An Assessment of Acquisition Outcomes and Impact of Reforms & Initiatives

Presentation by
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An Assessment of Acquisition Outcomes and Impact of Reforms & Initiatives

Presented at the Naval Postgraduate School’s 8th Annual Acquisition Research Symposium, 10-12 May 2011, Seaside, CA.
2011 Assessment Made Observations on the Following

• Cost characteristics of the MDAP portfolio
• Timing and amount of knowledge achieved
• Progress of WSARA implementation
• Progress of DOD efficiency initiatives
Cost Characteristics of DOD’s Portfolio of Major Defense Acquisition Programs
08 to 10: Portfolio $ Investment Same, Programs Grew By a Net of Two

- 15 programs estimated at $77 billion entered
- 13 programs estimated at $174 billion exited

<table>
<thead>
<tr>
<th>Portfolio status</th>
<th>Fiscal year 2008</th>
<th>Fiscal year 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of programs</td>
<td>96</td>
<td>98</td>
</tr>
<tr>
<td>Total planned investment</td>
<td>$1.6 trillion</td>
<td>$1.68 trillion</td>
</tr>
<tr>
<td>Funding expended</td>
<td>$834 billion</td>
<td>$968 billion</td>
</tr>
<tr>
<td>Funding to complete</td>
<td>$802 billion</td>
<td>$712 billion</td>
</tr>
</tbody>
</table>

Source: GAO analysis of December 2007 and December 2009 Selected Acquisition Reports.
## 2yr/5yr/Baseline Trend: FY 2010 MDAP Portfolio Cost Growth Over Time

<table>
<thead>
<tr>
<th>FY 2011 dollars</th>
<th>Last 2 years (2008 to 2010)</th>
<th>Last 5 years (2005 to 2010)</th>
<th>Since first full estimate (Baseline to 2010)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase in estimated RDT&amp;E costs</td>
<td>$15 billion 5 percent</td>
<td>$29 billion 10 percent 47 percent</td>
<td></td>
</tr>
<tr>
<td>Increase in estimated procurement costs</td>
<td>$121 billion 11 percent</td>
<td>$186 billion 18 percent 31 percent</td>
<td></td>
</tr>
<tr>
<td>Increase in total acquisition cost</td>
<td>$135 billion 9 percent</td>
<td>$217 billion 16 percent 35 percent</td>
<td></td>
</tr>
<tr>
<td>Average delay in delivering initial capabilities</td>
<td>5 months 8 percent</td>
<td>9 months 13 percent 30 percent</td>
<td></td>
</tr>
</tbody>
</table>

Source: GAO analysis of December 2009 Selected Acquisition Reports.
RDT&E Percentage Cost Growth From Baseline per MDAP

Summary Analysis
Average weighted growth = 47 percent
Median growth = 21 percent

Total Cost Growth = $102 billion

Note: Four programs have greater than 325 percent RDT&E cost growth. The four programs that exceed 325% range from 348% to 3633%.
Impact of Quantity INCREASES on Program and Portfolio Cost

- 43 MDAPS had increased quantities since starting
  - Total quantities for all increased by 73%
  - Overall total program cost increased by 100%
  - A “calculated” cost for increased quantities is $175B
  - The actual cost increase was $258B

- The difference—$83B—can be thought of as inefficient cost growth or “bad” cost growth
Impact of Quantity **DECREASES** on Program and Portfolio Cost

- 30 MDAPS had decreased quantities since starting
  - Total proc cost actually increased for 13 programs
  - A “calculated savings” for decreased Q is $197B
  - The actual cost **INCREASED** by $2B

- The difference—$199B—can be thought of as lost buying power
Timing and Amount of Technology, Design, and Manufacturing Knowledge Achieved
A Knowledge-Based Approach is Key to Successful Program Outcomes

- Model provides framework for incremental, time certain (development constrained to 5 to 6 years or less), and knowledge-based approach to weapon system acquisitions.
- Success requires structured, disciplined application and adherence to model.
- Knowledge points align with key investment inflection points.
- Controls are in place for decisions makers to measure progress against specific criteria and ensure managers capture key knowledge before moving to next phase.
Focus on Several Knowledge-Based Practices at Development Start

<table>
<thead>
<tr>
<th>Knowledge-based practices at development start</th>
<th>IAMD</th>
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</thead>
<tbody>
<tr>
<td>Knowledge point 1</td>
<td></td>
</tr>
<tr>
<td>Mature all critical technologies</td>
<td>○</td>
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<tr>
<td>Hold system requirements review</td>
<td>●</td>
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<tr>
<td>Hold system functional review</td>
<td>●</td>
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<tr>
<td>Hold preliminary design review</td>
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<tr>
<td>Constrain development phase to 6 years or less</td>
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</tbody>
</table>

