

**Report Out of Guidebook & Training Breakout Group  
Workshop on CMMI Use in Acquisition  
September 7 & 8, 2005  
Sheraton Crystal City Hotel, Alexandria, VA**

**Problem Statement:**

After discussion about the fact that programs fail for a variety of reasons, not all of which can be directly attributed to process failures, it was agreed that there is ample evidence that programs execute at lower maturity levels than their home organizations have achieved. Therefore, it was agreed that the problem statement should be "High maturity organizations are not consistently applying expected processes at the project level after contract award".

**Root Cause Discussion:**

There were a number of causes for the problem - programs not applying their mature behaviors and achieving the expected and desired results.

There were different perspectives for not achieving expected behaviors.

One was failure of the programs to execute. The causes were felt to be two fold. Programs fail because of poor deployment and monitoring of credible integrated systems engineering and project management processes across programs. Thus, organizations with good organizational practices would fail because they didn't get their practices deployed. If contractors and suppliers do not have effective means of transitioning organizational standard practices to new programs, the programs do not gain the benefit of the mature practices early in the programs when critical engineering activities occur. It was felt that not effectively performing these crucial engineering practices early in a program could create serious problems that later adoption of mature practices could not overcome.

Another perspective was related to the acquisition organization behaviors. It was recognized that the CMMI rating system as it is currently used in the acquisition process does not currently meet expectations of the acquisition community for the next project. It was felt that the expectations of the acquisition organizations for the CMMI ratings were broader than could reasonably be achieved. It was felt that acquisition organizations were largely untrained in the CMMI and did not understand how companies applied it in their process improvement activities. For example, acquisition organizations may expect that organizations that achieve a stated maturity or capability level automatically have achieved competency in deploying their processes to new programs. Yet an examination of the appraisal histories of an organization by a trained acquisition organization may identify that the organization has only achieved maturity levels on programs several years after their start up. This would lead a trained organization to question the organization's ability to roll out their practices early in a program which could lead to a weakness in engineering early in the program's

life cycle, when most of the critical engineering decisions are made. An untrained acquisition organization may have expectations that are broader than reality causing them to presume that they did not need to examine the supplier's capabilities in detail. It was concluded that training was needed if an acquisition organization is to effectively use the CMMI in evaluating capabilities.

It was also recognized that contractors employ process improvement to gain benefits in performance, but that they achieve those benefits over time. There were numerous comments concerning the fact that organizations carefully select sample projects or do not appraise all project within their organization. The workshop participants concluded that many programs have very long life cycles, and that organizational improvements are not necessarily retrofitted on long term programs for several reasons, not the least of which is the customer's dissatisfaction with having their program processes modified after the program is underway. In addition, internal process improvement is a long term activity and trying to apply in the short term may actually be detrimental to the value received both by the contractor organization and their customer, DoD. After much discussion, it was recognized that the normal focus of a CMMI appraisal is the latest organizational processes to determine their maturity, capability and effectiveness since it is those most current organizational processes that would be applied on the next program to start up. It was also recognized that a sample of those projects that are representative of the most current processes would be appropriate. It was noted that often the discussion of the value of sampling was confused. Part of the discussion presumed that, to have a valid benchmark, the organization would have to appraisal almost all their programs – some suggestions on measures of % of business, % of projects, and % of population involved would be needed to understand whether the organization had a representative appraisal. Yet the discussion also recognized that some organizations have a relative few programs and that numbers of projects might not be an adequate measure of appropriate appraisal content, either in organizations with large numbers of smaller projects or those with a small number of very large projects.

Lastly, the breakout group felt that DoD program managers did not understand why the CMMI is important making it difficult to interpret CMMI ratings. There were cases identified where key practices of the CMMI were eliminated by program managers, seriously impacting the ability of the program to execute the appropriate systems engineering and software engineering practices.

### **Solutions and Recommendations:**

The breakout group separated their recommendations into three categories.

- 1) Guidebook
- 2) Training
- 3) Other Actions and Recommendations

#### Guidebook:

The breakout group came up with 8 recommendations related to preparation of a “Guidebook for Use of CMMI In Acquisition”. The solutions are listed in priority order – priority having been established by multi-voting.

- 1) During source selection, collect descriptions of contractors proposed processes and evaluate those that you identify as key to your program success.
  - a. Document the key process requirements in the SEP
  - b. Ensure that contractors show how they perform those processes on other programs (Are the appraised organizational processes what is proposed?)
  - c. Require them to define how they will deploy those processes effectively to reduce the program’s risks.

