CMMI—Next Steps

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Overview

• Identification of Issues
• Resolutions Implemented for v. 1.2*
• Next Steps
  – What’s next for Process Improvement?
  – Development of CMMI-ACQ
• Questions/Comments

* This briefing summarizes a significant effort by Government and Industry to assess CMMI issues and determine appropriate action.
Identification of Issues
Surfacing of Problems with Use of CMMI Ratings

• Problems presented by OSD at the 2004 NDIA CMMI Technology Conference
  – When achieving a level replaces the focus on continuous improvement, we’ve lost sight of the goal
  – We created “level-mania” instead of continuous improvement
• NDIA Workshop and Summit 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
  – Reported to CMMI SG and Sponsors
• Ongoing: DCMA data call. Initial assessment confirms problems
CMMI Issues
DoD Sponsor Report, SSTC – May 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: 8 Major Issue Areas

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<tr>
<th>ISSUE AREA</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>1. High Maturity/Levels 4 and 5</td>
<td>Lack of consistency in what constitutes Levels 4 and 5, and what constitutes granting of an Equivalent Stage</td>
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| 2. Integrity – if certified, how can programs be performing at a lower level? | Appraisal Sampling  
- What defines the organizational unit  
- Lead appraiser authority for selection of sample  
Appraiser Quality  
- Consistency, adequacy of training  
Appraisal Disclosure  
- Process area profiles  
- More details on organizational unit  
Appraisal Life – “Level for life” |
| 3. Accounting for Organizational Commitment | How to ensure the appraisal addresses organizational commitment and ability to quickly implement processes on new projects |
# CMMI Government Assessment: 8 Major Issue Areas

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<tr>
<td>4. Education for users (acquirers)</td>
<td>Develop guidebook, training, for using CMMI in acquisition</td>
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<td>5. Two Representations</td>
<td>Consider the need for different representations</td>
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<td>- Define why we need both a maturity level and a capability level</td>
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<td>- Should we eliminate levels?</td>
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<td>6. Lean the model</td>
<td>Is it possible to make the model more streamlined?</td>
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<td>7. Constellation Implementation</td>
<td>Development and usage of Core Model</td>
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<td>Develop strategy to ensure constellations do not result in stovepiped domains</td>
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<td>8. CMMI Usage</td>
<td>Should CMMI be used for source selection? What is the “next generation“ goal for CMMI?</td>
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Resolutions Implemented for v. 1.2
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
Issue Areas 5-8
What’s Next for CMMI?

• Questions for V2.0 and beyond
  – Should there be two representations – continuous and staged?
  – Should CMMI be used for source selection?
  – Is the Level 4 & 5 construct correct?
  – Can we “lean the model”?
  – How can constellations be implemented and continue to have full integration
  – And more...

• What does Next Generation Process Improvement look like?
Next Steps:

CMMI-Acquisition

CMMI Moving Forward
CMMI-ACQ
Development Strategy

• General Motors and the SEI developed the initial CMMI-ACQ model
  – Considered CMMI Acquisition Module (CMMI-AM) in its development
  – Involved industry and government agencies in developing and reviewing the initial draft model

• Additional requirements solicited by piloting
  – Assures Service/Agency/Industry acquirer needs are addressed
  – Enhances acquiring organization understanding of process improvement

• CMMI-ACQ Model Team will propose improvements to the initial model based upon findings from the pilots

• Advisory Board will vet changes
  – Key reviewers identified for stakeholder review

• Steering Group will endorse final update
Initial CMMI-ACQ
Key Acquisition Processes

- Solicitation & Supplier Agreement Development
- Acquisition Requirements Development
- Acquisition Validation
- Acquisition Management
- Acquisition Technical Solution
- Acquisition Verification

Core Processes

Project Management
CMMI-ACQ Pilots

- CMMI planned/proposed pilot efforts for FY07
  - Australian DMO (complete)
  - General Motors – Warren, MI (in progress)
  - Army – Picatinny Arsenal
  - USAF – Space & Missile Center; Electronic Systems Command
  - NAVAIR – (tbd)
  - Missile Defense Agency (tbd)
  - DHS – “US Visit” Program
  - HUD – (tbd)

- UK MoD interest being explored
- GAO and others are piloting as opportunities arise
Summary Improvements in v1.2

