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The Process In-Execution Review (PIER) After Three Years

Dale Swanson, MITRE
Lynda Rosa, MITRE
Jennifer Hoberman, MITRE
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Original Problem Statement

Overview of the PIER

Experiences and Lessons Learned

Outlook for the future
Problem Statement

- Most DoD contractors claim high Maturity Levels (Level 3 and above) as measured by the Capability Maturity Model Integration (CMMI), yet performance of individual projects does not reflect that maturity.

- How can the Government leverage the CMMI to close the performance gaps on their programs?
Organizations

- Maturity Levels are indicators of organizational potential performance.
- They describe how the next project may perform based on a sampling of existing projects.
- Maturity Levels reside at the organizational level and are not an indication of how an individual project is performing.
- Project instances may be situated in a different time frame and in a different part of the organization.

High Maturity Projects

MLs apply HERE based upon appraisals of THESE é but your project is HERE or HERE
Overview

- Original Problem Statement

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Process In-Execution Review (PIER)

- Adapts the SCAMPI B/C method for assessing development contractor process performance during source selection and contract execution
- Applies to specific projects versus organizational level
- Exposes risks to project execution – early or “leading” indicator
- Tailored to focus on process areas of most interest
- Considers the appropriateness of the process for the program
  - Our observation is that this is a major difference between SCAMPI and PIER

Goals

- Execute projects at higher maturity levels
- Improve overall cost, schedule, and technical performance
- Tie process improvement goals and accomplishments to earned value and award fee to reinforce desired behaviors
SCAMPI Method A
Institutionalization
Organizational focus
Rigorous, expensive
Ratings

SCAMPI Method B
Deployment and execution
Evidence of implementation
What they are doing

SCAMPI Method C
Approach
Plan for execution
What they will do

Resource intensive
Limited utility for full and open source selection

Contract monitoring
Competitive downselect
Limited utility for full and open source selection

Contract Monitoring
Full and open source selection
PIER Methodology

- Assess risks associated with process development/tailoring and execution pre-contract award
- Assess risks associated with process tailoring, execution, adherence, and capability during contract performance
  - Select process areas relevant to project’s timing and activities
  - Assess process appropriateness
- Follow SCAMPI Methodology
  - Interview questions based on model tailored as appropriate
  - Artifact examination based on performance, quality, specific program process requirements, and risk
  - Observe strict confidentiality – non-attribution
  - Team, contractor, sponsor only
- Results in actionable findings by Program Office and/or Contractor
- Approach PIER collaboratively whenever possible
- Original Problem Statement
- Overview of the PIER
- Experiences and Lessons Learned
- Outlook for the future
Problems Found During PIERs

- Contractor proposed tailoring for specific processes
  - Government later discovered that tailoring meant “tailor out” processes that were appropriate and applicable for the program (e.g., configuration management)
  - Project specific plans and processes not developed when needed; out of date or boiler-plate content obviously not used

- In depth look into execution of processes, evidence provided by program artifacts, and staff interviews tell a different story than is often represented in management reviews
  - Need to check up on corrective actions

- Software development processes inadequate
  - Lack consideration of program specific risks especially for software assurance
  - Lack firmware development plans especially for programmable devices
Problems Found During PIERS (continued)

- Product quality and completeness is secondary to “on time” delivery
  - Management unresponsive to quality reports and audits especially during development activities

- Development configuration control is often inadequate or non existent
  - Software builds especially before critical design reviews
  - Documentation
  - Work products driving the design not reviewed, signed, final or under configuration control

- Inadequate risk management programs
  - Abandon process
  - Not full team participation/filtered risks

- Contractor not taking benefit of lessons learned from other programs

- Inadequate stakeholder planning and involvement
Problems Found During PIERs (concluded)

