2009 LAI Annual Conference

Portfolio Risk Management

2 April 2009
Motivation and Precursors

• DOD acquisition of major weapon systems falling well short of cost, schedule, and performance targets

• 2007 GAO recommendation to Senate ASC
  – Implement integrated portfolio management approach to weapon system investments
  – Based on commercial best practices

• OSD/ AT&L response: DOD pilot initiatives in investment and program decision making

<table>
<thead>
<tr>
<th>Program</th>
<th>Initial estimate</th>
<th>Initial quantity</th>
<th>Latest estimate</th>
<th>Latest quantity</th>
<th>Percent of unit cost increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joint Strike Fighter</td>
<td>$189.8 billion</td>
<td>2,866 aircraft</td>
<td>$206.3 billion</td>
<td>2,458 aircraft</td>
<td>26.7</td>
</tr>
<tr>
<td>Future Combat Systems</td>
<td>$82.6 billion</td>
<td>15 systems</td>
<td>$127.5 billion</td>
<td>15 systems</td>
<td>54.4</td>
</tr>
<tr>
<td>F-22A Raptor</td>
<td>$81.1 billion</td>
<td>648 aircraft</td>
<td>$65.4 billion</td>
<td>181 aircraft</td>
<td>188.7</td>
</tr>
<tr>
<td>Evolved Expendable Launch Vehicle</td>
<td>$15.4 billion</td>
<td>181 vehicles</td>
<td>$23.0 billion</td>
<td>138 vehicles</td>
<td>137.8</td>
</tr>
<tr>
<td>Space Based Infrared System High</td>
<td>$4.1 billion</td>
<td>5 satellites</td>
<td>$10.2 billion</td>
<td>3 satellites</td>
<td>315.4</td>
</tr>
<tr>
<td>Expeditionary Fighting Vehicle</td>
<td>$8.1 billion</td>
<td>1,025 vehicles</td>
<td>$11.1 billion</td>
<td>1,025 vehicles</td>
<td>35.9</td>
</tr>
</tbody>
</table>

Classic Portfolio Management Theory

- Developed by Harry Markowitz
  - "Portfolio Selection", Journal of Finance (1952)

Main Principles
- Diversification of assets reduces overall risk
- Focus is on choosing the right combination of assets to optimize the portfolio
- Rational decision making

Key Translational Limiter: PMT assumes independence of assets
The Value Proposition: What Makes Portfolio Management So Important?

• Filtering Process
  – Resource Allocation (Time, Money, Personnel, etc)
• Direct Linkage to Strategy
• Consistency and Fairness in Program Support
• Leadership Buy In
• **Risk Management**
• Probability of Program Success
The Value Proposition:
What Makes Portfolio Management So Important?

© 2009 W.Vixama – Massachusetts Institute of Technology
The Value Proposition:

Process within the process
Extension to Government Program/Product Investments

• 1994 GAO Report (GAO/AIMD-94-115)
  – Use PM strategies to manage IT investments
  – Improving Mission Performance Through Strategic Information Management: Learning from Leading Organizations

• Clinger-Cohen Act, 1996, requires federal agencies to adopt an investment approach to IT
Dominant PM Methods in Commercial Product Development

- Corporate Best Practices already utilized PMT

Source: Cooper et al., Industry Practice Study, 1998
Federal Agency Utilization

• Office of Naval Research
  – R&D Portfolio Management Decision Framework developed by RAND
  – Maximize the benefit of R&D spending in the presence of uncertainty inherent to R&D

• National Oceanic & Atmospheric Administration
  – Portfolios of environmental observing systems
  – Based on capability-based performance measures
  – MITRE-developed optimization tool called the Portfolio Analysis Machine (PALMA)
Assistant Secretary of the Air Force for Acquisition (SAF) Acquisition Chief Process Office (ACPO)

LT COL Frederick D. Gregory, USAF
SAF/ACPO
CAPT William H. Suggs, USN
Joint Advanced Concepts
PANEL DISCUSSION

- What experiences (positive, negative, neutral) have you had in the area of Portfolio Management investment strategy?
- Do you see PM applications as a significant departure from current product investment or resource allocation approaches utilized by your enterprise?
- What do you see as the most significant hurdles to the successful implementation of PM strategies in the DoD weapons acquisition system?
- How does your enterprise address the notion of “uncertainty” in its risk mitigation approach?
CLOSING REMARKS