Insights on the Implementation of Development Planning

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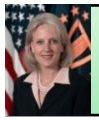


Systems Analysis
Kristen Baldwin (Acting)

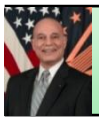
Addressing Emerging Challenges on the Frontiers of Systems Engineering

- **Analysis of Complex Systems/Systems of Systems**
- **Program Protection/Acquisition Cyber Security**
- **University and Industry Engineering Research**
- **Modeling and Simulation**
- **Systems Engineering FFRDC Oversight**

Major Program Support
James Thompson

Supporting USD(AT&L) Decisions with Independent Engineering Expertise

- **Engineering Assessment / Mentoring of Major Defense Programs**
- **Program Support Reviews**
- **OIPT / DAB / ITAB Support**
- **Systems Engineering Plans**
- **Systemic Root Cause Analysis**
- **Development Planning/Early SE**
- **Program Engagements**



Mission Assurance
Nicholas Torelli

Leading Systems Engineering Practice in DoD and Industry

- **Systems Engineering Policy & Guidance**
- **Development Planning/Early SE Policy**
- **Specialty Engineering (System Safety, Reliability and Maintainability Engineering, Quality, Manufacturing, Producibility, Human Systems Integration (HSI))**
- **Technical Workforce Development**
- **Standardization**

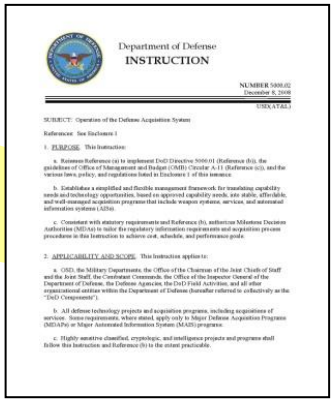
Providing technical support and systems engineering leadership and oversight to USD(AT&L) in support of planned and ongoing acquisition programs

Program Support Reviews

- Fall 2002: OSD establishes SE organization to:
  - Drive SE back into programs and instill credibility in the acquisition process
- ASD(R&E) Imperative #3 (2009):
  - Reduce the cost, acquisition time, and risk of our major defense acquisition programs
- Program Support Reviews: Element of DoD SE revitalization effort:
  - Help Program Managers identify & mitigate risks
  - Shape technical planning and management
  - Provide independent, actionable recommendations to facilitate program success
  - Provide insight to OSD stakeholders
  - Identify systemic issues requiring resolution above program
- Weapon Systems Acquisition Reform Act of 2009 Section 103:
  - ***"Carry out performance assessments of major defense acquisition programs…."***

Program Support Reviews (PSRs). PSRs are a means to inform an MDA and Program Office of the status of technical planning and management processes by identifying cost, schedule, and performance risk and recommendations to mitigate those risks. PSRs shall be conducted by cross-functional and cross-organizational teams appropriate to the program and situation. PSRs for ACAT ID and IAM programs shall be planned by the Director, Systems and Software Engineering (SSE) to support OIPT program reviews, at other times as directed by the USD(AT&L), and in response to requests from PMs.

Extract from DoDI 5000.02, Dated Dec 2, 2008


Department of Defense
INSTRUCTION

NUMBER 5000.02
December 8, 2008

USD(AT&L)

SUBJECT: Operation of the Defense Acquisition System

References: See Enclosure 1

1. PURPOSE. This Instruction:

a. Reissues Reference (a) to implement DoD Directive 5000.01 (Reference (b)), the guidelines of Office of Management and Budget (OMB) Circular A-11 (Reference (c)), and the various laws, policy, and regulations listed in Enclosure 1 of this issuance.

b. Establishes a simplified and flexible management framework for translating capability needs and technology opportunities, based on approved capability needs, into stable, affordable, and well-managed acquisition programs that include weapon systems, services, and automated information systems (AISs).

c. Consistent with statutory requirements and Reference (b), authorizes Milestone Decision Authorities (MDAs) to tailor the regulatory information requirements and acquisition process procedures in this Instruction to achieve cost, schedule, and performance goals.

