Findings and Recommendations from the NDIA/OSD Development Planning Working Group

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NDIA/OSD Development Planning Working Group
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Agenda

- Background
- Development Planning Working Group Formation
- Industry Solicitation on Development Planning
- Development Planning Workshop Findings
- Development Planning Working Group Follow-on Activities
- Recommendations for Working Group Actions
- Next Steps
- Summary

Background

Development Planning

NDIA SE Division Meeting
February 17, 2010

Mr. Michael Duffey
Deputy Director, Development Planning
Office of the Director for Systems Analysis
Systems Engineering Directorate
Office of Director, Defense Research and Engineering

Background

National Research Council

"Pre-Milestone A and Early-Phase Systems Engineering" Jan 2008

DoD 5000.02
December 2008

WSARA
May 2009

- **National Academies of Sciences Study**
  - All programs destined to fail without early [pre-MS A] systems engineering
  - Development planning can implement pre-MS A early systems engineering
- **DoD Acquisition Regulations (DoDI 5000.02) Update**
  - Increased focus on early pre-acquisition phases
  - Implication for added early systems engineering
- **Weapon Systems Acquisition Reform Act of 2009 (WSARA)**
  - Directs SE responsibilities to reinvigorate Development Planning

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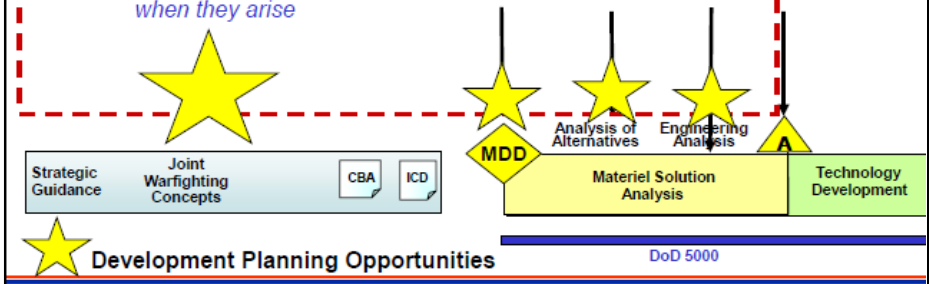
Development Planning Opportunities

Concept Development and Engineering

Focused SoS analysis and development of advanced systems concepts to support needs when they arise

Concept Evaluation and Refinement

Ensure optimal material solutions are identified with sound understanding of risks and opportunities



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Background

DoD Systems Engineering

Mr. Stephen Welby
Director, Systems Engineering
Office of the Director, Defense Research and Engineering

DDR&E Imperatives

1. Accelerate delivery of technical capabilities to win the current fight
   - SE Focus: Support the current fight, manage risk with discipline
2. Prepare for an uncertain future
   - SE Focus: Grow engineering capabilities to address emerging challenges
3. Reduce the cost, acquisition time and risk of our Major Defense Acquisition Programs
   - SE Focus: Champion Systems Engineering as a tool to improve acquisition quality
4. Develop World Class Science, Technology, Engineering and Mathematics capabilities for the DoD and the Nation
   - SE Focus: Develop future technical leaders across the acquisition enterprise

Opportunities for engagement with NDIA Systems Engineering Division

Director, Systems Engineering Focus:
Champion Systems Engineering as a tool to improve acquisition quality

Expand continuous engagement with Service acquisition efforts – provide mentorship and support to program offices

Significant focus for FY2010: Institutionalize early Development Planning
- Develop consensus across department on early Development Planning
- Develop and Implement plan for reinvigorating early Development Planning; address policy and implementation, resourcing issues across department
- Clarify Industry's role in Early Development Planning
- Plan a workshop to define industry's role
  - Mission Analysis volunteered to participate
- Convene a workshop to define industry role
  - Invite KOs and PMOs to participate
- Kristen will provide overview current Pentagon work

Evaluate current Systems Engineering policy and implementing guidance to identify opportunities to update and streamline current processes
- Support on an ad hoc review basis upon request

Development Planning Working Group Formation

- **OSD (DDR&E/SE) and NDIA (SE Div) agreed to form a Working Group to provide recommendations for how industry can support government Development Planning activities**
  - **Working Group formed with approximately 65 government/industry**
  - **WG Workshop held June 8 & 9 2010, in Alexandria VA (55 attendees)**

