An Assessment of Acquisition Outcomes and Impact of Reforms & Initiatives -- 2011

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2012 Assessment Made Observations
On The Following

• Cost performance and characteristics of the Major Defense Acquisition Program portfolio

• Timing and amount of knowledge achieved

• Progress in implementing acquisition reforms and department initiatives
Cost Performance and Characteristics of DOD’s Portfolio of Major Defense Acquisition Programs
Observations about portfolio’s cost

- Estimated cost of 2011 MDAP Portfolio is $1.58T and has grown by $74B, or 5%, in past year
- About $30B resulting from quantity changes, $45B due to RDTE and production inefficiency
- Programs with greatest RDTE growth are in production
- The F-35 program accounts for 21% of the portfolio’s total cost and 52%, or about $39B, of its cost growth in the past year
- 91% of funding needed to complete programs in the portfolio is for procurement, most of which is for a few large programs
- 60% of the 96 programs in the MDAP have lost buying power over the past year, depriving DOD of funding for other priorities
- About 40% of MDAPs exceeded cost growth targets in past year
- The number of MDAPs is smaller this year than last and projected to be smaller next year
# 1yr/5yr/Baseline Trend: FY 2011 MDAP Portfolio Cost Growth Over Time

<table>
<thead>
<tr>
<th>Fiscal year 2012 dollars in billion</th>
<th>1-year comparison (2010 to 2011)</th>
<th>5-year comparison (2006 to 2011)</th>
<th>Since first full estimate (baseline to 2011)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase in total research and development cost</td>
<td>$14 billion 4 percent</td>
<td>$39 billion 14 percent</td>
<td>$113 billion 54 percent</td>
</tr>
<tr>
<td>Increase in total procurement cost</td>
<td>$61 billion 5 percent</td>
<td>$192 billion 19 percent</td>
<td>$321 billion 36 percent</td>
</tr>
<tr>
<td>Increase in total acquisition cost</td>
<td>$74 billion 5 percent</td>
<td>$233 billion 17 percent</td>
<td>$447 billion 40 percent</td>
</tr>
<tr>
<td>Average delay in delivering initial capabilities</td>
<td>1 month 2 percent</td>
<td>9 months 11 percent</td>
<td>23 months 32 percent</td>
</tr>
</tbody>
</table>

Source: GAO analysis of December 2010 Selected Acquisition Reports, prior Selected Acquisition Reports, and other DOD data.
Performance of DOD’s 2011 Portfolio of MDAPs over the Past Year (cont.)

- RDT&E costs increased $14 billion from 2010 to 2011. JSF, Chemical Demilitarization—Assembled Chemical Weapons Alternatives, SBIRS High, F-22 Raptor, and P-8A Poseidon had the largest increases, totaling $8.3 billion.\(^a\)

- Procurement costs increased $60.6 billion from 2010 to 2011, of which $29.6 billion can be attributed to quantity changes.

- The Littoral Combat Ship, Joint Mine Resistant Ambush Protected vehicle, DDG 51 destroyer, HC/MC-130, and F/A-18 E/F programs experienced the largest cost increases due to increased quantities and account for $52 billion in growth. This is partially offset by large reductions on MEADS and EFV.

- Procurement costs for JSF increased by $34.7 billion over the last year without any changes to its quantities.

\(^a\) The NPOESS SAR showed an increase of $0.9 billion, but the program has been cancelled.
Joint Strike Fighter Drives Much of Portfolio’s Remaining Funding Needs

<table>
<thead>
<tr>
<th>Total sunk cost through 2011</th>
<th>Funding needed to complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>$85.0 billion</td>
<td>$70.6 billion</td>
</tr>
<tr>
<td>$40.4 billion</td>
<td>$46.1 billion</td>
</tr>
<tr>
<td>$16.6 billion</td>
<td>$6.5 billion</td>
</tr>
<tr>
<td>$8.0 billion</td>
<td>$11.1 billion</td>
</tr>
<tr>
<td>$2.8 billion</td>
<td>$2.8 billion</td>
</tr>
<tr>
<td>$4.0 billion</td>
<td>$4.0 billion</td>
</tr>
<tr>
<td>$37.6 billion</td>
<td>$37.6 billion</td>
</tr>
</tbody>
</table>

**Top 20 programs**
- Joint Strike Fighter
- Virginia-class Submarine
- Littoral Combat Ship
- P-8A Poseidon
- CH-53K Helicopter
- CVN 78 Class
- Black Hawk Helicopter
- V-22 Osprey
- DDG 51 Destroyer
- JTRS GMR

