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Process Models and Performance Improvement – Future Perspectives

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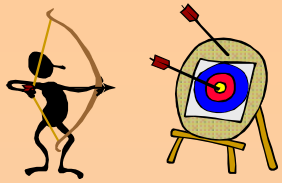

OBJECTIVES

- Is the IDEAL^{sm} approach still relevant?
- Is partitioning up the system into its People-Process-Technology components, the right thing to do?
- What is at loss, if the focus of process improvement programs is at the organizational level?
- How should we future proof process discipline when it comes face-to-face with other approaches that seem to lack rigor?
- What should be expected from all stakeholders if Lean and Agile are the likely, New Age quick-fix solutions?

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Some Perspectives …

Process Improvement programs and the maturing of the Indian IT Industry can be traced back to when the Software CMM was introduced by Motorola India in 1993.

- There were 18 Key Process Areas in the Software CMM
- One of the most eloquent process descriptions ever witnessed, was set between the covers of two, 1”-thick binders
- “The recipe is not the meal”!
- Level 5 process

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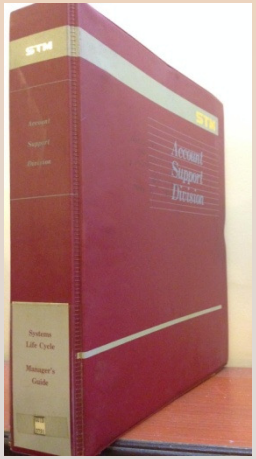
Some Perspectives …

"Every fire is the same size when it starts" – Seneca

- Many other descriptions were consigned to being shelf-ware
- Totally unusable in the literal sense but,
- … whose sheer size was sufficient to scare an auditor/appraiser!
- Ten+ binders, each 3"-thick! And many more, Method 1, CS10000
- Level 2 process



- Refer: http://sebokwiki.org/wiki/System_Life_Cycle_Process_Models:_Vee

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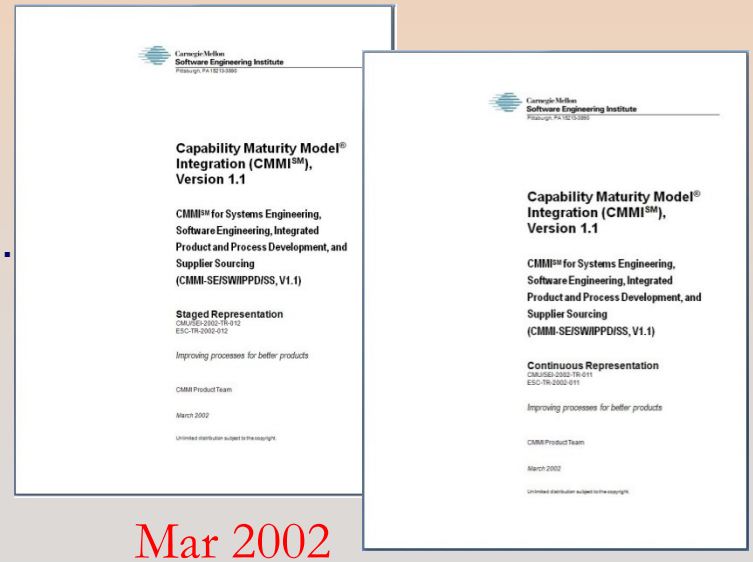
Some Perspectives …

Around 1998, there were around Ten Level 5 organizations in India; process programs became overtly ambitious, momentum to create a one-size-fits-all started to grow, and the fire raged on!

- Software CMM morphed into an alphabetical soup called CMMI-SE/SW/IPPD/SS v1.1 – Staged and Continuous representations
- 700+ pages each
- Models themselves looked scary
- Lot of unnecessary repetition …
- Lots of room for interpretations …
- …possibility for lots of confusion!



