Appraisals and CMMI Gotchas

Lessons in CMMI Use and Appraisal Preparation

Neil Potter
The Process Group
help@processgroup.com

Referenced articles are at www.processgroup.com/newsletter.html

Agenda - Part 1

- **Introduction**
- **CMMI Premise**
- **Documentation**
- **Configuration Management**
- **Measurement and Analysis**
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- **Project Monitoring and Control**

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Agenda - Part 2

- **Integrated Project Management**
- **Training**
- **Equal-weighted Process Area practices?**
- **Appraisal Preparation - PIIDing**
- **Appraisal Interview Preparation**

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CMMI HAZARDS!
Introduction

Using CMMI or preparing for an appraisal?

– Avoid the hazard of creating a **paper factory**, instead focus on organizational results

– Avoid putting the emphasis on the **less important** issues

  » e.g., policy recital, training records, emails that say "We assigned this to Fred"

– Spend your time making things better, not on a rote exercise

– Know some **common blind spots**

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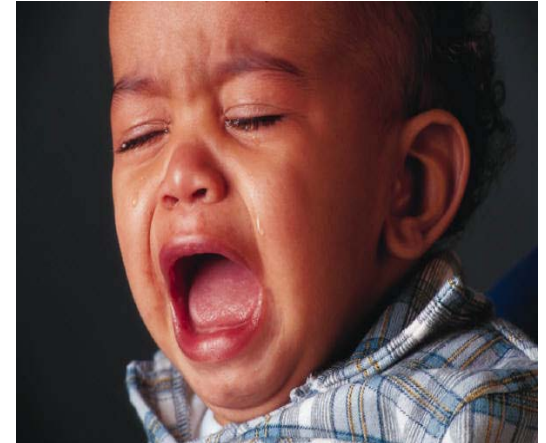
CMMI Premise

- **CMMI practices can:**
  - Reduce project risk
  - Reduce rework and costs
  - Improve output quality and predictability
  - Improve productivity through process improvement and process reuse

- **CMMI:**
  - Can be used to diagnose current state
  - Provides an example roadmap forward
    - » Management/project, engineering/organization, statistics/prediction, variation/mean

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Hazard: Drowning in Documentation

- **Easy to fall into the trap of the paper factory**
  - We are developers, so we develop!
  - What we really need is **guidance** for our jobs
    - » **Capture** best organization engineering and management practices
    - » Not necessarily **repeat** every book known to mankind!
- **What problem are we trying to solve?**
  - Make engineering easier, quicker, less hassle - NOT MORE

[Newsletter "documentation"]

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Configuration Management (CM)
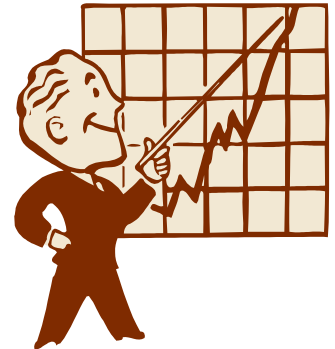## Hazard: over-simplification

- **CM looks pretty straight forward, once people start to understand the discipline**

- **Don't avoid Configuration audits - make them useful [SP 3.2]**
  - Use physical audits to help ensure that products are released correctly, e.g.,
    - » Verify **differences** between source and release = change list
    - » Compare **checksum** value between source and release

- **What problem(s) are we trying to solve?**
  - Producing the right stuff and getting it to the customer
  - Keeping track of our stuff, protecting ourselves from loss

SP 3.2: Perform configuration audits to maintain integrity of the configuration baselines.

Measurement and Analysis (MA)
Hazard: skip parts or overkill

- **Organizations often have metrics but entirely skip the first half of this Process Area:**
    - Defining: objectives, metrics, analysis, reporting, information storage
- **Or take the other extreme and overdo measurement and goal definitions**
    - 34 objectives, a procedure for documenting objectives, 82 core metrics
- **Need a good balance for:**
    - Spending enough time to arrive at **appropriate goals**
    - Specifying what **measures** are needed
    - Clarifying how they will be **analyzed and stored**
- **What problem are we trying to solve?**
    - Knowing why we are measuring in order to get the most value out of it and not waste time on useless metrics

[Newsletter "measurement"]

GP 2.8/3.2 and Over-simplified MA
Hazard: I measured it because CMMI SAID I HAD TO!

🙁 **MA comprises of only 7 PA measures, and GP 2.8 and 3.2 are academic**

  – What is it telling you?

- **What problem are we trying to solve?**

  – GP 2.8 (on each PA) – How's it going this time?

  – GP 3.2 (on each PA) - Are the PA related processes as implemented meeting our needs, getting better or worse?

  – MA should help you run your business, not just CMMI!

GP 2.8: Monitor and control the process against the plan for performing the process and take appropriate corrective action.

GP 3.2: Collect process-related experiences derived from planning and performing the process to support the future use and improvement of the organization's processes and process assets.