- Procurement through fiscal year 2011
- Research and development through fiscal year 2011
- Procurement fiscal year 2012 to completion
- Research and development fiscal year 2012 to completion

Source: GAO analysis of DOD data.
Joint Strike Fighter Accounts for Significant Portions of the Portfolio’s Growth

Joint Strike Fighter as a Portion of 2011 Portfolio Cost Growth

- **Research and development**: $3.9 billion
- **Procurement**: $34.7 billion
- **Total acquisition cost**: $38.6 billion

Source: GAO analysis of DOD data.
Significant Amounts of RDT&E are Supporting Concurrency or Upgrade Efforts on Programs in Production

<table>
<thead>
<tr>
<th>Program</th>
<th>Growth in last year (millions)</th>
<th>Reason for additional funding</th>
<th>Start of production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joint Strike Fighter</td>
<td>$3,922</td>
<td>To reduce risk</td>
<td>2007</td>
</tr>
<tr>
<td>SBIRS High</td>
<td>$785</td>
<td>To meet requirements</td>
<td>2001</td>
</tr>
<tr>
<td>F-22 Raptor</td>
<td>$780</td>
<td>For modernization</td>
<td>2001</td>
</tr>
<tr>
<td>P-8A Poseidon</td>
<td>$742</td>
<td>For new increment of capability, to correct deficiencies, update estimates</td>
<td>2010</td>
</tr>
<tr>
<td>Virginia-class</td>
<td>$727</td>
<td>For enhancements, cost reduction initiatives, testing</td>
<td>1997</td>
</tr>
<tr>
<td>Global Hawk</td>
<td>$722</td>
<td>For inclusion of new capabilities, testing</td>
<td>2001</td>
</tr>
<tr>
<td>DDG 51</td>
<td>$656</td>
<td>For inclusion of new capabilities</td>
<td>1985</td>
</tr>
<tr>
<td>Trident II</td>
<td>$624</td>
<td>For modernization and replacement</td>
<td>1987</td>
</tr>
<tr>
<td>Apache Block IIIA</td>
<td>$506</td>
<td>For software development</td>
<td>2010</td>
</tr>
</tbody>
</table>

Source: GAO analysis of December 2010 Selected Acquisition Reports and other DOD data.
Number of MDAPs Decreased in FY 2011 and is Expected to Decrease Further

- In 2011, 6 programs estimated at $29 billion entered the portfolio, 4 programs estimates at $108 billion exited.

- Looking forward to the 2012 portfolio, at least 1 program is expected to enter, 13 programs expected to exit.

Source: GAO analysis of DOD data.
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.
Knowledge At Three Critical Junctures
Still Not Consistent

• 20 of 37 programs in the current portfolio entered development with critical technologies nearing maturity; 4 had technologies fully mature

• 8 of 37 programs had stable designs at CDR or start of ship fabrication; only 5 tested system-level prototypes

• 26 of 32 programs plan to demonstrate critical processes on a pilot line at production start; 4 plan to have these processes in control

• 15 of 24 programs plan to complete production representative prototype testing,
Progress In Implementing Acquisition Reforms and Department Initiatives
New Acquisition Reforms and DOD Policy Initiatives Could Improve Outcomes

• The Weapon Systems Acquisition Reform Act of 2009 inserted a number of requirements whether programs planned to:
  • Hold PDR before system development start.
  • Complete competitive prototyping as part of technology development phase.
  • Describe measures taken to ensure competition throughout the program lifecycle in their acquisition strategies.
  • Consider trade-offs among cost, schedule, and performance objectives at Milestone B approval to ensure affordability.

• In addition, DOD has introduced new initiatives intended to control costs and requirements
  • Early Materiel Development Decision required for all programs.
  • Introduction of affordability targets at major program milestones
  • Use of “should cost” to strengthen negotiations with contractors
Programs Have Begun to Implement Reforms and New Initiatives

- Programs in our 2011 assessment have begun to implement acquisition reforms that could improve cost and schedule outcomes.
  - Early systems engineering – 11 of 16 pre-MDAPs in our assessment have scheduled a preliminary design review before Milestone B.
  - Competitive prototyping – 13 of 16 pre-MDAPs plan to develop competitive prototypes prior to Milestone B.
  - Competition – 11 of 16 programs plan to incorporate competition into their acquisition strategy after Milestone B.
  - Trade-offs – Each of the 3 programs that entered system development or were re-certified had the requirement for making major cost, schedule, and performance tradeoffs before development start waived.