Mar 2002

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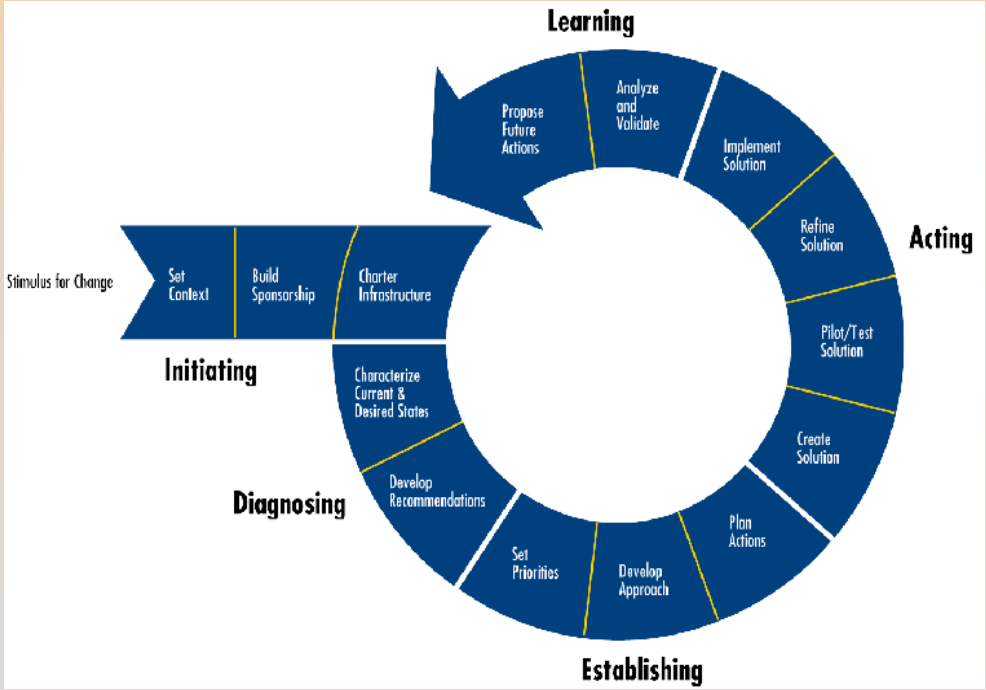
Some Perspectives …

Based on the IDEAL^{sm} model, the CMMI held out a promise for organizations committed to design their manifest process descriptions per its recommendations that, it would improve quality, reduce risks and rework



"If a man with an ideal makes a thousand mistakes, I am sure that the man without an ideal makes fifty thousand. Therefore, it is better to have an ideal".

– Swami Vivekananda

The Complete Works, Vol 2

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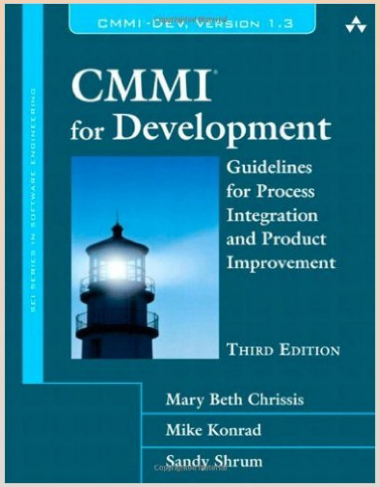
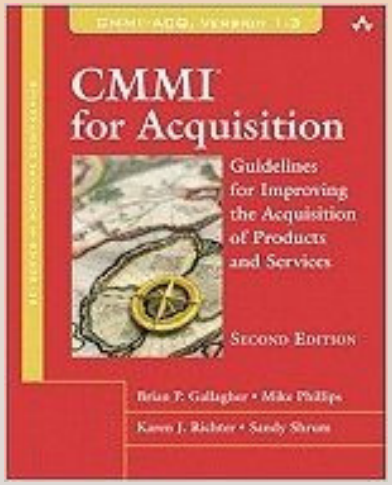
Some Perspectives …

