Working Group 3
Development Planning

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22 September 2011
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WG 3 – Development Planning

Theme –

“What type and level of analytics are needed to support informed investment decisions throughout development planning period – Pre-MDD thru MS A?”

– Mr. Kendall, OSD(ATL)

Objectives –

• What analytics are required to support informed Acquisition decisions?
  o How to bound and manage Pre-MDD?
  o How to bound and Manage Pre-Milestone A?
• Where are the gaps?
MORS March 2010 Workshop: DP Working Group

- Identified 4 key opportunities which exist to achieve the upfront technical preparation required to ensure the successful selection and development of a materiel solution.

- Provided an outstanding opportunity to engage with several different communities and gain insight from a cross-section of participants to help inform the development of DP policy & guidance.

- Next Steps:
  - Findings utilized to develop DP guidance and policy
  - OSD(ATL) will host a government / industry DP workshop
Development Planning since MORS Workshop

- Established DP Policy influenced by the previous MORS DP Working Group
- Policy requires new evidence at MDD
  - The candidate materiel solution approaches have the potential to effectively address the capability gap(s), operational attributes and associated dependencies
  - There exists a range of technically feasible solutions generated from across the entire solution space, as demonstrated through early prototypes, models, or data
  - Consideration has been given to near term opportunities to provide a more rapid interim response to the capability need
  - The plan to staff and fund analytic, engineering, and programmatic activities supports the proposed milestone entry requirements
- Established Development Planning Working Groups to define sufficiency of evidence requirements and to improve DP implementation
- More emphasis placed by the Services on the pre-MDD and MDD to MS A phase analytics – cross-functional teams created
  - Identified pockets of good practices, but not institutionalized throughout DoD

*Department has made progress emphasizing Development Planning analytics, but more work is needed.*
Making Acquisition Decisions With FACT

- Dependent relationships are considered from the beginning.
- Efficient utilization of resources
- Complete understanding of the trade space
- Informed Requirements Setting

Establishes the required workflow/dataflow dependencies from a standards based architectural framework.
Other Development Planning “Best” Practices

• Cross-functional teams
  o Requirements, acquisition, and budgeting

• System agnostic mission threads for capability gaps
  o Use Analytic Agenda for common threat scenarios
  o Ensure appropriate mission context to analyze system interdependencies to ensure mission completion

• Industry involvement in developing the range of technically feasible alternatives
  o Ensure industry understands the government context

These are pockets of best practices, but more work is needed.
## Development Planning Analytics & Activities

<table>
<thead>
<tr>
<th>DP ANALYTICS &amp; ACTIVITIES</th>
<th>PRE-MDD</th>
<th>MDD to MILESTONE A</th>
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</thead>
<tbody>
<tr>
<td>Advanced Technology Prototyping</td>
<td>Methods to assess technology feasibility</td>
<td>Technology prototype assessment</td>
</tr>
<tr>
<td>Affordability Analysis</td>
<td>Service budget portfolio analysis; program</td>
<td>Performance, cost, risk trades; vital; more</td>
</tr>
<tr>
<td></td>
<td>level less critical; ROM</td>
<td>precise</td>
</tr>
<tr>
<td>Architectural Considerations</td>
<td>Initial</td>
<td>More details</td>
</tr>
<tr>
<td>CONOPS / Concept Development</td>
<td>Brainstorm for concepts</td>
<td>Refinement; should have spec for contract</td>
</tr>
<tr>
<td>Cost Analysis</td>
<td>Start; ROM, lower fidelity</td>
<td>Refinement; more precise</td>
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<tr>
<td>Include &quot;ilities&quot; in everything (sustainability,</td>
<td>Considered during concept feasibility</td>
<td>Include with AoA</td>
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<tr>
<td>reliability, survivability, maintainability)</td>
<td>assessment</td>
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<tr>
<td>Interdependency Analysis (system integration</td>
<td>Initial</td>
<td>Refinement</td>
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<td>assessment)</td>
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<tr>
<td>Market Research</td>
<td>Leverage work from previous studies</td>
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<tr>
<td>Mission Analysis (Capability Needs &amp; Gaps)</td>
<td>Initial</td>
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<td>Performance Analysis</td>
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<td>Red Team Assessments</td>
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<tr>
<td>Risk Analysis</td>
<td>Start; early &amp; often; Navy model of &quot;gates&quot;</td>
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<tr>
<td>Schedule Analysis</td>
<td>Initial</td>
<td></td>
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<tr>
<td>Solution Capability vs. Operational Gap</td>
<td>Initial</td>
<td></td>
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<tr>
<td>Stakeholder Analysis</td>
<td>CBA</td>
<td></td>
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<tr>
<td>Technology Gap Assessment</td>
<td>Initial review</td>
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<tr>
<td>Technology Readiness Level Assessment</td>
<td>Start (FSA)</td>
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<tr>
<td>Tradeoff Analysis</td>
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<tr>
<td>Operational Gap Analysis</td>
<td>CBA</td>
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<tr>
<td>Wargaming Activities</td>
<td>Capability gaps developed</td>
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</tbody>
</table>
Development Planning Gaps # 1

