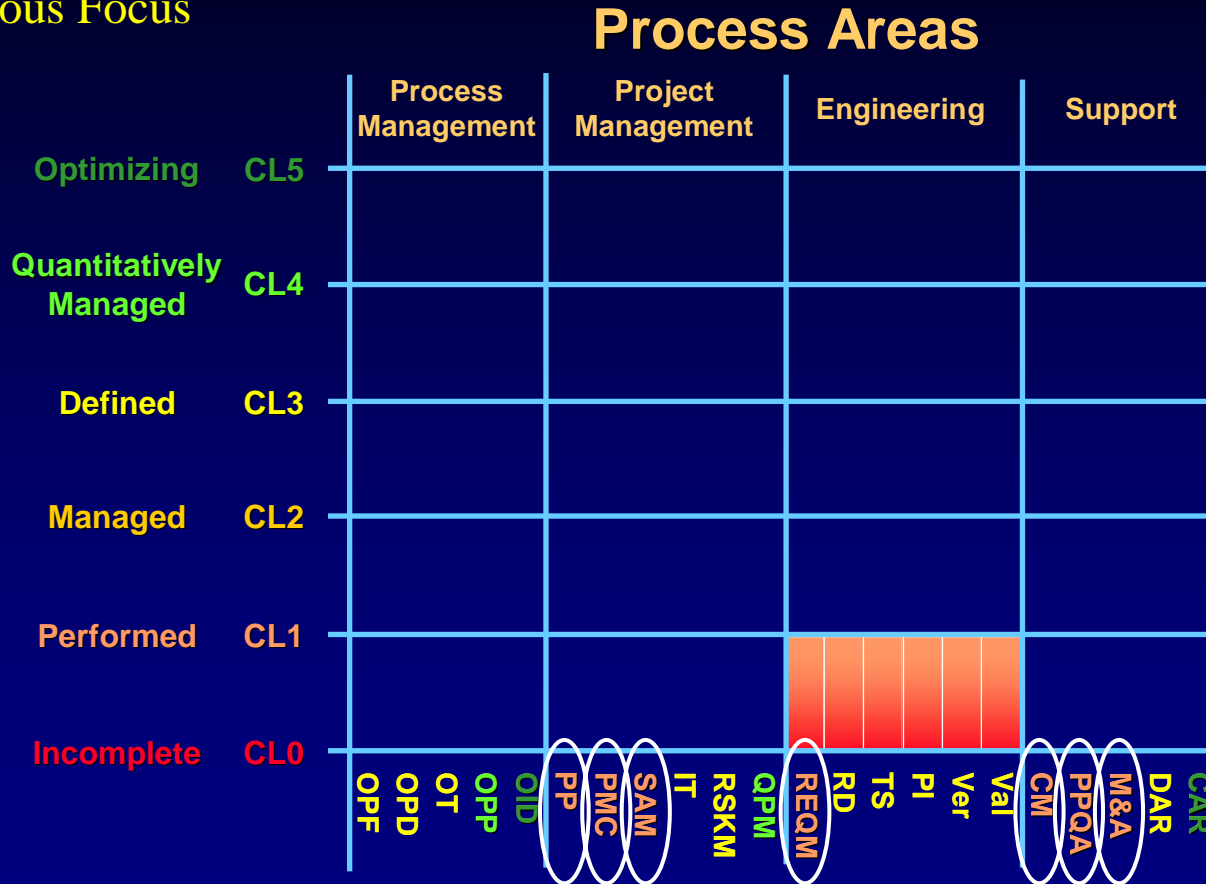




Starting with Engineering: Concept 1.02

Continuous Focus

Process Capability Level ↑





Starting with Engineering: Concept 1.02

Continuous Focus

Process Capability Level ↑

Process Areas

		Process Management	Project Management	Engineering	Support
Optimizing	CL5				
Quantitatively Managed	CL4				
Defined	CL3				
Managed	CL2		pp, PPMC, SAM, IT	REQM, RD, TS, PI, Ver, Val	CM, PPQA, M&A, DAR
Performed	CL1		pp, PPMC, SAM, IT	REQM, RD, TS, PI, Ver, Val	CM, PPQA, M&A, DAR
Incomplete	CL0	OPF, OPD, OT, OPP, OIID	pp, PPMC, SAM, IT, RSKM, QPM	REQM, RD, TS, PI, Ver, Val	CM, PPQA, M&A, DAR, CAR