- **●** Practice implemented by program
- **○** Practice not implemented by program

Source: GAO analysis of DOD data.
Design Knowledge Increasing, but Prototypes Are Not Being Used

<table>
<thead>
<tr>
<th>Knowledge-based practices at design review</th>
<th>AB3</th>
<th>FAB-T</th>
<th>CH-53K</th>
<th>GPS IIIA</th>
<th>Increment 1 E/BCT</th>
<th>JPALS</th>
<th>JTRS AMF</th>
<th>PATRIOT MEADS CAP Fire Unit</th>
<th>Reaper</th>
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</thead>
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<tr>
<td>Mature all critical technologies</td>
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<tr>
<td>Release at least 90 percent of design drawings</td>
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<td>Test a system-level integrated prototype</td>
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<td>Use a reliability growth curve</td>
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<td>Conduct producibility assessments to identify manufacturing risks for key technologies</td>
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<td>Complete failure modes and effects analysis</td>
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- ● Practice implemented by program
- ○ Practice not implemented by program
- Practice not applicable or information not available

Source: GAO analysis of DOD data.
Programs Are Identifying Processes, But Not Demonstrating Them Pre-Prod

<table>
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<tr>
<th>Knowledge-based practices at production decision</th>
<th>AB3</th>
<th>C-130 AMP</th>
<th>E-2D AHE</th>
<th>ERMP UAS</th>
<th>GPS IIIA</th>
<th>Increment 1 E/IBCT</th>
<th>NMT</th>
<th>P-8A</th>
<th>SIV-6</th>
<th>WIN-T Increment 2</th>
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<tr>
<td>Mature all critical technologies</td>
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<td>Identify key product characteristics</td>
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<tr>
<td>Identify critical manufacturing processes</td>
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<td>●</td>
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<td>Demonstrate critical processes are in statistical control</td>
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<td>Demonstrate critical processes on a pilot production line</td>
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<td>Test a production-representative prototype</td>
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- ●: Practice implemented by program
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- Shaded: Practice not applicable or information not available

Source: GAO analysis of DOD data.
Progress of Acquisition Reforms and Efficiency Initiatives
New DOD Policies Could Improve Outcomes

• More discipline and up-front knowledge in early acquisition phases could put programs on more stable footing
  • Early Materiel Development Decision required for all programs.
  • Preference for incremental development, with baselines for each increment.
  • PDR required before system development start.
  • Competitive prototyping required as part of technology development phase.
  • Configuration Steering Boards established to control requirements.
  • Acquisition strategies required to describe measures taken to ensure competition throughout the program lifecycle.
  • Trade-offs among cost, schedule, and performance objectives required at Milestone B approval to ensure affordability.
Programs Have Begun to Implement DOD’s Revised Acquisition Policies

- Programs in our 2011 assessment have begun to implement acquisition reforms that could improve cost and schedule outcomes.
  - Competitive prototyping – 9 of 14 pre-MDAPs planned to develop competitive prototypes prior to Milestone B.
  - Early systems engineering – 10 pre-MDAPs in our assessment have already scheduled a preliminary design review before Milestone B.
  - Trade-offs – 7 of 14 programs reported making major cost, schedule, and performance tradeoffs before development start.
  - Competition – 6 of 14 programs are planning to incorporate competition into their acquisition strategy after Milestone B.

- Several programs in our 2011 assessment still have not reported holding a configuration steering board meeting.
  - 12 of 40 programs in our assessment reported never having held a configuration steering board.
  - 5 programs presented de-scoping options to the board and 4 had those approved to help maintain cost and schedule.
DOD Efficiency Initiative Can Help Further Reforms

- **Sets shorter programs timelines** – Requirements and proposed schedules must be consistent; justification for proposed program schedule is required before a program can proceed.
- **Treats affordability as a requirement** – Affordability is to be treated like a key performance parameter at Milestone A.
- **Stresses the use of systems engineering analysis** – At Milestone B, requires the presentation of a systems engineering tradeoff analysis showing how cost varies with schedule and design parameters.
- **Emphasizes competition throughout the program lifecycle** – Requires the presentation of a competitive strategy at each program milestone.
- **Recommends portfolio analyses to eliminate redundancies** – Conduct portfolio reviews at the joint and Department-wide level to identify redundancies, as well as among smaller programs.
END