Analytics

• Affordability analyses and processes
• Tools & analytics for initial concept evaluation, e.g., Quality Functional Deployment (QFD) analyses
  o Parametric tools to scope down concepts, not detailed analyses
• Traceability of data and decisions throughout DP
• Reference architectures (at both Joint & Service Levels)
• Operational suitability, i.e., communications, intelligence, logistics, etc.
• Early manufacturing and reliability analysis to support MS A
• Non-materiel analyses and process
• Clear problem statements with baselines
Development Planning Gaps # 2

Organization and Teams

• Organizational impediments to analytic support for DP
  o Cross-functional teams need to better integrate operations analysts, systems engineers, testers, etc.
  o Translating broad user capability needs to candidate solution sets for acquisition community

• Appropriate resources for initial concept evaluation
  o People with the “right” skill set and experience, i.e., mission level analysis, system level thinking, decision analysis, facilitation, etc.
  o Allocated funding
  o Scheduling time to do prerequisite work, i.e., CBA, AoA, etc.
Development Planning Gaps # 3

Industry
• Lack of operational context for Concept RFIs
• Limited early involvement

Concepts
• Lack of “Achilles Heel” Analysis
• Insufficient Red Teaming potential concepts
• Insufficient consideration of flexibility, adaptability, resiliency
Development Planning Recommendations # 1

• Continue maturing Development Planning through DoD and Industry DP Working Groups
  o Including knowledge sharing, best practices, and lessons learned
• Expand and institutionalize cross-functional teams
  o User, acquisition, resource, requirements, operations analysts, testers, programmers, etc.
• Develop and formalize affordability analysis processes for DP
  o Recognize the difference between cost & affordability analyses
  o Affordability analysis should include mission-based, portfolio-based, and capability-based analyses
• Develop list of tools, techniques and processes for each of the DP Analytics and Activities (in the spreadsheet)
Development Planning Recommendations # 2

• Develop and institutionalize a “Red Team” process
  o Establish the analysis scope for the “Red Team” to consider
  o When assessing solution feasibility, conduct the “Achilles Heel” analyses
    ▪ What vulnerabilities does it introduce?
    ▪ What other gaps are created?
    ▪ What gaps are not covered?
  o Establish a peer review process

• Allocate adequate resources for DP, i.e., right people, tools, data, time, funding, etc. (currently not consistently implemented across DoD)

• Develop a method to ensure manufacturing and reliability analyses early in concept refinement

• Develop and share a list of best practices and techniques for conducting “system level” trade space analyses
Development Planning Summary

- Department has made progress emphasizing Development Planning analytics, but more work is needed.
- There are pockets of good practices, but not institutionalized throughout DoD
- Services have placed more emphasis on the pre-MDD and MSA phase analytics
- DoD and Industry DP Working Groups established to define sufficiency of evidence requirements and to improve DP implementation