



Achieving the Vision

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CMMI Vision*

The initial vision for CMMI was to integrate the competing maturity models and provide a framework for more consistent process improvement

- Cause integration of the functional disciplines within organizations and across programs
- Increase systems engineering and software process maturity as organizations migrate from the sun-setting CMMs to CMMI

Build on and improve the significant work done on CMM-like models



Have We Lost Sight of the Goal?*

- The end goal of CMMI is to provide a model for continuous process improvement to achieve:
 - Reduced cycle times
 - Meet cost and schedule targets
 - Improved quality
 - Common Systems Engineering and Software model

When achieving a level replaces the focus on continuous improvement, we've lost sight of the goal



How We Got Where We Are*

- CMMI Sponsors opted to pursue staged and continuous models to preserve legacy
 - SW-CMM, staged
 - SECM, continuous
- Acquiring organizations do not have full understanding of how CMMI is intended to be used
 - What a specific level at the enterprise level actually means to an acquisition program
 - That the process and people evaluated to obtain a level are not necessarily applied to their program
 - Achievement of a specific level may or may not have meaning to any given acquisition program



Efforts to Define the Problem

- NDIA report to DoD - CMMI issues, Feb 2005
- NDIA Workshop on CMMI Use in DoD Programs, Sept 2005
 - Explored issues, and identified a set of recommendations
- Spring '06 Government Review and Assessment
 - Validated Workshop findings
 - Refined and augmented issues, developed recommended actions
 - Directly influenced CMMI v1.2
- Ongoing: DCMA data call



Summary of CMMI Problems DoD Sponsor Report 2006

- Programs execute at lower maturity levels than their organizations have achieved and advertised
- High-maturity practices are not consistently applied at the project level after contract award
- How to ensure new projects will incorporate CMMI processes
- Appraisal sampling procedures – how to ensure adequate coverage of the organizational unit
- Appraiser quality – training, consistency
- Lack of agreement on what constitutes Levels 4 and 5
- Need to converge to a single representation
- Content of appraisal disclosure statements is lacking
- Inadequate training and education for acquirers
- Should CMMI be used for source selection

What is the resolution of these issues?



CMMI Government Assessment: Spring 2006: 8 Major Issues for Resolution

1. High Maturity

- Lack of consistency and agreement on what constitutes levels 4 and 5

2. Integrity

- If certified, how can programs be performing at a lower level?

3. Organizational Commitment

- Commitment and ability to implement processes on new projects

4. Acquirer Education

- Misunderstanding and misuse of CMMI by Acquirers



CMMI Government Assessment: Spring 2006: 8 Major Issues for Resolution

5. Two representations

- Staged and Continuous representations

6. Model Complexity and Size

- Balancing content (700 pages) with ease of use

7. New Constellation Strategy

- Impacts of the new architecture on original goal

8. Intended usage of CMMI

- Current application of CMMI against original and future goals



Improvements Implemented in CMMI v1.2

- “Level for Life” - **ELIMINATED**
- Organizational Commitment
 - Added new goal and 2 practices to CMMI v1.2 to address commitment to processes at project start-up
- Appraisal Sampling
 - Developed new sampling rules
 - Precise definition of sample size and organizational coverage
- Appraisal Disclosure Statement (ADS)
 - Added specific sampling information to enhance transparency
 - DoD Contractor ADSs will be posted for Government acquirer access



Improvements Implemented in CMMI v1.2

- High maturity appraisers
 - Established certification requirements for appraisers
 - Oral exams being given to all high maturity appraisers
 - High maturity training course under development – Oct 07 release
- Guidebook for Acquirers
 - Provide concise information to acquirers on supplier use of CMMI
 - Expected release January 2007
- Appraisal Integrity
 - Lead Appraiser cannot be from the appraised business unit
 - Lead Appraiser certification of sample, and appropriateness of Level 4/5 practices
 - SEI is conducting appraisal audits



Remaining Opportunities ...and some Questions

- Revisit Levels 4 and 5
 - Do we need something else to define high maturity?
- Lean the Model and the Appraisal Method
 - Eliminate cumbersome material included for legacy reasons
 - Eliminate staged representation?
- Evaluate Constellation strategy
 - Will Constellations result in stovepipes? Do they make sense?
- Assess next generation process improvement
 - Should CMMI be used for source selection?
 - Given worldwide adoption, is the CMMI Governance Structure appropriate?

Need your ideas and participation



Moving Forward

- Evaluate changes to the CMMI v1.2 product suite to ensure improvement goals are really being met
- Monitor constellation evolution
 - Pilot CMMI-ACQ model
 - Assess implementation
- Continue to capture the right knowledge in the CMMI Guidebook for Acquirers
- Leverage DCMA for actual performance monitoring



Reinforce the basics

- Continue focus on refining what CMMI was intended to achieve
 - Does the current product suite allow us to achieve those objectives?
- Make sure that v1.2 changes bring value added to the user
 - Assess the value of each change
- Ensure changes facilitate achievement of the CMMI objectives

The Department is committed to ensuring CMMI has integrity, and is responsive to next generation process improvement needs



Questions?