- **The objectives of the Working Group are to:**
  1. **Identify specific areas, activities and knowledge in the pre-milestone "A" timeframe where industry engagement could inform early technical analysis and engineering for DoD Acquisition Programs;**
  2. **Understand the available and potential mechanisms necessary to facilitate industry involvement in that early technical analysis and engineering;**
  3. **Recognize the issues, limitations, and questions and formulate recommendations to foster industry involvement in early technical analysis and engineering**

Development Planning Working Group Formation

- **The Working Group addressed the Development Planning scope of activities from two perspectives…**
  - **Pre-MDD**
  - **MDD to Milestone A**
- **The output of the Working Group will be a report to OSD DDR&E/SE identifying industry's potential role in supporting government Development Planning activities, specifically addressing the following:**
  - Identify how the government can engage with industry in early technical analysis and engineering
  - Identify the constraints industry engagement faces during early technical analysis and engineering and suggested recommendations
  - Identify the mechanisms Government can use to engage with industry during early technical analysis and engineering
  - Identify the key characteristics of DoD Policy & Guidance needed to enable industry engagement in early technical analysis and engineering

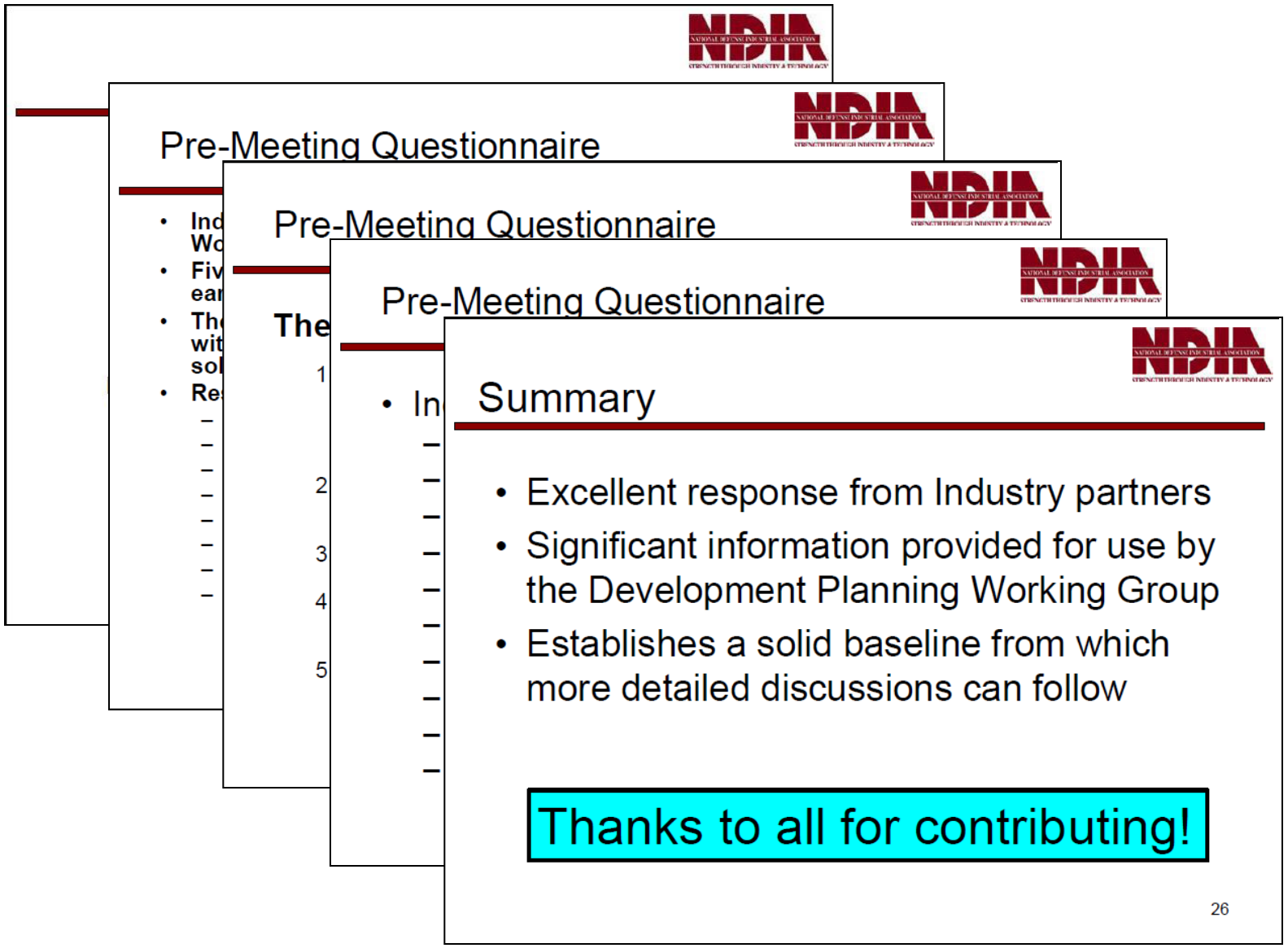
The underlying objective of this report is to identify the role industry can play in Development Planning in effectively starting the right acquisition programs