2. APPLICABILITY AND SCOPE. This Instruction applies to:

a. OSD, the Military Departments, the Office of the Chairman of the Joint Chiefs of Staff and the Joint Staff, the Combatant Commands, the Office of the Inspector General of the Department of Defense, the Defense Agencies, the DoD Field Activities, and all other organizational entities within the Department of Defense (hereafter referred to collectively as the "DoD Components").

b. All defense technology projects and acquisition programs, including acquisitions of services. Some requirements, where stated, apply only to Major Defense Acquisition Programs (MDAPs) or Major Automated Information System (MAIS) programs.

c. Highly-sensitive classified, cryptologic, and intelligence projects and programs shall follow this Instruction and Reference (b) to the extent practicable.

- Systemic Root Cause Analysis:
  - Identifies the most prevalent issues and their root causes in major acquisition programs
  - Develops effective recommendations that go beyond treating symptoms

Initial Systemic Issues

Planning

- **Requirements**
  - Lack of reasonable, measurable, and testable requirements
- **Resources**
  - Schedule driven programs
  - Marginal Program Office staffing
  - Optimistic plans to leverage M&S
- **Management**
  - Lack of incremental acquisition strategy with defined phase exit criteria
  - Poor communication between acquirer/supplier prior to contract award
  - Lack of Integrated Master Plan/Integrated Master Schedule; Not being used as management tools
  - Roles, responsibilities, and lines of authority not clear
  - Lack of mature risk management program
- **Technical Process**
  - Lack of rigorous SE planning; No “time” for all SE technical reviews
  - Lack of growth margins/trade-space
  - Underestimation of integration efforts and COTS modifications
  - Insufficient efforts to design-in reliability
  - Testing and verification approach inadequate

Note: Issues cited 2007

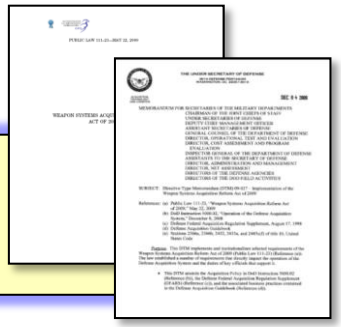
Execution

- **Requirements**
  - Requirements changes contribute to SE churn; Increase costs and risks
  - Failure to establish a process for flowing down requirements
- **Resources**
  - Aggressive/success oriented/concurrent test schedule
  - Difficulty in retaining high quality personnel
  - Shortage of military operators for operational testing
- **Management**
  - Poor balancing of requirements, schedule and resources
  - Lack of properly documented risks and mitigation plans
  - Lack of management metrics to monitor program health
    - Poor integration of IMP/IMS, EVMS and risk management
    - Lack of resourced contingency plans
  - Poor communication across IPTs and program lines
- **Technical Process**
  - Lack of growth margins/trade-space
  - Underestimation of integration efforts and COTS modifications
  - No “time” to conduct the full suite of SE technical reviews
  - Software productivity and reuse less than planned
  - Reliability not progressing as planned
- **Technical Product**
  - Developmental testing not complete prior to operational testing
  - Weak emphasis on RAM and suitability contributes to IOT&E issues
  - Challenging production ramp rates for contractors/suppliers

Weapon Systems Acquisition Reform Act of 2009

- **Codified *Development Planning* through legislation**
- **Law specifically requires DASD (SE) to:**
  - Monitor and Review systems engineering and *development planning* activities of the major defense acquisition programs
  - Provide advocacy, oversight, and guidance to elements of the acquisition workforce responsible for systems engineering and *development planning*
  - Provide input on the inclusion of systems engineering requirements in the process for consideration of joint military requirements by the Joint Requirements Oversight Council
  - Periodically review the organizations and capabilities of the military departments with respect to systems engineering and *development planning* capabilities
- **DoD policies developed and issued to formally implement previously ad hoc activities**

