Office of the Chief Systems Engineer Program of Record Engineering Support

Army Systems Engineering Support to Materiel Development Decision (MDD) Development Planning (DP)

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SOLDIERS AS THE DECISIVE EDGE

Problem

- Insufficient systems engineering during Pre-Milestone A phase of system development
  - Program Management Office and Prime Contractor(s) often not established until after Milestone B
  - Lack of a dedicated SE team during the Materiel Solution Analysis Phase hinders sufficient SE in critical efforts leading up to Materiel Development Decision (MDD)

- Leads to:
  - Weak baseline, trade studies, modeling, and Analysis of Alternatives (AoA)
  - Unconstrained weapon systems requirements
  - Underestimation of risk
  - Risky technology development and acquisition strategies

- Results in increased potential for schedule slips, cost overruns, and program termination
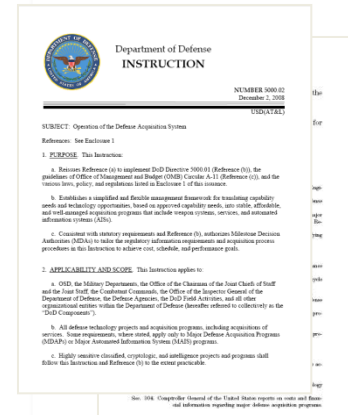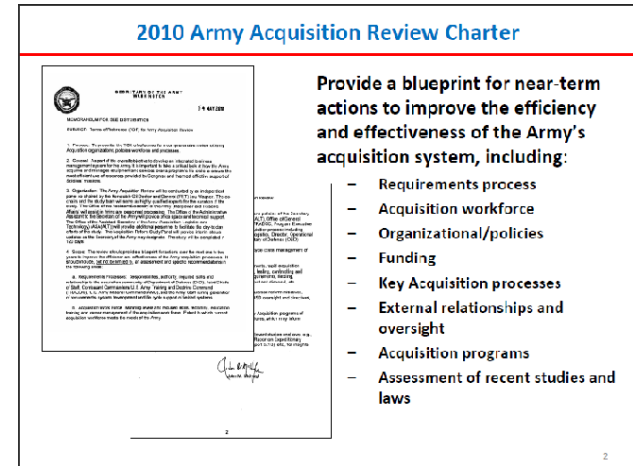
Calls to Action

- Weapon System Acquisition Reform Act (WSARA 2009: PL 111-23)
  - *Directed acquisition improvements through early SE and DP activities*
  - *OSD ATL Directive-Type Memorandum (DTM) 10-017 – Development Planning to Inform Materiel Development Decision (MDD) Reviews and Support Analyses of Alternatives (AoA)*

  ==*Each service has their own advocacy, oversight and execution responsibility*==

  - *"Major Problems Hamper Acquisition"*
  - *Make Requirements Process Collaborative and Timely*

Weapons Systems Acquisition Reform Act Signed by President May 22, 2009 (Public Law 111-23)

2010 Army Acquisition Review Charter

Provide a blueprint for near-term actions to improve the efficiency and effectiveness of the Army's acquisition system, including:
- Requirements process
- Acquisition workforce
- Organizational/policies
- Funding
- Key Acquisition processes
- External relationships and oversight
- Acquisition programs
- Assessment of recent studies and laws

**2010 Army Acquisition Review**

Objectives

- Best value for the Warfighter
- Requirements traceability
    - Understanding of operational utility
    - Understanding of what attributes have the greatest value, and why
- Feasible designs
- Rational and accurate costing
- Architectural compatibility
- Informed trades between cost, schedule, and performance objectives made before development start
- Solid understanding of risk
- Identify advanced technology needs
- Focus technology development where required, to enable maturation and integration of critical technology essential to program success
- Establish close collaboration between acquisition, requirements and resource communities, and processes; integrate these three decision processes to the extent possible.
- Provide the right information in the right forums to enable appropriate leadership involvement in the definition and development of critical programs

- **Choose the right programs**
- **Ensure a solid foundation and a viable path for success**