Project Planning (PP)
Hazard: skimping on size estimation and risk management

- **Many people either skip size, or don't spend enough time finding a good use for size or attribute estimation [SP 1.2]**
  - "My project size is 2,000 hours"
  - "I estimate Lines of Code, but track effort"

- **Others underutilize risk at the project level [SP 2.2]**
  - Risks should come from the team, not just the manager
  - Risks should be more than boilerplate "We might not have resources"
  - Risks should be made very visible to customers + management

- **What problem are we trying to solve?**
  - Clarifying **how big the project is**
  - Understanding what can **really** go wrong
  - Thinking through potential issues ahead, while there is **time to react** / recover

SP 1.2 Establish and maintain estimates of work product and task attributes.
SP 2.2 Identify and analyze project risks.

[Newsletter "attributes"]

Project Monitoring and Control (PMC)
Hazard: missing valuable information that could save the day

- **No useful way to track actual work progress [SP 1.1], e.g.,**
  - Actual work effort (**labor**)
  - Actual amount of work accomplished (**size**)
- **What problem are we trying to solve?**
  - Use data to determine if current **resource** expenditure (hours or money) can be **sustained**
  - Know the **volume of work** and how much each project **actually costs**
    - » How much we lost this time, or how much future projects might cost
  - Proactively manage and identify re-planning points while there is time to recover
    - » **Identifying large changes in effort or size**
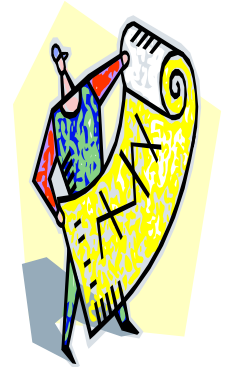
SP 1.1 Monitor actual values of project planning parameters against the project plan.

[Newsletter "attributes"]

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Integrated Project Management (IPM)
Hazard: not having proactive visibility

- **Not use thresholds to trigger corrective action [SP 1.5]**
  - At Level 3, corrective action and escalation are more <u>objective</u> ("We are 10% behind") than <u>emotional</u> ("I think things will speed up")
  - Organizational and project knowledge are used to establish thresholds
- **Process tailoring not based on organizational learning [SP 1.1]**
  - Level 3 is often interpreted as "**Processes are standardized** across all projects," rather than "**Standard processes are tailored** for each project"
- **What problem are we trying to solve?**
  - We have MEANINGFUL data, let's really use it!
  - Have organizational wisdom available and used

SP 1.5 Manage the project using the project plan, other plans that affect the project, and the project's defined process.

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Integrated Project Management (IPM) Without Historical Data?
Hazard: databases full of data are not enough!

- **Organizational Process Definition (OPD) and IPM not well understood**
  - OPD sets up a Process Asset Library and measurement repository for use by projects (IPM)
  - Not all Lead appraisers know or communicate this
- **What problem are we trying to solve?**
  - Run projects based on historical and current data

Do Software Engineers Need Training?
## Hazard: trivial training

- **Project Planning (SP 2.5)**
  - Make sure you have the skills for THIS project
- **Organizational Training**
  - Make sure you have the skills for current work, and work to come
- **What problem are we trying to solve?**
  - Engineers and managers don't have the skills to perform their roles correctly (as per process definition) and/or efficiently
  - Prevent mistakes due to lack of skills

Equal-weighted Process Area practices?
Hazard: each process area <u>practice</u> is treated as EQUAL

- **Each CMMI practice should not necessarily be equally weighted during implementation. Example:**
  - Policy vs. estimating effort or risk
  - Training records vs. performing validation

- **The correct weighting can be given when you:**
  - Focus on what you are trying to accomplish (real jobs)
  - Use the CMMI and its components to improve
  - Fix real problems

- **What problem are we trying to solve?**
  - Real world, day-to-day work gets better (easier, faster, higher quality, less stress, less busy-work, less rework, less risk)

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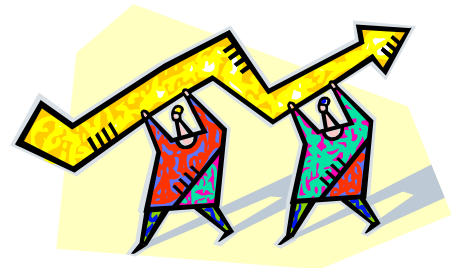
Appraisal Preparation - PIIDing*
Hazard: creating documents to please the appraiser

- **As an appraisal date approaches, people find themselves focused on providing required appraisal evidence:**
  - A lot of time can be **wasted chasing down documents**
  - When practices are **institutionalized** correctly, the evidence needed **already exists**

- **What problem are we trying to solve?**
  - Evidence should never be created to please an appraiser
  - Artifacts examined should be the **real work** of the organization
  - For example, evidence of responsibilities could be an organization chart or a schedule with assignments

*Practice Implementation Indicator

Appraisal Interview Preparation
Hazard: wasting time rehearsing

- **Some people prepare using mock interviews**
  - Appraisals should be about how you DO YOUR **REAL** work

  - Interview practice might make folks feel more comfortable, but this can:
    » Induce stress over remembering to say the right answers
    » Focus your people on CMMI terms and rote answers

- **What problem are we trying to solve?**
  - Time to practice for an appraisal takes away from getting real work done

  - Participants should be able to answer the questions because the answers describe how they do their jobs

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Q & A

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