- Program information and materials at risk
  - Security and back up systems
- Not getting the best out of engineering tools
  - Not implemented well or at appropriate point in the program
  - Personnel not sufficiently trained in use
- Critical trade studies, design decisions and rationale not documented or explained in accordance with documented organizational processes
- Inadequate or ineffective program planning and control
  - Not recording all time worked – skews historical information for estimation
  - Booking credit for incomplete work packages – roll problems forward
  - Schedule planning results in periods of substantial contractor and Government overload for reviews and meetings
  - Inadequate staff planning results in critical shortfalls
Lessons Learned – PIER Process

- Variability of process execution and performance varies widely
  - From contractor to contractor
  - Among contractor teams
  - For different contractor operating locations or programs
- Performance is directly related to process execution
  - Periodic checks on contractor increases probability of good process execution on individual programs
- Conduct of PIERs provides insight not otherwise available to Government Program Manager
  - Conduct when artifacts are available and time exists to correct identified risks
    - Between requirements review and design review
- Plan PIERs so as to minimize program disruption and maximize participation
  - Between System Requirements Review and Design Reviews
Lessons Learned – PIER Process (continued)

- Program Manager must act on the information resulting from the PIER in a timely manner
  - Capture observations and trends to isolate potential systemic problems
  - Improvements required for contractor and Government
- PIER teams should be led by individuals with CMMI, SCAMPI, technical, and program management background
  - Especially important to have some knowledge of the program and topic area
  - Certified SCAMPI B/C Team Lead or Lead Appraiser PIER teams should have a mix of technical backgrounds relevant to program
  - One contractor team member from outside the program (and preferably the organization)
- Consider the type of program, the stage of development, and asserted organizational maturity level in selecting process areas
Lessons Learned – PIER Process (concluded)

- Contract execution PIERs for process improvement
  - Independent Team Lead
  - Mix of contractor and program office team in collaborative environment
  - At least one team member independent of program
  - Team training to include site coordinator

- Contract execution PIERs for Award Fee
  - Government team

- Acquisition organization must have a consistent approach to conducting PIERs
  - Need guidance, templates, and training to ensure consistency of PIERs

- Government needs a method for collecting PIER results (non-attribution) to isolate systemic problems in acquisitions

- PIERs are mentally and physically challenging but worth the effort
■ Original Problem Statement

■ Overview of the PIER

■ Experiences and Lessons Learned

■ Outlook for the future
Outlook for the Future

- Add financial management and Cost Account Management
  - Assess execution of Earned Value Management System (EVMS) practices especially in correlating product maturity and performance to earned value
  - May integrate with the Integrated Baseline Review (IBR) process
- Deeper look into product quality
  - Technical maturity and product performance using models, simulations, prototypes, and early functional assessments
  - Identification and implementation of Technical Performance Measures
- Modify PIER for CMMI v1.2 for Development
  - Adjustments based on CMMI-ACQ when available
  - Adjustments based on CMMI-SVC when available
- Apply PIERs to Government as well as Government/contractor teams
ESC has conducted about 18 PIERS for various programs

The SCAMPI-based PIER provides valuable insight into contractor capability on a project-by-project basis, supplementing technical activities, and providing a basis for risk assessment, performance feedback, incentive management, and program office commitment

The PIER is gaining acceptance in the acquisition community, being integrated into past and present program plans

Planning for future PIERS will leverage current lessons, and will adapt as the CMMI changes

We're watching you...
For More Information, Contact:

- **Dale Swanson**  
The MITRE Corporation  
202 Burlington Road  
Bedford, MA 01730-1420  
781-266-9195  
swaneed@mitre.org

- **Lynda Rosa**  
ESC ACE Chief Engineer  
9 Eglin Street  
Hanscom AFB, MA 01731-2100  
781-377-5398  
linda.roса.ffrdc@hanscom.af.mil  
lmrosa@mitre.org

- **Jennifer Hoberman**  
The MITRE Corporation  
202 Burlington Road  
Bedford, MA 01730-1420  
781-266-9581  
jkh@mitre.org