Development Planning Working Group Formation

Key Motivator

- ***The Government decision-maker can make better and more informed decisions to achieve a balanced design of performance, schedule and cost including life cycle cost - i.e. what is practical and feasible - on a given program if they have more pertinent critical information of the type that Industry can provide.***

Industry Solicitation on Development Planning



Findings- Objective 1

Identify specific areas, activities and knowledge in the pre-milestone "A" timeframe where industry engagement could inform early technical analysis and engineering for DoD Acquisition Programs

- A-1:Industry knowledge can inform concept solution trade space and feasibility
- A-2: Industry input to Development Planning to support JCIDS Process would add value
- A-3: Early Industry engineering analysis would enhance the pre-MDD knowledge base
- B-1: Industry support in architecture development needed throughout Development Planning
- B-2: Industry can provide data and models, verified and validated by government, to inform independent government analysis in the AoA
- B-3: Industry support for engineering analysis during the initiation of program planning
- B-4: Industry support to the Gov't in assessing the state of technology
- B-5: Understanding of MDD/AoA Information enables Gov't/Industry collaboration to support MS-A

Findings- Objective 2

Understand the available and potential mechanisms necessary to facilitate industry involvement in that early technical analysis and engineering

- **Types of mechanisms (tools) is well understood**
  - Request for Information
  - Cooperative Research and Development Agreements
  - Study Contracts
  - Industry/Government Working Groups
  - Community of Practice
  - Mission-Domain Focused IDIQs
  - DTIC IRAD Database
  - Industry Days
  - Technology Demonstrations and Industry Driven Experiments
  - Broad Agency Announcements
  - Small Business Independent Research
  - Industry "pools" in theater and in acquisition
- **Process for government/industry collaboration to support pre-MDD & post-MDD activities needs to be defined**

*Defining a Development Planning process (**mechanism**) which incorporates these **tools** is part of the task at hand*