When is Systems Engineering Required

Early Systems Engineering Required prior to MDD
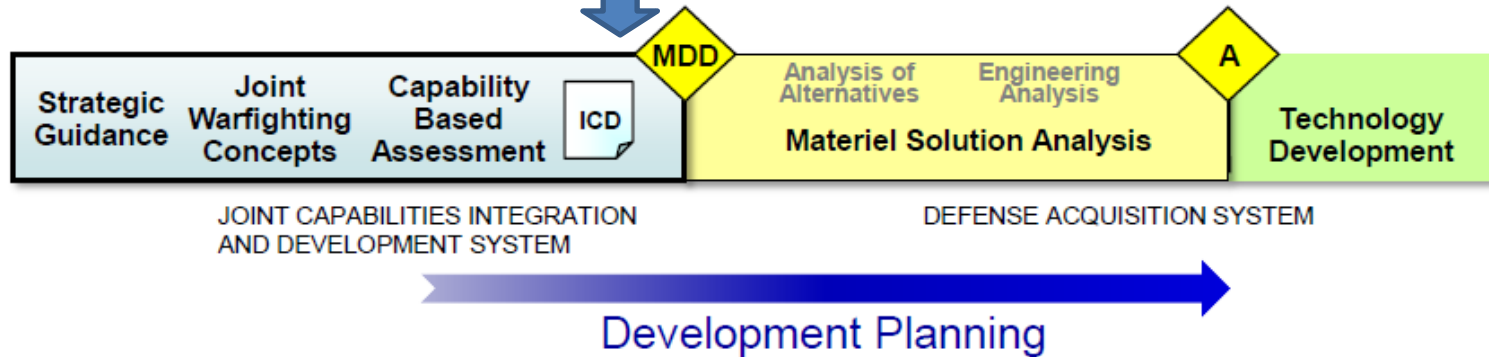
Development Planning is the upfront technical preparation to ensure successful selection and development of a materiel solution

Required Actions and Deliverables

- **Examine appropriate solutions that exist (across the entire solution space)**
- **Narrow down to the most promising potential solutions and provide more detailed examination**
- **Make recommendation of best potential solutions to be further examined in an AoA**
- **Output**
    - Identification of most promising potential solutions for AoA
    - Tech assessment and identification of S&T, tech demo, and dem/val needs
    - Identification of credible range of performance and utility
    - Credible cost range
    - Identification of risk factors
    - Business Case Analysis
    - SE Artifacts
    - Market Research*
    - Acquisition Decision Memorandum (ADM) Draft*
    - Draft Analysis of Alternatives (AoA) Study Guidance*
    - AoA Study Plan*
    - Initial Capability Documents (ICDs)*   **
    - Small Business Innovation Research (SBIR) Technologies Consideration*