What We Learned Along the Way



Where We Were:
Slides from My 2004 Luncheon Address



What We Have Accomplished, And What's Left To Do



NDIA Workshop and Summit on CMMI Use in Acquisition

- Held on September 7 & 8, 2005
- Issues Discussed
 - Background on how organizations approach CMMI appraisals and why
 - Use of Appraisal Disclosure Statement by acquiring organizations
 - Formal guide to CMMI Usage for DoD
 - Training for DoD Acquisition Organizations in the use of CMMI for DoD
 - Government lack of understanding of need for mature SE content and practice
 - Specifying or requiring CMMI in RFPs



CMMI Revitalization

- DoD has invested heavily in the CMMI project as an important Systems and Software Engineering (SSE) initiative
- Problems have surfaced with CMMI
- This briefing will describe these problems, actions being taken, and future plans:
 - Where We Were
 - *Slides from My 2004 Luncheon Address*
 - What We Learned along the Way
 - *Workshops, Assessments, Data Calls*
 - What We Accomplished and What's Left to Do
 - *Resolution of Some Issues for v. 1.2*
 - *Moving Forward*



DCMA Survey and Data Collection*

- Survey conducted in response to OUSD (AT&L) request:
 - “How well do suppliers maintain their CMMI/CMM assessed levels during contract execution?”
- Data collected on 30 Programs (first in a quarterly collection process)
- ACAT Levels reported
 - ACAT – IAC – 1 program
 - ACAT IC – 8 programs
 - ACAT ID – 18 programs
 - ACAT II – 3 programs
- Claimed maturity levels (MLs)
 - 7 CMM ML3
 - 1 CMM ML4
 - 10 CMMI ML3
 - 2 CMMI ML4
 - 10 CMMI ML5

*** Excerpt from DCMA initial findings briefing, 3 Nov 06**



Initial DCMA data reveals...

- Programs are adhering to organizational processes
 - 77% of programs find the supplier performs their defined processes with minor non-compliance
 - The majority of programs do tailor 0-10% of their processes
- Reasons for process non-adherence
 - Primary reason is schedule
 - Cost, resources, and customer impacts are also causes
- There does not appear to be a link between higher maturity levels and program performance
 - No correlation between maturity levels and CPI/SPI



Issue Area 1: High Maturity/Level 4 & 5

- Issues:
 - Lack of agreement on what constitutes Levels 4 and 5
 - High-maturity practices are not consistently applied at the project level after contract award
- Resolution:
 - Certification of high-maturity appraisers is now in place
 - July 06 workshop on high maturity training determined the requirements for which the lead appraisers have to provide evidence in order to do high maturity appraisals
 - Previous courses, oral questions, etc.
 - Body of Knowledge on high maturity will be developed and available by October 2007
 - Lead Appraisers must certify that level 4 and 5 appraised subprocesses map to organization's business objectives



Issue Area 2: Integrity – Programs Execute at Lower Levels than Achieved and Advertised

- Findings that lead to Integrity Issue:
 - Issues with appraiser quality – training, consistency, independence
 - Content of Appraisal Disclosure Statements (ADS) lacking
 - Appraisal sampling inconsistent, and influenced by appraised organization
- Resolutions:
 - CMMI v1.2 training upgrade: face-to-face training with focus on integrity
 - Eliminated “level for life”— now 3 year limit
 - DCMA developing a survey related to CMMI appraisal ratings and program performance to begin to measure the problem
 - CMMI v1.2 updates to the ADS (separate chart)
 - CMMI v1.2 updates to Sampling (separate chart)



Issue Area 2: Integrity - continued

- Issue
 - Appraisal sampling inconsistent, and influenced by appraised organization
 - Appraisal sampling representation of the organizational unit
- Resolutions:
 - Precise definition of the sample
 - Organizational scope: name, type, location
 - Organizational Unit Coverage: size, application domain, geographical breadth, project type expressed in percentages of total organizational unit
 - Projects excluded and rationale
 - Lead Appraiser certification that focus and non-focus projects are representative of organization
 - Lead Appraisers must come from an organization other than the business unit being appraised



Issue Area 2: Integrity - continued

- Issue:
 - Content of Appraisal Disclosure Statement (ADS) is not representative of CMMI appraisal data
- Resolution: v1.2 ADS requires improved level of detail
 - Provides details on appraisal sample
 - Organizational unit, projects, domains
 - Provides Lead Appraiser certifications
 - Project sampling is representative
 - Level 4/5 certifications are based upon practices that represent organizational business goals
 - All appraisals performed after 28 Nov 2006 must use ADS v1.2 (includes CMMI v1.1 appraisals)
 - DoD contractor ADS's will be posted (website tbd) for Government acquirer review



Issue Area 3: Organizational Commitment

- Issue:
 - How to ensure new projects will incorporate CMMI processes
- Solution:
 - Added new goal and two practices to Operational Process Focus (OPF) PA to stress deployment of processes to projects.
 - Added text in Integrated Project Management (IPM) PA to emphasize having a defined process at project start-up
 - CMMI Guidebook for Acquirers will discuss need to address project level implementation with developers



Issue Area 4: CMMI Guidance for Acquirers

- Issues

- Inadequate training and education for acquirers resulting in misrepresentation and misuse of CMMI

- Solution

- *CMMI Guidebook for Acquirers*
 - Due out after the first of the year
 - Will address how CMMI should be used by acquirers, how to interpret appraisal results, how to treat CMMI throughout the lifecycle
- Development of the CMMI-Acquisition Constellation