Findings- Objective 3

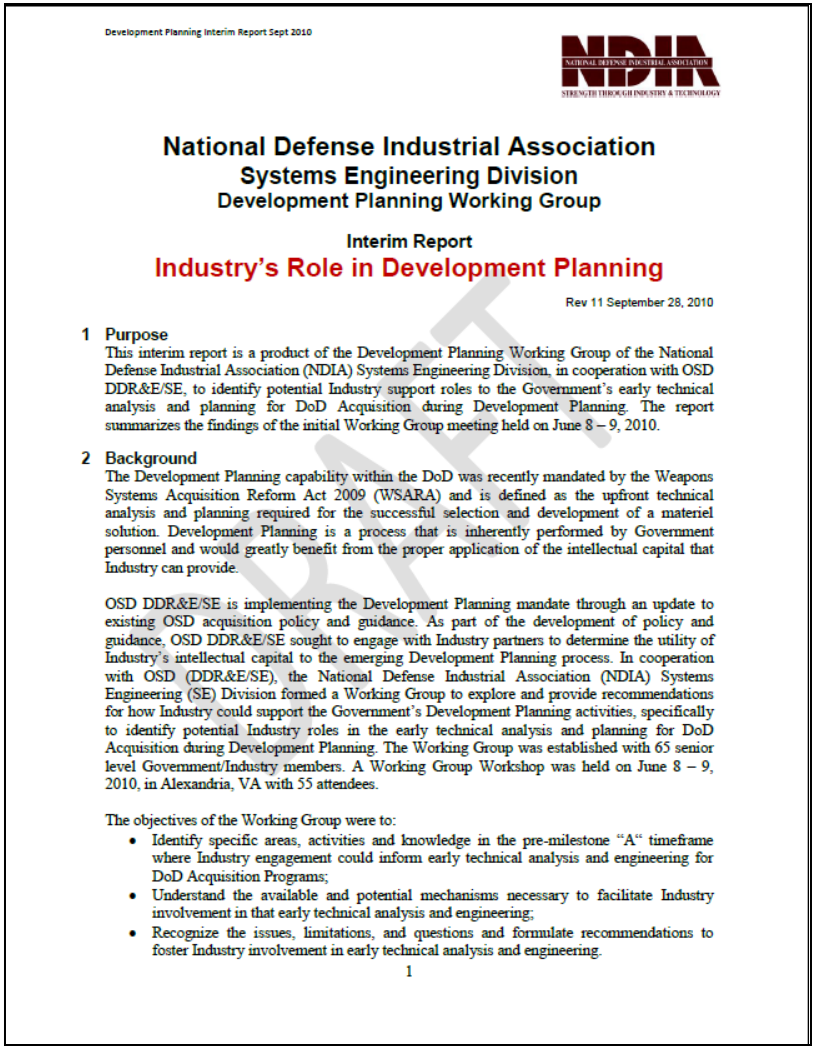
Recognize the issues, limitations, and questions and formulate recommendations to foster industry involvement in early technical analysis and engineering

- Organizational Conflict of Interest – interference with a contractor's ability to participate in subsequent competitions for development and production
- Industry cannot participate in "inherently governmental activity"
- Government reluctance to provide JCIDS products to industry
- Analytic Agenda requires classified access and limited distribution – possible other issues
- Industry input in the early phases of activity require the presence of technically competent government representatives to support technical exchanges
- Release and prioritization of capability needs and gap
- Industry activity in the early phases can be funded through industry investment to a point - establishing that threshold and identifying funding methods to support government needed industry investment in the early phases is a challenge
- Protection of industry intellectual property
- Industry reluctance to expose risks and opportunities in a pre-RFP environment (i.e., honesty and realism about industry capability can cost a contractor the contract)

Defining a Development Planning process which addresses these issues is part of the task at hand

Development Planning Working Group Follow-on Activities

- Briefed Mr. Welby, OSD, DDR&E, Director, Systems Engineering on July 28, 2010
- Received approval to continue Working Group effort
  - Generate a formal report
  - Provide recommendations on a detailed Development Planning process



Development Planning Interim Report Sept 2010

National Defense Industrial Association
Systems Engineering Division
Development Planning Working Group

Interim Report

Industry's Role in Development Planning

Rev 11 September 28, 2010

1 Purpose

This interim report is a product of the Development Planning Working Group of the National Defense Industrial Association (NDIA) Systems Engineering Division, in cooperation with OSD DDR&E/SE, to identify potential Industry support roles to the Government's early technical analysis and planning for DoD Acquisition during Development Planning. The report summarizes the findings of the initial Working Group meeting held on June 8 – 9, 2010.

2 Background

The Development Planning capability within the DoD was recently mandated by the Weapons Systems Acquisition Reform Act 2009 (WSARA) and is defined as the upfront technical analysis and planning required for the successful selection and development of a materiel solution. Development Planning is a process that is inherently performed by Government personnel and would greatly benefit from the proper application of the intellectual capital that Industry can provide.

OSD DDR&E/SE is implementing the Development Planning mandate through an update to existing OSD acquisition policy and guidance. As part of the development of policy and guidance, OSD DDR&E/SE sought to engage with Industry partners to determine the utility of Industry's intellectual capital to the emerging Development Planning process. In cooperation with OSD (DDR&E/SE), the National Defense Industrial Association (NDIA) Systems Engineering (SE) Division formed a Working Group to explore and provide recommendations for how Industry could support the Government's Development Planning activities, specifically to identify potential Industry roles in the early technical analysis and planning for DoD Acquisition during Development Planning. The Working Group was established with 65 senior level Government/Industry members. A Working Group Workshop was held on June 8 – 9, 2010, in Alexandria, VA with 55 attendees.