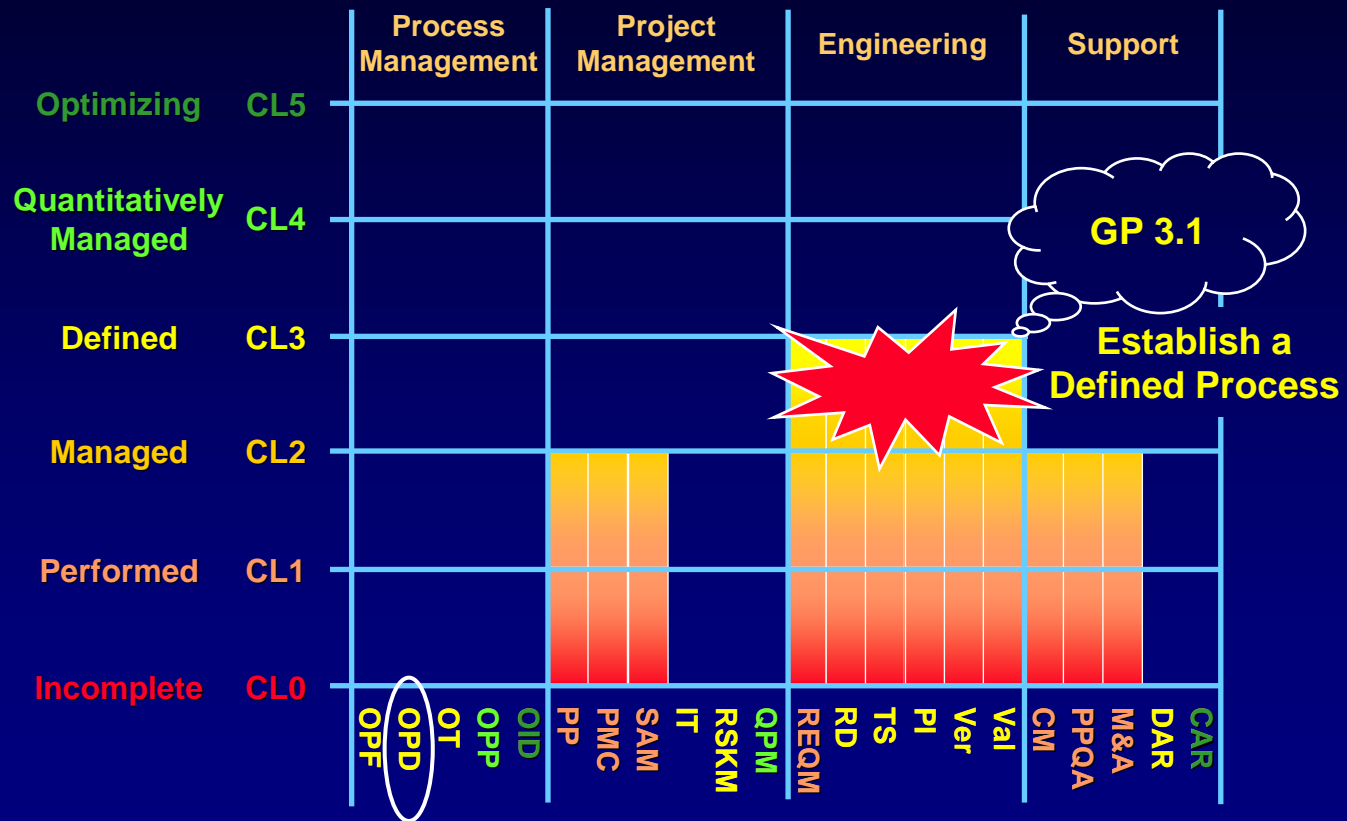


Starting with Engineering: Concept 1.03

Continuous Focus

Process Capability Level ↑

Process Areas

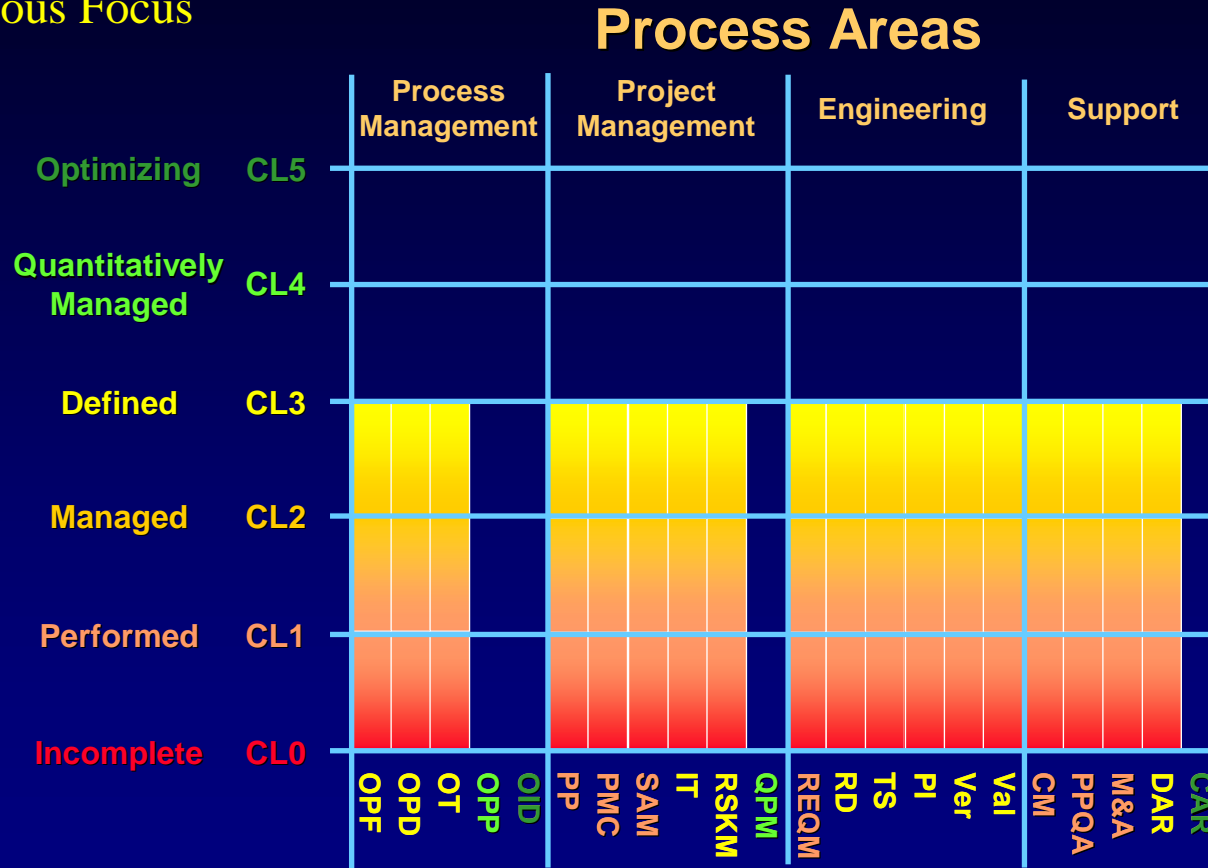




Starting with Engineering: Concept 1.04

Continuous Focus

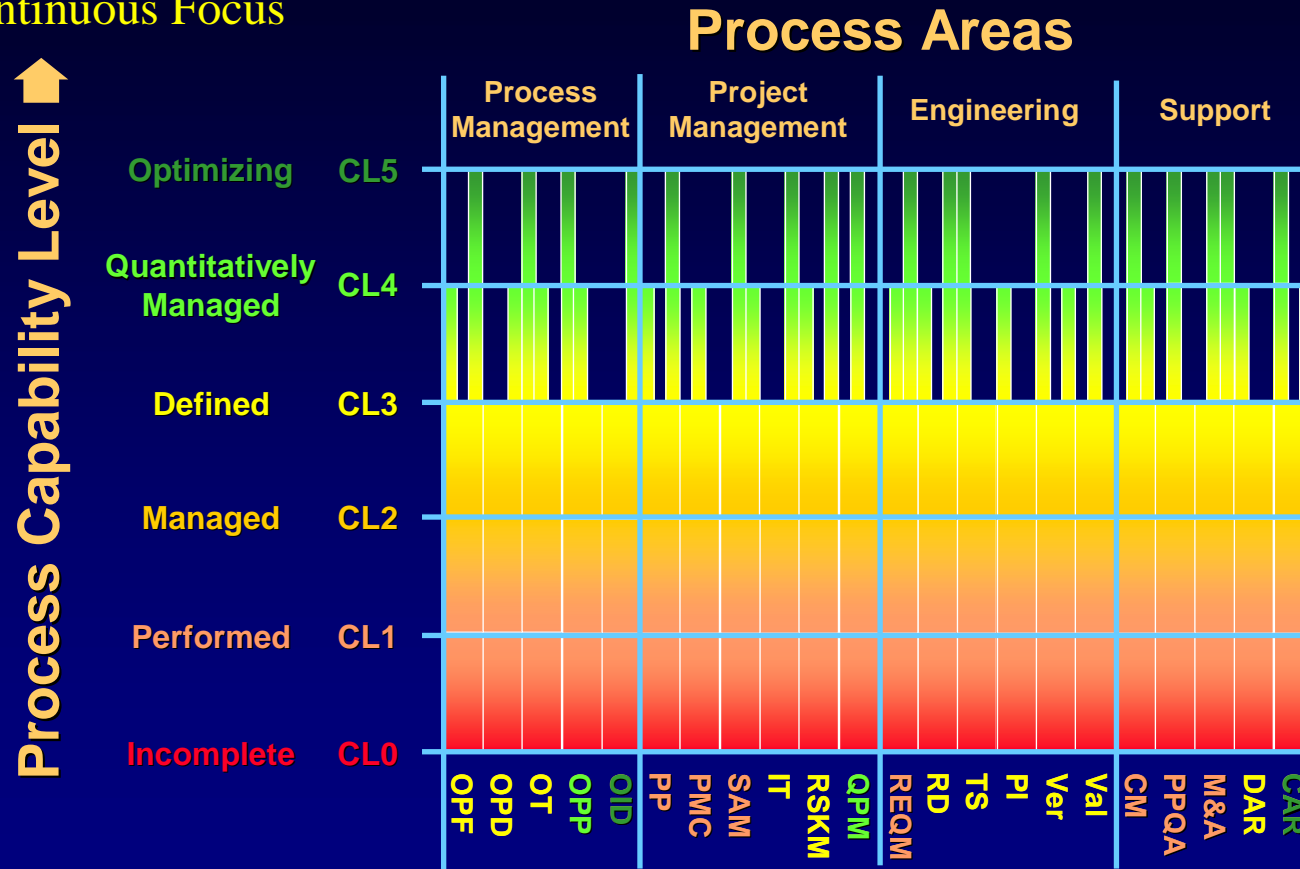
Process Capability Level ↑





Starting with Engineering: Concept 1.04

Continuous Focus





Continuous Supported by Staged

In summary, the staged representation can provide structure for a continuous-focus initiative:

- as a guide for big picture “strategic” planning
- to “chunk” higher-granularity activities for senior management
- as a means for representing high-level success in “industry standard” terms key stakeholders will more readily understand



The Point of All This

Two representations provide orthogonal views of the CMMI process areas.

Multiple perspectives facilitate understanding of process improvement and increase flexibility.

Using continuous and staged together

- takes advantage of the benefits of both representations
- minimizes the negative effects of their disadvantages

Using both representations increases the potential effectiveness and efficiency of process improvement initiatives.



That's all, folks!

Your questions and observations, please...