• New material added to CMMI v1.2 to ensure processes used at project start-up
• Appraisal Disclosure Statement (ADS) improved
• Sampling rules improved
• High maturity appraiser certification instituted
• Guidebook and model being developed for acquirers
Moving Forward

• Ensure constellations don’t become stovepipes
• Evaluate changes to the CMMI v1.2 product suite to ensure improvement goals are really being met
  – Integrity of appraisals
  – Quality of the product suite
  – Education of acquirers
• Capture the right knowledge in the CMMI Guidebook for Acquirers

CMMI continues to evolve and improve
Additional Improvement Opportunities

• Lack of agreement on what constitutes Levels 4 and 5

• Lean the Model
  – Convene 6-sigma team to analyze
  – Eliminate cumbersome material included for legacy reasons
  – Opportunities for streamlining where appropriate
  – Assess convergence to a single representation?

• Next Generation Process Improvement (PI)
  – Develop a strategy for how we will take PI to the next level
  – Do we need something else with CMMI for high maturity?
  – Given worldwide adoption, is the CMMI Governance Structure appropriate?

Need your ideas and participation
Questions/Comments?
CMMI-ACQ Operational Concept

CMMI-SG

Advisory Board
- OUSD (AT&L)
- Services (3)
- MDA
- DCMA
- GAO
- GM
- NDIA

Model Team
- CMMI Architect
- SEI
- Acquisition Experts (Services, DAU, Industry)

Initial CMMI-ACQ

- v.1
- v.9
- v.1.2

(Requirements/Design*) (Pilot/Review/Revise) (Pilot/Revise)

Making changes to be consistent with 1.2)

*The initial CMMI-ACQ model Requirements and Design was developed with CMMI-AM, and the GM ACQ project, using the CMMI v1.2 model as the core

Stakeholder Community
Advisory Board Functions

• Representatives from major acquisition community stakeholders
  – OUSD (AT&L)
  – Services/Agencies
  – Industry (GM, NDIA)
  – Government Agencies (GAO)
• Develops requirements and rules for changes to the baseline
  – Ensures CMMI-ACQ considers stakeholder needs and is relevant
• Oversees the pilots
• Coordinates the model within their organizations
• Actively monitors progress of and vets/contributes to products from all CMMI-ACQ teams (pilot teams, model team)
• Reports CMMI-ACQ status and recommendations to CMMI Steering Group for approval
DCMA CMMI/CMM Data Call on Process Adherence*

• Sent out in response to OUSD (AT&L) request to answer “How well do suppliers maintain their CMMI/CMM assessed levels during contract execution?”

• Included
  • Suppliers with ACAT I and II programs and,
  • Suppliers claiming a CMM/CMMI maturity level or capability level rating
    • Ratings came from independent third parties and internal teams

• Adherence ratings given by DCMA
  • Ratings based on routine process reviews of the rated processes to determine compliance during contract execution

• Data from 108 Supplier Organizational Units (after data scrub)

*DCMA, 14 Aug 06
DCMA Data Call on Process Adherence Results

• 44% of the suppliers have major non-compliance issues with implementing their appraised processes
• Only 6% of the suppliers are strictly following their appraised processes
• The suppliers that have a CMM rating have a higher percentage of non-compliance than CMMI-rated suppliers
• The highest percentage of adherence with minor non-conformances are the CMMI Maturity Level 5 suppliers
• Additional study is needed to determine the relevance of this information
CMMI: Next Steps

• Implementing changes to the CMMI v1.2 product suite to ensure:
  – Integrity of appraisals
  – Quality of the product suite
  – Education of acquirers
  – Opportunities for streamlining where appropriate

• Developing a CMMI model for Acquirer process improvement
  – Partnership with General Motors
  – Stakeholders cross DoD, Govt Agencies and Industry

CMMI continues to evolve and improve
New CMMI Architecture
Concept of Constellations

• “A collection of components that are used to construct models, training materials and appraisal materials in an area of interest”
  – Development Constellation
  – Acquisition Constellation
  – Services Constellation

• CMMI-DEV v. 1.2 published 28 Sept along with appraisal and training materials
  – Available at http://www.sei.cmu.edu/news-at-sei/whats-new/cmmi-v12.htm

• The model for the Acquisition Constellation will be called CMMI for Acquisition, CMMI-ACQ