The objectives of the Working Group were to:

- Identify specific areas, activities and knowledge in the pre-milestone "A" timeframe where Industry engagement could inform early technical analysis and engineering for DoD Acquisition Programs;
- Understand the available and potential mechanisms necessary to facilitate Industry involvement in that early technical analysis and engineering;
- Recognize the issues, limitations, and questions and formulate recommendations to foster Industry involvement in early technical analysis and engineering.

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Recommendations for Working Group Actions

1) Explore opportunities for lessons learned from past successes involving industry and government collaboration in early phase acquisition
2) Define government and industry interpretations of the OCI legislation and rules
3) Clearly define the “inherently governmental activities”
4) Government and Industry ensure competent “up-front” involvement in Development Planning
5) Define government POCs within component Development Planning processes (domains, areas, expertise) to facilitate government/industry collaboration
6) Investigate the advantages, issues and challenges with each identified mechanism to facilitate recommended government/industry exchanges

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Next Steps

- Refine and resolve Findings/Recommendations into an integrated narrative with additional implementation detail
- Final report to be provided to OSD/DDR&E which clearly defines how industry can support government Development Planning activities
- Assist in initiating implementation of those recommendations considered viable by OSD through mechanisms included in specific recommendations

The underlying objective of this report is to identify the role Development Planning can play in effectively starting the right acquisition programs

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Summary

- The NDIA SE Division, in cooperation with OSD DDR&E/SE, formed a Development Planning Working Group to define potential Industry support roles in Development Planning
- A Development Planning Workshop was held on June 8 – 9, 2010
- Findings were presented to Mr. Welby on July 28, 2010
- Follow-on efforts being worked to provide Development Planning implementation details

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Questions?

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BACKUP

A-1:Industry knowledge can inform concept solution trade space and feasibility

- Industry can provide appropriate levels of government with critical information needed to help with pre-MDD information needs
  - Definition of the Concept Solution Space and associated technology assessments
  - Capability Trades in a Family of Systems context are needed with level of detail adequate to evaluate approaches to meeting a capability gap
- Benefits
  - Ensures a broad range of viable solutions are considered at MDD
  - Industry can identify what is achievable – or not - what the risks are, what the costs might be, and how long it might realistically take
- Mechanisms
  - TBD Development Planning process would establish information exchange mechanics
    - The current S&T environment provides some of this input, generally on a 1-on-1 basis
  - Component level Development Planning operating models need to be established
  - The existing DTIC IRAD dissemination site can inform government of current Industry advance developments and help provide additional critical S&T inputs
- Barriers/Issues
  - Must be done in a government-managed environment to obviate OCI* issues
  - Industry cannot actively participate in “inherently government activity”

***OCI: Organizational Conflict of Interest**

A-2: Industry input to Development Planning to support JCIDS Process would add value

- Decisions made at the MDD will benefit from more thorough and competent engineering analysis of potential concept
  - Critical information on feasibility, what is practical & plausible, risk, technologies available, costs, potential development schedules, and similar items to help in dealing with the overall trade space
- Benefits
  - More informed decision-making by government officials will allow for greater confidence and integrity in MDD inputs
- Mechanisms
  - Component level Development Planning operating models need to be established
  - Possible amendment to JCIDS (CJCSI 3170.01G) to formalize method for interacting with services Development Planners and Industry
- Barriers/Issues
  - JCIDS was not written to involve Industry or to facilitate informed information exchanges
  - Industry, working through the component Development Planning organizations, can provide critical information to government personnel for inclusion in JCIDS
  - Industry access to Analytical Baseline and Analytical Agenda would be needed
  - Potential OCI

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A-3: Early Industry engineering analysis would enhance the pre-MDD knowledge base

