CMMI—Update and Next Steps

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Outline

- CMMI-DEV Guidebook for Acquirers
- CMMI for Acquisition (CMM-ACQ)
- CMMI Next Steps Beyond v1.2
- CMMI Constellations, Focus Topics and Moving Forward
CMMI: Implementation Issues

- Developers execute at lower maturity levels than their organizations have achieved and advertised
- Assurance that new projects will incorporate CMMI processes
- Appraiser quality – training, consistency
- Lack of agreement on what constitutes Levels 4 and 5
  - Requirements for demonstrated behavior
  - Definition of Levels 4 and 5 themselves
- Appraisal disclosure statement content
  - Coverage of the organization appraised
  - Performance on individual process areas
- Training and education for acquirers
- CMMI misuse in source selection

Proper use of CMMI requires knowledge of these issues
Understanding and Leveraging a Supplier’s CMMI Efforts: A Guidebook for Acquirers
CMMI Acquirer’s Guidebook

• Designed to help an acquirer benefit from a supplier’s use of CMMI-DEV while avoiding the pitfalls associated with unrealistic expectations related to CMMI level ratings

• Readable (small) 40 pages for the Program Manager
  – Available at http://www.sei.cmu.edu/publications/documents/07.reports/07tr004.html

• Part of the CMMI Product Suite
  – Change requests and comments can be submitted to cmmi-comments@sei.cmu.edu.
  – Will be updated with learning and experience

• Will be made into a Continuous Learning Module for acquirer training with the Defense Acquisition University
Key Tips in the Guidebook

• Do not ask for CMMI maturity levels in RFPs
  – Ask for capability in processes that are key to the success of your program

• Read the Appraisal Disclosure Statement (ADS)
  – Determine what part of the organization was actually appraised and how it relates to your program
  – For high maturity (levels 4 and 5), determine what processes were actually improved
  – Ask for clarification, appraisal findings if needed

• Recognize that levels are a result of appraisals that cost money
  – Can achieve results using other assessment techniques
  – Can do post-award checks to ensure your project is implementing its promised processes

**High capability and maturity level ratings do not of themselves guarantee program success**
Guidebook Bottom Line

• DoD does not place significant emphasis on capability level or maturity level ratings
  – Promotes CMMI as a tool for internal process improvement

• Lack of emphasis on ratings is prudent
  – Findings that not all suppliers are exhibiting behavior consistent with their attained CMMI maturity level rating

• Essential that DoD and industry use CMMI capability in the right manner, with appropriate measure, in order to realize benefits
  – CMMI-DEV provides a set of best practices to be employed by the supplier
CMMI for Acquisition
1 Nov 07 release
CMMI-ACQ
Development Strategy

• General Motors and the SEI developed the initial draft model
  – Source models included CMMI Acquisition Module (CMMI-AM) and Software Acquisition Capability Maturity Model (SA-CMM)
  – Incorporated lessons from several acquisition organizations to adapt the CMMI-DEV to their organization
  – Pilots from several acquisition organizations (DHS, GAO, Army, GM, others)
• Model Team dispositioned over 700 change requests from stakeholder review and workshop to develop and peer review recommended changes to initial draft
• Advisory Board of government and industry stakeholders established as change control board
• v0.9 piloted at one defense agency and one commercial company
• Steering Group endorsed final product as part of the v1.2 product suite
• Will be published on 1 November, available at http://www.sei.cmu.edu/cmmi/models/index.html
CMMI-ACQ Development Challenges

• Model had to explicitly apply to the acquisition of both products and services
  – From IT outsourcing to DoD acquisition of a weapon system
  – Applicable internationally-recognized references and glossary terms added, e.g., service level measurement

• Model had to apply to spectrum of acquisition organizations from commercial industry to government agencies, both large and small
ACQ PAs seamlessly interact with all CMF PAs through ACQ-specific material added to CMF PAs
Acquisition Specific-Practice Enhancements to CMF PAs

- Measurement and Analysis
  - Includes earned value management material
  - Consistency across the model in measurement terms
- Project Planning
  - Includes establishment and maintenance of a project’s acquisition strategy
- Project Planning and Project Monitoring and Control
  - Includes important specific practices on transition to operations and support
- Integrated Project Management and Organizational Process Development
  - Includes material on integrated teaming
  - Crucial to stakeholder involvement for acquisitions in a system of system environment
Highlights of Acquisition PAs

• Solicitation and Supplier Agreement Development (SSAD) and Agreement Management (AM)
  – Similar to Supplier Agreement Management in CMMI-DEV but greatly expanded into 2 PAs
  – Covers both legal contracts and other forms of supplier agreements such as interagency MOAs

• Acquisition Requirements Development
  – Similar to Requirements Development in CMMI-DEV, but develops customer and contractual requirements
  – At maturity level 2 due to its importance in acquisition
Highlights of Acquisition PAs

• Acquisition Technical Management
  – Emphasizes technical reviews and technical performance measurement for oversight of the supplier
  – Interface Management included to complement the other kinds of technical management process areas (e.g., Risk Management, Requirements Management)

• Acquisition Verification and Acquisition Validation
  – Similar to CMMI-DEV Verification and Validation PAs but enhanced for the acquirer
CMMI Next Steps: Beyond v1.2
Questions for v2.0 of the Models and Appraisal Method