Processes and Procedures Implemented

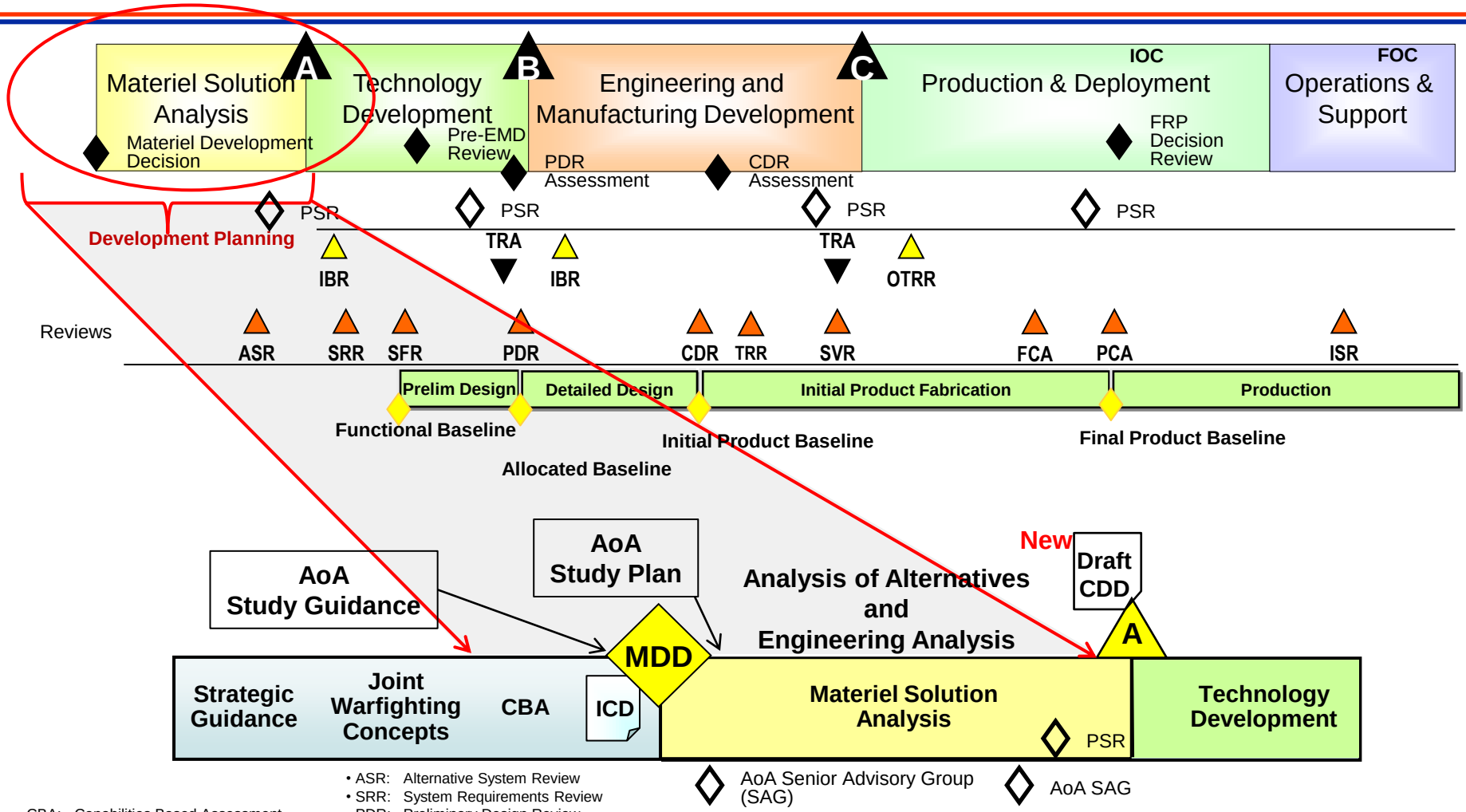


Development Planning and Early Systems Engineering

- **The Materiel Development Decision (MDD) is the formal entry point to the Acquisition system. The Milestone Decision Authority must:**
  - Decide whether to initiate Materiel Solution Analysis (MSA) to address the capability gap
  - Determine the fundamental path the material development will follow
- **Decisions must be based on:**
  - Effective development planning
    - The plan to staff and fund analytic, engineering, and programmatic activities supports the MSA and proposed milestone entry requirements
    - Shape Technical Planning for MSA phase, and beyond
  - A strong technical foundation
    - **Pre-MDD:**
      - Understanding of user capability needs and requirements (CBA, ICD, AoA Study Guidance)
        - Ensure capability gaps in ICDs are understood and well defined
        - SE equities (schedule, risks, RAM, integration, manufacturing, etc.) are properly accounted for/addressed in AoA Guidance
    - **Post MDD/Pre-Milestone A:**
      - Complete examination of Alternatives (AoA Study Plan, and conduct of AoA)