The breakout group concluded that acquisition organization should require that the contractor define in their proposals those processes that they will use on the project; and, at the outset of the acquisition, the acquisition organization should identify the processes that the acquisition organization deemed to be important to its success and would use those in the source selection evaluation. The contractor should also be required to clearly establish the relationship between the contractor’s proposed processes and the processes that were used as the basis of their most recent appraisal. In addition, it is equally important to have the contractor define their approach to deployment of their processes to the new program.

- 2) Include contractor-defined processes in contract and evaluate contractor compliance early and throughout execution.

Regardless of the evaluation of the contractor processes, the acquisition organization needs to ensure that there is a commitment to execute those processes and the proposed transition of those processes to the new program in the contract so the contractor is held responsible to meet these commitments.
- 3) Request process performance data against project plan to demonstrate process effectiveness and review that data during project performance. Monitoring of process execution is a function of the acquisition organization and should be described and executed as part of the project.
- 4) Provide a methodology to relate processes to milestones or acquisition phases and to the phasing of artifacts.

It was recognized that a mapping of processes to milestones and acquisition phases would not only aid in evaluating the contractors proposal but would provide a means to monitor execution.
- 5) Provide guidance on use of award fee criteria as a means to enforce contractor behavior.

One means that works is to use award fee criteria on Cost contract vehicles to encourage contractor behavior relative to implementation of process and effective transition of the organizational processes to new programs.
- 6) Recommend use of support sources for acquisition (e.g., DCMA & FFRDCs).

Because DCMA and the FFRDCs are trained and knowledgeable on the use of CMMI, they can provide a valuable resource for the acquiring organization. Furthermore, they are available today, and can immediately mitigate the current lack of CMMI training within acquiring organizations.

- 7) Define means to measure and evaluate how quickly organizations get organizational processes instantiated on new projects.  
If the transition of organizational processes to new programs can be measured, the acquisition organization will have a means to determine the risk that an organization will incur in new program start up.
- 8) Create methodology for identifying and specifying appropriate standards in the RFP.  
Several acquisition organizations, SMC in particular, are beginning to require a core set of standards for use on their projects in identified domains. Appropriate use of these standards should be addressed in the guidebook.

#### Training:

There were 4 training recommendations. The breakout group concluded that all are equally important.

- 1) Educate acquisition organizations to look for evidence of performance of a high maturity organization (past performance measures to provide evidence versus past performance).  
To effectively apply CMMI in choosing the supplier who can deliver with the least risk, training should be provided for the acquisition organization so they understand the ways evidence can be gathered to support their evaluation.

- 2) Develop CMMI training focused on the acquirer
  - Why process is important
  - What benefits it provides
  - Best practices as represented in CMMI
  - How to use CMMI in acquisition (how to use guidebook)

Any training created to support the application of CMMI in acquisition needs to be focused on the acquisition organization. Up until now, CMMI training has been focused on the developing organization.

- 3) Review training to determine where and how CMMI related training should be included
  - Include development of an on-line training module

CMMI training should be developed in ways that are appropriate for acquisition organizations. On-line training was felt to be an effective means to provide that training.

- 4) Make training mandatory for acquisition program managers, SPRDE, contractor support chief engineers, and contracting officers.  
It was felt that the only way to ensure that the key acquisition personnel actually received training was to make that training, at least on-line training, mandatory for the key acquisition workforce.

#### Other Actions and Recommendations:

The breakout group concluded that there were 6 other recommendations related to execution of the solutions.

- 1) Complete Guidebook draft, submit for review and pilot.  
Actually, this was to emphasize the timely completion of the Guidebook.
- 2) Issue policy on requiring training on CMMI in Acquisition.  
One way to ensure that training is deployed and acquisition organizations are actually trained is to issue a directive requiring it.
- 3) OSD should issue guidance for use of sources of support to Program Offices (e.g., DCMA, FFRDCs)
  - DCMA has an aggressive CMMI training effort underwayTo encourage use of established resources that are available to acquisition organizations, OSD should provide guidance on the availability of those resources and the appropriateness of their use.
- 4) Create a 'road show' to encourage adoption of Guidebook
  - Demonstrate value of what it brings to the program
  - Link this to the CMMI best practices
  - Link use to reduction of program riskOne way to provide the needed information on the value and use of the CMMI to acquisition organizations is to create a 'road show' that would focus their attention and provide the needed impetus to take the desired action.
- 5) Establish a goal to train a specified percentage of the targeted population within a stated number of years
  - Priority on training program managers & contracting officersIt was felt that setting a goal for training key acquisition staff would be the only way to ensure that the program was given appropriate emphasis.
- 6) Establish a review process for Program Offices when it is proposed that engineering processes that are related to CMMI Process Areas should be eliminated from a program.  
One means of ensuring that Program Offices do not inappropriately delete key engineering processes is to create a formal process for review of all such decisions.