As experiences with the process model grew, CMMI was broken up into 3 constellations with practices spread across 35 process areas

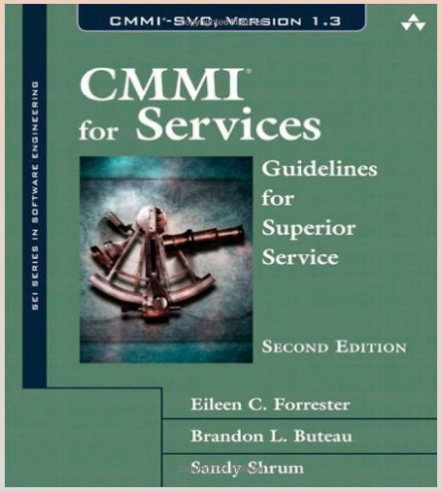
- Each addressing the 3 aspects of Development, Acquisition and Service Establishment and Delivery



Aug 2006



Nov 2007



Feb 2009

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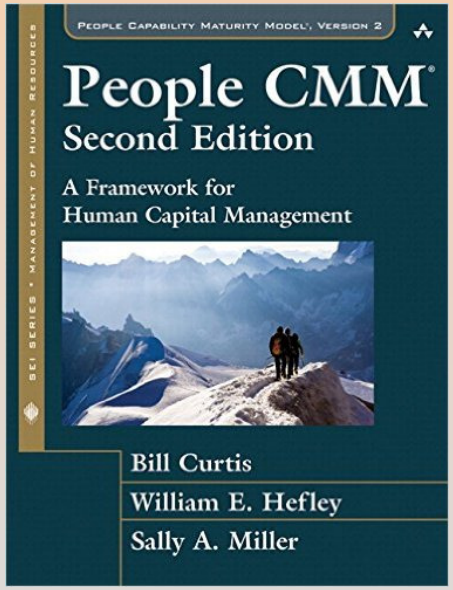
Some Perspectives …

And then, there are 22 process areas in the People CMM for competency and people management bringing up the total to 57 process areas



Jul 2009

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Do we need so many practices spread across 57 process areas to realize the promise of improved quality, reduced risks and rework?

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Is the IDEAL^{sm} approach still relevant?

Primary Motivation for Process Models and Performance Improvement even in the futuristic context will remain …

"**How does an organization improve learning and minimize variation?**" If the …

- Nature of problem: Chronic, with Unknown Cause
- Nature of project execution: Unknown Solution
- Understanding of Software Engineering is ~30-years old now!

- A better, …even though a "reactive" approach, is: **DMAIC**
  - DEFINE – MEASURE – ANALYZE – IMPROVE – CONTROL inspired from Lean Six Sigma
  - Short 2-3 months duration project cycles with focus on $ advantage and lifecycle determination at the project level
  - Continually Narrow Performance Gap/Variation – focus on the average
  - **Documentation**: **Required, Necessary and Sufficient** to ensure continuity until retirement of the solution

It Depends!

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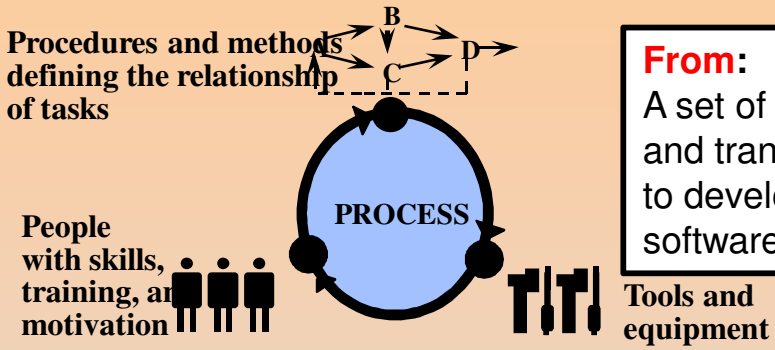
Is partitioning up the system into its People-Process-Technology components the right thing to do?