- Programs are still in the process of implementing new DOD initiatives.
  - 6 of 16 pre-MDAP programs in our assessment reported holding MDD.
  - 4 of the 16 future and 19 of the 37 current MDAPs reported having affordability targets.
  - 6 of the 16 future and 23 of the 37 current MDAPs reported having “should costs.”
Reforms and Initiatives are Increasing Activities in Technology Development Phase

The focus on pre-Milestone B activities results in increased spending in the technology development phase, which could have beneficial effects if the funds are spent on activities such as prototype demonstrations and systems engineering analysis.
Key Takeaways

Good trends
• Out with the old, in with the new – **it’s improving the portfolio’s health**
• More mission area reviews to reduce duplication – **it’s freeing funding**
• More SE time & energy from MDD through A to B – **it’s reducing risk**
• CAPEs new role and responsibility may be best thing – **it’s forcing change**

Things to think about
• MDD continue to force incremental solutions – **it’s easier to plan/execute**
• Continue to scrutinize reqments – **it’s the only way to reduce cycle time**
• Reconsider the role of our S&T community – **it will impact EVERYTHING!!**
• Demand knowledge – **it will make things more predictable, less risky**
• Demand a 5-year cycle time from B to IOC – **it will force knowledge**
• Find a mechanism to disseminate/imp lessons – **it creates role models**
END
RDT&E Percentage Cost Growth From Baseline per MDAP

Summary Analysis
Average growth = 104 percent
Median growth = 32 percent

Total Cost Growth = $113 billion

Note: Three programs have greater than 400 percent RDT&E cost growth, ranging from 729% to 3313% (GMLRS, MH-60S, C-130J).
Total Percentage Cost Growth per Major Defense Acquisition Program

Summary Analysis
Average growth = 95 percent
Median growth = 36 percent

Total cost growth = $447 billion

Note: Two programs have greater than 600 percent total cost growth (1365% and 1523%).
## Changes Between FY 2010 and FY 2011 MDAP Portfolios

<table>
<thead>
<tr>
<th>Programs added since FY 2010</th>
<th>Total cost: $29 billion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apache Block IIIB New Build</td>
<td>HC/MC-130 Recapitalization</td>
</tr>
<tr>
<td>KC-130J</td>
<td>Small Diameter Bomb Increment II</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Programs removed from FY 2010 portfolio</th>
<th>Total cost: $108 billion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bradley Armored Fighting Vehicle Upgrade</td>
<td>C-17A Aircraft</td>
</tr>
<tr>
<td>CVN 68</td>
<td>EA-6B Improved Capability III</td>
</tr>
<tr>
<td>Minuteman III Propulsion Replacement Program</td>
<td>MC-1B Predator UAS</td>
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</tbody>
</table>
Expected Changes Between FY 2011 and FY 2012 MDAP Portfolios

<table>
<thead>
<tr>
<th>Programs added since FY 2011</th>
<th>Programs removed from FY 2011 portfolio</th>
</tr>
</thead>
<tbody>
<tr>
<td>KC-46 Tanker Replacement Program</td>
<td>Advanced Threat/Infrared Countermeasure/Common Missile Warning System</td>
</tr>
<tr>
<td></td>
<td>Airborne Signals Intelligence Payload</td>
</tr>
<tr>
<td></td>
<td>B-2 Radar Modernization Program</td>
</tr>
<tr>
<td></td>
<td>Expeditionary Fighting Vehicle</td>
</tr>
<tr>
<td></td>
<td>Force XXI Battle Command Brigade and Below</td>
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<tr>
<td></td>
<td>Joint Mine Resistant Ambush Protected vehicle</td>
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<tr>
<td></td>
<td>Longbow Apache</td>
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<tr>
<td></td>
<td>Lewis and Clark-class Dry Cargo/Ammunition ship (T-AKE)</td>
</tr>
<tr>
<td></td>
<td>F-22 Raptor</td>
</tr>
<tr>
<td></td>
<td>Increment 1 Early-Infantry Brigade Combat Team</td>
</tr>
<tr>
<td></td>
<td>Large Aircraft Infrared Countermeasures</td>
</tr>
<tr>
<td></td>
<td>Space Based Space Surveillance Block 10</td>
</tr>
</tbody>
</table>
1yr/5yr/Baseline: Less Than Half of MDAPs Meet GAO High-Risk Cost-Growth Targets

The number of programs represents those in the 2011 portfolio—those with December 2010 SARs—which break down several programs into smaller elements for reporting purposes. One program, Airborne Signals Intelligence Payload (ASIP) –Baseline, was not included in the 5-year comparison because data were not available to make that comparison. BMDS is not included.