



CMMI V1.3

High Maturity Panel

WE THOUGHT BUT NOW WE KNOW

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Raytheon



Presentation Agenda

TWO PARTS

1. WE THOUGHT

Background – how we got here

2. WE KNOW

CMMI V1.3 High Maturity Process Areas



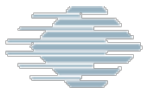
The Challenge

433 Change Requests
Version 1.2 and Version 1.2A

Audit Criteria
SEI September 2008 Workshop



High Maturity CMMI V1.3



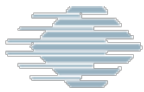
High Maturity Starting Point

The High Maturity Team is composed of veterans of the V1.2A workshop – note the majority are from high maturity organizations in industry.

- Lynn Penn (LMCO) – Lead
- Dan Bennett (AF)
- Will Hayes (SEI)
- Rick Hefner (NG)
- Jim Kubeck (LMCO)
- Alice Parry (Raytheon)
- Kathy Smith (HP)
- Rusty Young (SEI)

Use of the high maturity redline of CMMI for Development and change requests submitted against it has added another layer of complexity to the analysis of change requests.

- Assumption – CMMI Dev V1.2 is baseline
- Assumption – CMMI Dev V1.2A (redlines) is a CR



High Maturity Issues

- Terminology Confusion
- Requirements implied versus explicit
- Explanations not central or consistent
 - Model/ Audit Criteria/ Presentations (Healthy Ingredients)/ UCHMP
- Perceptions
 - Customers – ML 5 is expensive – no better than 3
 - Industry – ML 5 is NOT RIGHT for every business
- High Maturity in ALL constellations
 - Examples are focused on Development



Terminology Confusion

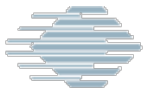
- Common Cause
 - Statistical versus Quantitative Techniques
- Process Models and Process Modeling
- Business Objectives
- Subprocesses



Requirements Explicit Explanations not central

Two issues really one

- Goal:
 - Sunset – OTHER explanations
 - Incorporate Healthy ingredients as appropriate – goals/ practices
 - Audit Criteria – Audit to Model and MDD – include what is necessary

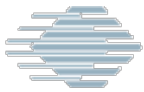


Perceptions

Individual based... However recommended

HIGH MATURITY RESTRUCTURING

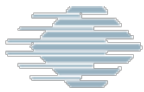
- Insufficient link between process improvement, business objectives, and **performance**
- Clarify distinction between ML4 and ML5
- Eliminate GG4 and GG5
- CMMI V1.3 Webinar Suggestions (not covered elsewhere)
 - Clarify role of OID and CAR
 - Make CAR more relevant/ clarification in role



High Maturity Pre-Review

High Maturity Review at SEPG

- Invited individuals which include HMLA/ Potential HM Pilot companies to a special session at the NA SEPG
 - Rusty and Lynn presented the HM Team intentions and introduction to the HM PAs (including the new OPM PA)
 - Provided these same individuals with the redlines for HM including a high level OPM (GLOP)
 - Asked for the following actions:
 - Within 1 week provide HMT with a heads up or down on changes
 - Within 2 weeks provide HMT with redlines to the redlines



High Maturity SEPG Results

- Approximately 150 individuals were invited
- Approximately 45 individuals attended
- Received feedback at conference – positive on intentions and direction we were pursuing
- Received heads up/ down feedback from 6 individuals
 - One of these was not at presentation so took many emails to explain
 - The feedback was more questions – not in keeping with initial SEPG positive feedback
 - Four of these individuals have also provided redlines



High Maturity Team Consensus

- Team members that attended SEPG were positive and very upbeat about questions and follow up
- Observations after feedback
 - Discouraged that so few responded
 - A few comments showed a mis-understanding of existing HM and an inability to grasp anything different
- Team Position
 - Clean up existing PAs (some relevant comments)
 - Complete OPM generation
 - Proceed to “Open Team” review



Combined OPM/ OID – 1 ML5 PA Organizational Performance Management

Improvements

Progress toward achieving quality and process performance objectives

Organization

Quality and process performance objectives

Causal Analysis and Resolution

Improvement Proposals

Organizational Performance Management

Measures, baselines, and models

Organizational Quality and process performance objectives

Organizational Quality and process performance objectives

Measures, baselines, and models

Quantitative Project Management

Measures, baselines, and models

Organizational Process Performance

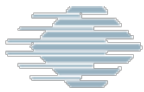
Updated measures, baselines, and models (actual performance)

Selected Outcomes

Root Cause/Solutions

Quality and process performance objectives

Customer



High Maturity PAs Relationships 1

Organizational Process Performance (OPP)

- Clarified relationship between OPP and rest of high maturity process areas
- Clarified that process performance baselines and models can be created and used in at levels and not just the organizational level

Quantitative Project Management (QPM)

- Restructured to a prepare for quantitative management and quantitatively manage the project or work.
- Emphasized the use of statistical and other quantitative techniques
- Emphasized that quantitative management covered managing subprocesses through the project levels (from the micro through the macro levels)



High Maturity PAs Relationships 1

Quantitative management

- Managing a project or work group using statistical and other quantitative techniques to build an understanding of the performance or predicted performance of processes in comparison to the project's or work group's quality and process performance objectives, and identifying corrective action that may need to be taken. (See also "statistical techniques")

Statistical techniques used in quantitative management include analysis, creation, or use of process performance models, analysis, creation, or use of process performance baselines; use of control charts; analysis of variance, regression analysis; and use of confidence intervals or prediction intervals, sensitivity analysis, simulations, and tests of hypotheses.

