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

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- **Original Problem Statement**
- **Overview of the PIER**
- **Experiences and Lessons Learned**
- **Outlook for the future**

# blem Statement

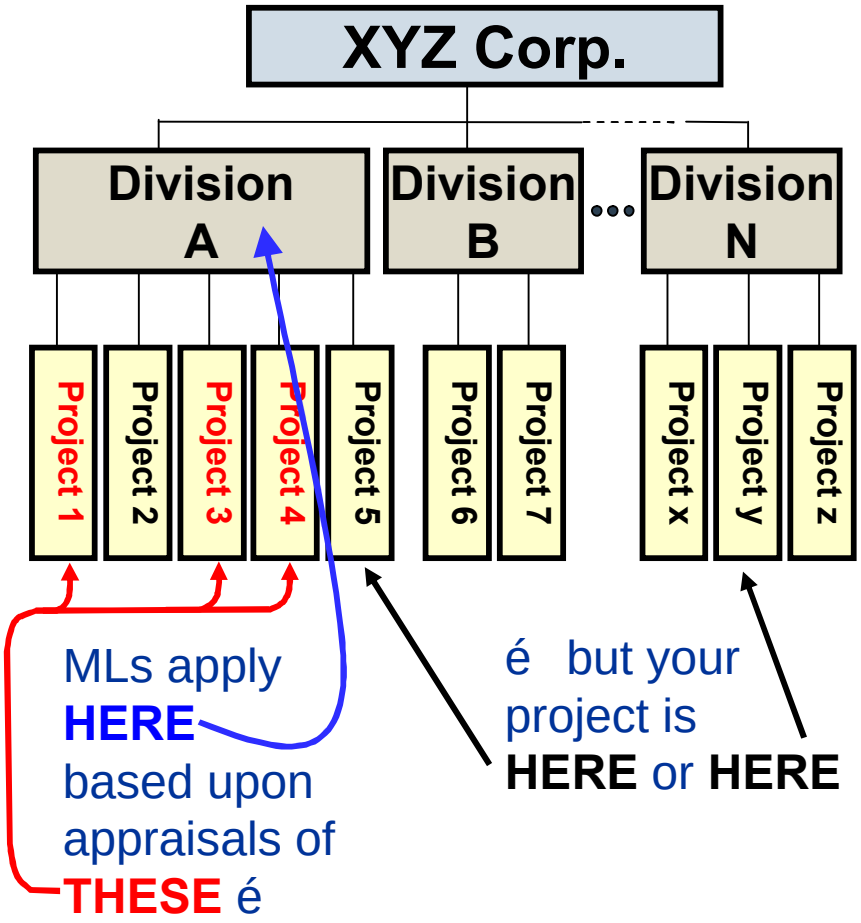
- Most DoD contractors claim high Maturity Levels (Level 3 and above) as measured by the Capability Maturity Model Integration (CMMI), yet performance of individual projects does not reflect that maturity.

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

# Organizations

# High Maturity Projects

- **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.**



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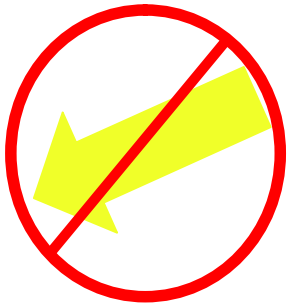
# troduced in 2004 for ESC

- **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

# sessment Needs

**SCAMPI Method A**

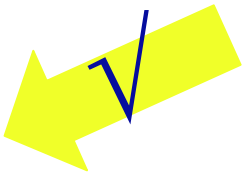
- Institutionalization
- Organizational focus
- Rigorous, expensive
- Ratings



- *Resource intensive*
- *Limited utility for full and open source selection*

**SCAMPI Method B**

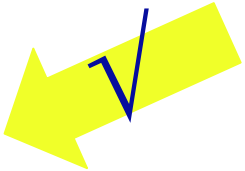
- Deployment and execution
- Evidence of implementation
- What they are doing



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

**SCAMPI Method C**

- Approach
- Plan for execution
- What they will do



- *Contract Monitoring*
- *Full and open source selection*

# dology

- 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

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# 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

# arned – 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

# arned – 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

# arned – 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

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# 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…

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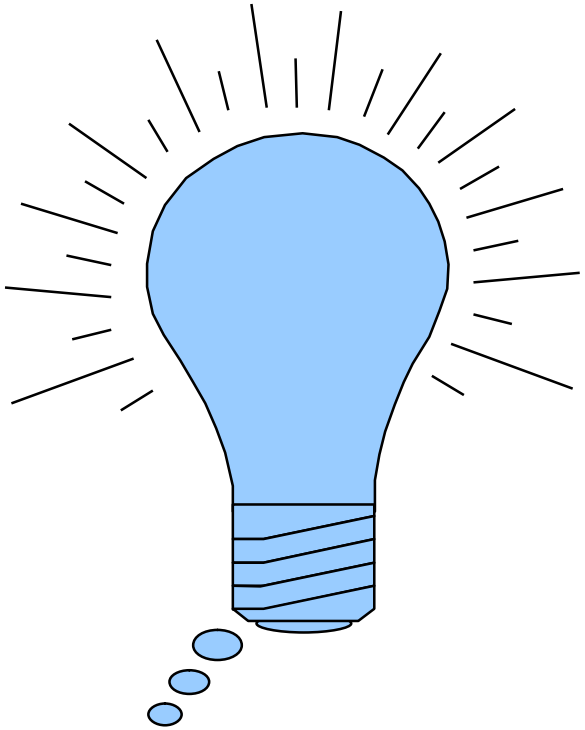

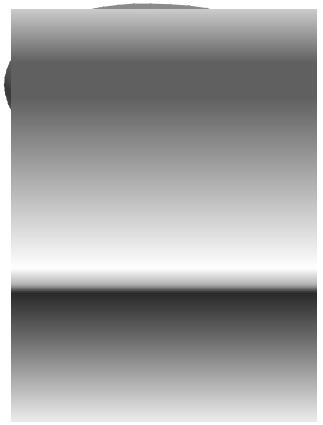

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