• Do we need something different or additional to define High Maturity (i.e. CMMI Level 4 & 5)?
• How can we apply Lean techniques to CMMI models? Appraisal methods?
• Can we eliminate the Staged representation?
• Is the CMMI v1.2 Constellation Strategy the right approach?
• Can we identify “next-generation” process improvement methodology?
• Can CMMI be harmonized with other continuous process improvement efforts?
• Can repeatability, consistency and overall model and appraisal methodology be improved?
• Are there “breakthrough” concepts that we can apply to overall process improvement?
Excerpts from Next Gen PI Workshops

• Leaning the model
  – Can we lean for small projects? Can the model have some scalability according to various factors (e.g., project size, PoP, organization size)?
  – Consider options for packaging (remove redundancy or repackage)
  – Consider fundamental, intermediate and advanced volumes
  – Consider architectural views for appropriate for the different using communities

• Levels 4-5
  – Combine levels 4 and 5 into one level because of their close tie
  – 4 and 5 are not adequately elaborated for implementation - may need more detail to drive proper behavior
  – Consider maturity levels within PAs (e.g., project management PAs for each level)

• Constellations – the right approach?
  – Alternative approach: Start with a CMMI Model Framework (CMF) and add where you need to, expand scope (+ concept)
  – Instead of creating constellations, encourage projects to do what makes sense with respect to what they are doing using the parent model
• Next Gen PI ideas
  – Consider better interfacing approaches with other methodologies (e.g., six sigma for high maturity)
  – Consider how CMMI could interface with other process improvement methodologies (e.g. Lean, PMBOK, theory of constraints, next generation IDEAL)
  – Consider an emphasis on process performance effectiveness and efficiency, (e.g., effectiveness 6 sigma, efficiency LEAN)

• Leaning Appraisals
  – Consider notion of visits or interim steps (like ISO surveillance audits)
  – Focus on correlation between results and performance (process reviews)
  – Make some assumptions that some processes are in place (e.g., assume project planning has happened, but don’t look at PP specifically unless you see something out of place in PMC; similarly, could start with IPM for a level 3, or QPM for a level 4)
Next Steps:
**CMMI Constellations and Focus Topics**
Dealing with Two Constellations in the Product Suite

• The following questions need to be considered
  – How does an organization that does both development and acquisition use both models effectively?
  – How does an organization that uses both models have efficient appraisals?
  – How to keep the CMF consistent
    • CMMI-ACQ identified changes needed in the CMF shared material
    • There is now a mismatch with CMMI-DEV v1.2
  – How to ensure appraiser and instructor qualifications for the new model?
  – How do we accomplish training?
CMMI for the Service Sector: Some Questions to be Addressed

• What is the requirement/problem to be solved?
• What distinguishes CMMI-SVC from CMMI-DEV and ACQ? Other process models?
• What are the characteristics of Service providers?
• Is there known benefit from Service-specific process improvement? From Service-specific practices?
• Can the broad spectrum of Services be governed by a single model?
• How should Service Sector needs be incorporated into the CMMI product suite?

We are currently evaluating these questions
CMMI Focus Topics:
Business Rules

What is a Focus Topic?
• Focus Topics provide additional guidance for the development of CMMI-based internal processes within an area of interest
• Examples of Focus Topics: SoS, Safety, Security, COTS

Business Rules for Focus Topics:
• They provide a “thread” through existing process areas to augment or highlight a specialty area of importance to an acquirer or developer
• They do not introduce new process areas or specific goals
• Documented as Technical Notes (TNs)
• Appraisals shall not include reference to Focus Topics as part of the appraisal ratings
  – Progress against Focus Topics can be included in appraisal findings for the purpose of identifying strengths and weaknesses.
• Shall adhere to the CMMI Architecture Document
• Steering Group and Sponsors informed of the possible Focus Topic TN and its proposed development plan before work is begun by the SEI
• SEI publishes the TN after a suitable set of reviews have been completed and comments have been dispositioned and accepted

Ensure all parts of the product suite are consistent and managed
Moving Forward

• 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
  – Opportunities for streamlining where appropriate

• Re-look levels 4 and 5
  – Consistent definition and appraisal
  – Relationship to other models (e.g. 6 sigma)
  – Appraiser and implementer training and understanding

• Monitor Cost Impacts and Return on Investment
  – All changes to the suite have impacts on industry and government, direct and indirect
  – Need cost impact data from you!!
Questions/Comments?

Guidebook:
http://www.sei.cmu.edu/publications/documents/07.reports/07tr004.html

CMMI-ACQ Model:
http://www.sei.cmu.edu/cmmi/models/index.html

CMMI-AM Module:
http://www.sei.cmu.edu/publications/documents/05.reports/05tr011.html

Ideas for Next Gen PI:
Comment forms available on SEI website
Example: Published maturity levels may be based on a single location.
CMMI-ACQ Plan for V2.0

• V1.2 concentrated on the project-, or program-level acquisition best practices
• V2.0 will add more of the enterprise/organization level best practices for acquisition
  – Address enterprise level acquisition strategies
    • Preferred supplier strategies
  – Address the Program Executive Office level
• V2.0 will also benefit from change requests issued from lessons learned using the model globally