(2 of 5)



From:
A set of activities, methods, practices, and transformations that people use to develop and maintain software & associated products

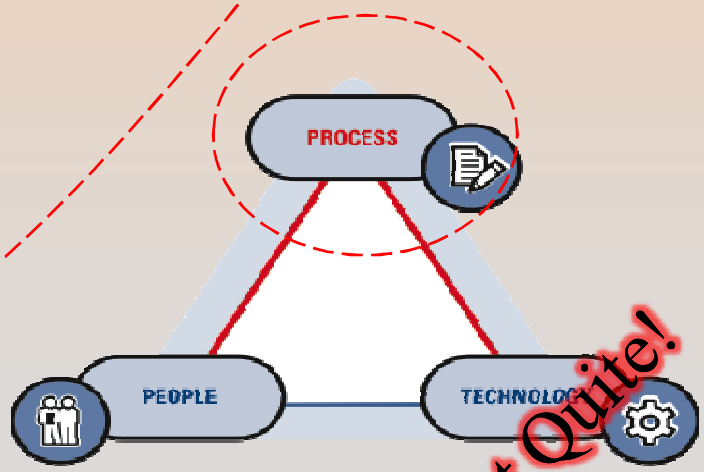
Shift Focus Down From:
Organization

NEW Definition:
Flow-based process transformations that people create, use, and improve to establish solutions that constantly narrows performance gap while demonstrating benefits in projects by exploiting automation.

To:
Projects

To:
Being considered the "glue" that ties the triad together.

Using: DMAIC or Continuous Representation



Not Quite!

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What is at loss, if the focus of process improvement programs is at the organizational level?

(3 of 5)

In projects – is where all the action happens; most opportunistic *process area specific* improvements are tightly integrated with tools & technologies wherein, $$ benefits and other quantitative advantages get highlighted

One of the key challenges while designing a software process that is positively enabled for process measurements is –

- to ensure data collection, analysis, storage and communication of results to relevant stakeholders for process adjustments and,
- subsequent improvements are made part of the process itself
- Little, to no value in aggregating measurements at the organizational level; shelf-life of a PCB is nothing more than 3-months! *And, variation is NOT explained by the process definition!*

Metric	Unit of measure	Q1 YYYY performance				Q2 YYYY performance			
		Average	Std. Dev.	Sample Size	Min.	Average	Max.	Std. Dev.	95% CI Mean
COQ	%	13.88	0.97	9	17.98	19.90	21.82	1.35	19.02-20.78

- Besides, data must be sourced from a set of homogeneous projects – *which is extremely difficult to guarantee*

Accuracy, at Loss!

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How do we future proof process discipline when it comes face-to-face with other approaches that lack rigor?

Can the first part of each of these "what-we-value over…" statements, taken from the Agile manifesto …

- Individuals and interactions over *process and tools*
- Working software over *comprehensive documentation*
- Customer collaboration over *contract negotiation*
- Responding to change over *following a plan*

… be realized in practice without the support of the second part?

Apparent cognitive bias in these statements … "fat-free milk over *2% milk*"!

Without some basis that promotes institutionalization, it is difficult to imagine how the oft quoted 12 Agile principles will automatically fall in place. "***Magic is rare in software engineering!***"

Performance improvement must be a core OD strategy requiring investments to build process competencies for every individual in an organization, in every project – ***PM must be made in charge***

No Short-cuts!

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What should be expected from all stakeholders if Lean and Agile are the likely New Age quick-fix solutions?