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quantitatively manage the project or work.

- Emphasized that **quantitative management** covered managing subprocesses through the project levels (from the micro through the macro levels)
- Emphasized the use of statistical and other quantitative techniques

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High Maturity PAs Relationships 1

statistical and other quantitative techniques

Analytic techniques that enable accomplishing an activity by quantifying parameters of the task (e.g., inputs, size, effort, and performance). (See also “statistical techniques” and “quantitative management.”)

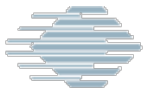
This term is used in the high maturity process areas where the use of statistical and other quantitative techniques to improve understanding of project, work, and organizational processes is described.

Examples of non-statistical quantitative techniques include trend analysis, run charts, Pareto analysis, bar charts, radar charts, and data averaging.

The reason for using the compound term “statistical and other quantitative techniques” in CMMI is to acknowledge that while statistical techniques are expected, other quantitative techniques can also be used effectively

through the macro process area.

- Emphasized the use of **statistical and other quantitative techniques**



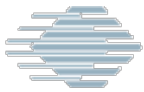
High Maturity PA Relationships 2

Causal Analysis and Resolution (CAR)

- Made it clearer when to use statistical and other quantitative techniques.
- Clarified use by projects AND organizations to perform causal analysis and resolution on selected outcomes.
- Updated to include positive and negative outcomes – not just defects.
- Modified outputs from CAR to include Improvement Proposals to feed process improvements to the organization's set of standard processes (OPM).

Organizational Performance Management (OPM)

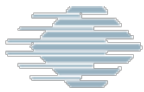
- Focused the Process Area on managing business performance to achieve quality and process performance objectives.
- Added a Specific Goal that requires organizations to use measures, process-performance baselines and models from OPP to understand process performance, target areas for continuing improvement, and evaluate the impact of proposed improvements.
- Made it clear that statistical and other quantitative techniques are used to evaluate and select improvement proposals and to evaluate whether the improvement achieved expected performance improvement.



Organizational Process Performance

Changes:

- Restructured OPP moving “Establish Quality and Process Performance Objectives to SP 1.1 for emphasis.
- Revised SP 1.4 to include process performance analysis and assessment of subprocess stability.
- Revised SP 1.5 to clarify process performance models are used throughout the development lifecycle toward achieving quality and process performance objectives.
- Clarified that not all process performance baselines and models must be created at the organization level. Projects can follow OPP practices to create process performance baselines and models, when appropriate.
- Clarified the relationship of OPP to other high maturity process areas.
- Emphasized traceability to business objectives through modifications to SP1.1 and SP1.2



Quantitative Project Management

Changes:

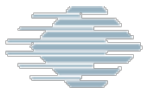
- Restructured QPM so that SG1 focuses on preparation and SG2 focuses on managing the project.
- Broadened the focus on using statistical techniques from individual selected subprocesses to cover multiple levels from the individual subprocesses to the entire project.
- Added guidance about using process performance baselines and process performance models.
- Defined quantitative management in the glossary to include statistical techniques and used that definition for use of the terms throughout QPM.
- Modified the practice to remove the emphasis on applying statistical methods to understand variation to reduce the over-emphasis on control charts.
- Added new practices about managing performance and performing root cause analysis.



Causal Analysis and Resolution

Changes:

- Used “outcomes” to include positive outcomes instead of only “defects and problems.”
- Added examples for service organizations and for selecting outcomes for analysis.
- Added subpractices in SP 1.1 for defining the problem, and in SP 2.2 for following up when expected results were not realized.
- Added more information about how PPMs can be used.
- Added informative material addressing more proactive defect prevention.



Organizational Performance Management

Changes:

- Expanded the former OID PA to include performance management and called it Organizational Performance Management (OPM) to emphasize focus on performance of the organizational processes as they relate to business objectives.
- Defined a new goal about managing business performance using statistical and other quantitative techniques.
- Clarified that improvements selected for possible implementation can be validated in different ways, piloting is not the only option.
- More explicitly described the use of process performance models.
- Provided more information about how improvements can be selected for deployment.
- Changed references from “process and technology improvements” to “improvements”, with an explanation that improvements include both.



Questions ?