- Pre-MDD activities will benefit from thorough and more competent engineering analysis by government
- Industry could assist in providing such to government through collaboration within the component Development Planning process
- Benefits
  - Pre-MDD work will have better data and focus resulting in better decision-making as process moves forward (i.e. what is practical & plausible)
  - Industry would gather additional feedback to help guide IRAD investments and refine technology investment strategies
  - Capitalize on past successes with technical collaboration between Industry & Government
- Mechanisms
  - OSD policy to encourage Service's Development Planning establish methodology which facilitates Industry interfaces, roles and responsibilities
  - Some funding may be required
- Barriers/Issues
  - Must not compromise OCI
  - Funding of efforts

B-1: Industry support in architecture development needed throughout Development Planning

- Gov't /Industry need alignment on the Mission Architecture, and collaboration on the transition to SoS and System architectures
- Benefits
  - Supports the transition to SoS and System capability definition
  - Creates Gov't/Industry alignment on SoS capability that will define Milestone A and Technology Development activities
  - Ensures identification of necessary enabling systems that need to be considered
- Mechanisms
  - Development Planning organizations collaborate with Industry on mission architecture dealing with common information on the Warfighter mission and corresponding needs
  - RFIs, CRADAs, and Study Contracts can be used to solicit a broad base of proprietary Industry responses
- Issues/Barriers
  - Protection of Industry IP once the architecture evolves into the potential SoS and System solution space
  - Potential OCI issues

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B-2: Industry can provide data and models, verified and validated by government, to inform independent government analysis in the AoA

- The AoA will benefit from industry input on the models, tools, and data used by the Gov't to conduct the analysis
- Benefits
  - Gov't can validate their service models with further insight provided by Industry system models and architectures
  - Enables reusable concepts and higher fidelity models
  - Provides Gov't/Industry a shared understanding of mission parameters
  - Provides initial focus on affordability as a critical factor in the AoA
  - Provides tool/data/model configuration management and repository environment
- Mechanisms
  - Development Planning organizations identify the planned AoA tools and data, and Industry provided data on capability versus cost trades provides enhanced understanding in defining potential solution sets
  - RFIs, CRADAs, and Study Contracts can be used to obtain proprietary information on Industry models, tools, and data
- Issues/Barriers
  - Protection of Industry IP relative to Industry models, data, and tools, especially in a joint repository environment
  - Potential OCI issues

B-3: Industry support for engineering analysis during the initiation of program planning

- Post AoA engineering analysis is needed to shape initial program planning for the transition into Technology Development.
- Benefits
  - Industry information will help shape more realistic program planning and acquisition strategies accounting for cost/schedule/performance risks
  - Industry knowledge of the technical concepts and technology risks enable evolutionary acquisition with technology transition realism
  - Industry knowledge informs Gov't PMO or Development Planning organization as they build Milestone A documentation
  - Improved competition through cross Industry awareness
- Mechanisms
  - Development Planning organization or Gov't PMO establish the baseline of initial program planning documents
  - RFIs, CRADAs, and Study Contracts can be used to obtain proprietary information on Industry risks and opportunities relative to the Preferred System Concept identified by the AoA
- Issues/Barriers
  - Reluctance of Industry to share risks and opportunities in a pre-RFP environment
  - Protection of Industry IP relative to Industry risks and opportunities
  - Potential OCI issues

B-4: Industry support to the Gov't in assessing the state of technology

- It is critical to obtain credible assessments of the state of current and potential enabling technologies required to support the concept solution space prior to, during, and after the conduct of the AoA
- Benefits
  - Provides realism in technology assessment
  - Provides input on technology feasibility, and the capacity for growth/evolution
  - Supports TDS development relative to CTEs
- Mechanisms
  - Development Planning organization can assess applicable technologies
  - RFIs, CRADAs, and Study Contracts can be used to solicit a broad base of proprietary Industry responses on potential enabling technologies
  - Technology Demonstrations and Industry Driven Experiments can be used to assess and validate the current state of enabling technologies
  - The existing DTIC IRAD dissemination site can be used by Industry to post their IR&D efforts and by the Gov't to search on enabling technologies
- Issues/Barriers
  - Protection of Industry IP surrounding potential enabling technologies,
  - Potential OCI issues
  - Technology Demonstrations may require Gov't funding
  - Little Gov't feedback provided for Industry Driven Experiments