Many of the institutionalization features of the CMMI or the People CMM help to make gains due to the process improvement program for a project, "permanent"

- No proof that projects *without* institutionalization capability, can leverage value from reuse and can offer cycle time reduction
- Also consider: effects of attrition, competency erosion, poor KT and no documentation; very bad combination which is reality!
- Without a "process language" possibly embedded in collaboration tools such as TFS or SharePoint, it is hard to believe Agile projects can operate beyond a hypothetical maturity Level 1/2
- It is very hard for any project, Agile/Lean based or otherwise, to shrug-off the importance of say, …
  - *Baselines of identified work products are established (CM-SG1)*
  - *Coordination and collaboration between the project and relevant stakeholders are conducted (IPM-SG2)*
  - *Or, just about any goal statement!*

Emphasize Goals!

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Conclusion

The core issue for process heavy implementation appears to be–

- "English like" interpretation of the model without the right expertise in problem/domain analysis, or application of professional judgment to day-to-day "project" issues
- Rigid enforcement of sub-practices/practices and other informative components of the model, instead of permitting alternative solutions while keeping the focus on "goals"
- Wrong and inaccurate interpretation of the models based on what was heard and said by someone considered wise with missing context information; blame LinkedIn Groups!

It is actually a lot easier to gear projects, to equip themselves with the right processes and measurement systems, so that–

- data collection, analysis, storage and communication of results to relevant stakeholders for process adjustments and,
- subsequent improvements are made part of the project execution

Think DMAIC!

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Conclusion

It is almost **impossible** for the one-dozen Agile principles to magically fall in place without institutionalization!

- Satisfy the customer through early and continuous delivery of valuable software *(if it is valuable, then where is the documentation?)*
- Welcome changing requirements, even late in development *(is in knowing what, and how much to change; expects good change, configuration and release management to pin-point the problem)*
- Deliver working software frequently, with a preference to shorter time scales *(is in good design, integration, testing and reuse)*
- Collaboration amongst business people and developers throughout the project *(is in having an established "language" of collaboration, aka process, besides collaboration tools)*
- Build projects around motivated individuals and trust them to get their job done *(in God we Trust, the rest bring factual data and proven competencies to bear)*
- Face-to-face communication as the most efficient and effective method of conveying information *(but, many geographically distributed projects succeeded with a solid process)*

Contd…

Magic is in these details!

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Conclusion

Contd…

- Working software as the primary measure of progress *(what about secondary measures required to build "trust"?)*
- Agile process promoting sustainable development among sponsors, developers and users in an indefinite manner *(indefiniteness is in making other things such as, a disciplined process, definite!)*
- Continuous attention to technical excellence and good design enhancing agility *(every project must be executed the Agile way, but, using CMMI and People CMM as enablers)*
- Simplicity -- -- is essential *(Process is what you make of it)*
- Self-organizing teams that develop architecture, requirements, and design *(trust based empowerment is key)*
- Periodic team reflection to tune and adjust behaviors accordingly *(needs a structure for such reflection to be effective)*

Excellence is a Habit!

I hope that the next SPIN Conference draws a lot more presentations and participation from project managers and from those actually burning their fingers!

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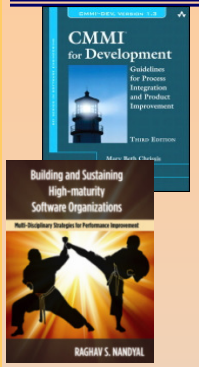

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[WEB Resource] http://www.dsdm.org/dig-deeper

[WEB Resource] http://www.agilemanifesto.org/

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POINTS TO PONDER …

- A control chart is just a "limited use" heuristic memory chart! New baseline affects old baseline and therefore PCBs should only be given the importance they truly deserve.
- Process is very much "software"! It is therefore as important as what we otherwise call, "software".
- Build your process improvement programs keeping the customer in mind. If the customer wants a Level 2 process, why thrust a Level 5 process? "*Beware of* Over-Processing"
- Most causal analysis and risk management processes are underleveraged because they are built only for prevention; what about detection?
- Don't under-estimate importance of the "quick", "do-it-now" improvements; that is what Lean and Kaizen is all about!

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Thank You!

DISCUSSIONS, Q&A

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