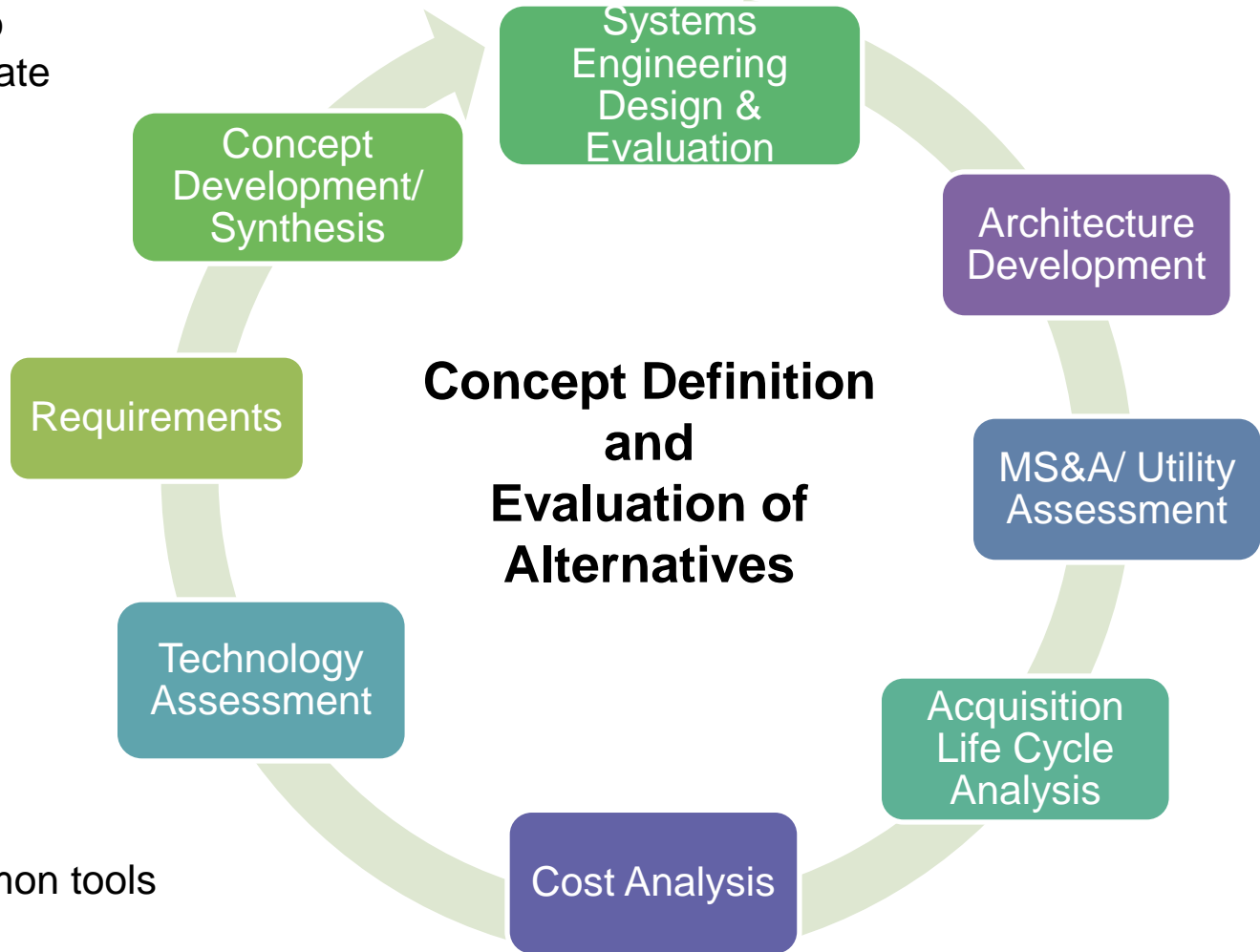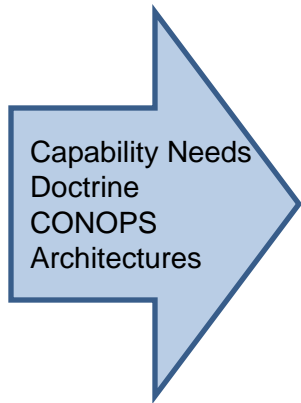* required documentation for MDD
** produced by TRADOC integrated capabilities development team (ICDT)

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Concept Definition and Evaluation of Alternatives

Teams formed to provide appropriate expertise

Capability Needs
Doctrine
CONOPS
Architectures

Concept Definition and Evaluation of Alternatives

- Concept Development/ Synthesis
- Systems Engineering Design & Evaluation
- Architecture Development
- MS&A/ Utility Assessment
- Acquisition Life Cycle Analysis
- Cost Analysis
- Technology Assessment
- Requirements

Make use of common tools and methodology

Potential Means to Conduct CD & EoA

- Participants
  - TRADOC ICDT
  - RDECOM, including aligned RDEC
  - AMSAA and TRADOC Analysis Center (TRAC)
  - Aligned PEO
  - Cost Analysts
  - LCMC
  - Industry and Academia, as appropriate
  - T&E Community

- For select programs, acquisition organizations tasked by AAE charter
- Co-led by Chair, ICDT , and an ASA(ALT) Trailboss designated by ASA(ALT) charter
- Teams meet for specified periods of time, either physically or virtually, to collaborate and accomplish specific tasks
- RDECOM supports with ability to take potential solutions and quickly and objectively characterize
- Use common tools and methods where possible; tools unique to the problem set when required
- Process continuously narrows down to the best alternatives – only the worthy survive
- Charter remains in force until program office stood up or materiel development discontinued

Summary

- There is a recognized need for greater Systems Engineering up front in the acquisition process
- We need a means, that operates within existing resources, to insert SE rigor prior to MDD
- This briefing proposes a process that brings multiple organizations together to work collaboratively and provide that rigor
- We invite your comments and recommendations on this proposal

Contact Information

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