B-5: Understanding of MDD/AoA Information enables Gov't/Industry collaboration to support MS-A

- Increased sharing of MDD/AoA information to enable Gov't/Industry collaboration in refining the solution space to support MS A decision
  - Includes the AoA Study Guidance, the Acquisition Decision Memorandum defining Milestone A expectations, the AoA evaluation criteria/critical success factors, and the mission level MOEs.
  - This information needs to include technical, schedule, and budget constraints
- Benefits
  - The identification and potential refinement of these measures is critical to ensure meaningful MOEs with feasible parameters.
  - Allows Industry to inform Gov't on potential alternatives and risks (including disruptive and maturing technologies) which would drive evolutionary strategy
  - Aligns Gov't/Industry to Milestone A objectives and allows Industry to inform Gov't on potential objectives not considered in ADM
  - Aligns Gov't/Industry on the Warfighter needs (scenarios, threats, etc) and the measures against which the solution will be validated.
  - Industry can verify evaluation criteria/critical success factors are complete/balanced
- Mechanisms
  - Gov't/Industry Working Groups disseminate information to a broad Industry base and allow consolidated, non-proprietary Industry feedback
  - RFIs, CRADAs, and Study Contracts can be used to disseminate the information and solicit a broad base of proprietary Industry responses
- Issues/Barriers
  - Protection of Industry IP included in feedback
  - Potential OCI issues

C-1: Define clear guidelines for avoiding OCI

- OSD may need to provide additional clarification & guidance to Services regarding Organizational Conflict of Interest interpretations
  - Current FAR 9.505.2 provides all pertinent information
  - Additional clarification may be needed to facilitate collaborative environment
- Benefits
  - Would allow additional Industry participation in pre-MDD Development Planning activities, JCIDS process, and Material Solution Analysis activities
- Mechanisms
  - Could be included in OSD DDR&E Development Planning & Guidance
- Issues/Barriers
  - Current approach tends to be for government to use the lowest-risk interpretation, which typically causes exclusion of industry participation
  - Clear guidance on what type of industry involvement IS and IS NOT allowed, using examples, would help mitigate the current reluctance
  - NOTE we are not suggesting loosening the OCI provisions but clarifying them

C-2: Government leadership should ensure competent "up-front" involvement in Development Planning

- Ensuring that the best-available government engineering capability is involved with Development Planning will add integrity to the process
  - Growing losses of competent engineering personnel is problematic
  - Competent government engineering in the Development Planning process is essential and can be restored, and enhanced, with informed Industry inputs
- Benefits
  - Utilizing the best new/existing talent in Development Planning would add integrity to the process and allow for better decision-making
  - Industry inputs will be better utilized due to better understanding of technologies, inherent capabilities, risks, costs and what is practical and plausible
- Mechanisms
  - Services could consciously identify "best/brightest" and assign to Development Planning and related development activities as appropriate

C-3: Define Development Planning process for increased Gov't/Industry Collaboration

- Define attributes of a component Development Planning process which allows Government & Industry to facilitate increased collaboration
  - Examine existing component Development Planning processes
  - Identify important information exchange interfaces within each component process and between the appropriate stakeholders within the DoD
- Benefits
  - Will improve information sharing on advance developments, future military needs, and MDD information and documentation
  - NOTE: Industry believes this exists within DARPA, but is far less effective in the Services
- Mechanisms
  - Broad Agency Announcements (BAA)
  - Requests for Information (RFI)
    - Such need to remain open
- Issues/Barriers
  - BAAs and Open RFIs are costly
  - Industry would expect feedback from such

C-4: Identify and apply funding alternatives to support selected Development Planning activities

- Additional funding needed could come from Industry and/or Government for such things as additional engineering and technical analysis
- Benefits
  - Funded activities provide greater focus on specific needs
- Mechanisms
  - CRADAs (Cooperative Research and Development Activity)
  - Industry will self-fund certain activities if clear benefit to Development Planning is understood
  - SBIR (Small Business Independent Research) at MAJCOM level
- Issues/Barriers
  - S&T environment not funded/budgeted to “systemize”
  - Potential OCI issues, but careful boundary control can mitigate
  - CRADAs sometimes hard to implement; government help in visualizing mutual value will help