      - Development of the Draft CDD with KPPs and KSAs through collaboration with the user
      - Development of system specification based on the results of the AoA,
      - Complete and thorough planning for the next phase – SE Equities properly accounted for/addressed

Early Systems Engineering consists of activities conducted prior to MS-A that are necessary to ensure a solid foundation for a smooth transition from JCIDS to the Acquisition process.

Development Planning in Acquisition

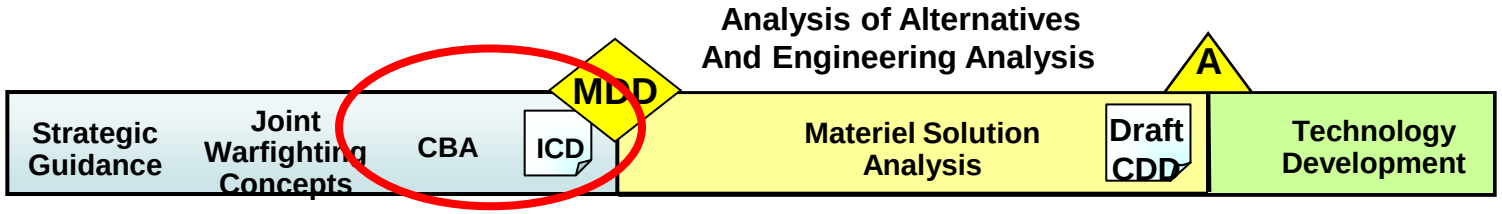


- CBA: Capabilities Based Assessment
- ICD: Initial Capabilities Document
- MDD: Material Development Decision
- AoA: Analysis of Alternatives
- PSR: Program Support Review
- TRA: Technology Readiness Assessment
- IBR: Integrated Baseline Review

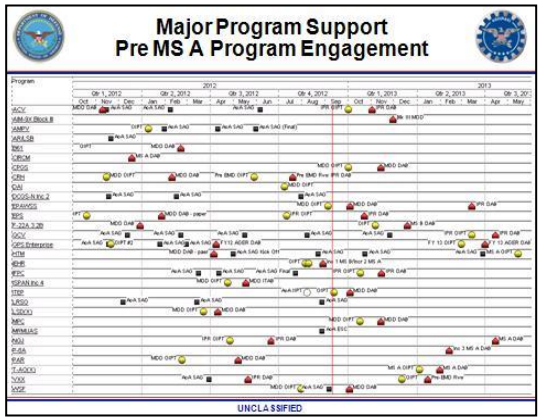
- ASR: Alternative System Review
- SRR: System Requirements Review
- PDR: Preliminary Design Review
- CDR: Critical Design Review
- TRR: Test Readiness Review
- SVR: System Verification Review
- FCA: Functional Configuration Audit
- PCA: Physical Configuration Audit
- ISR: In-Service Review

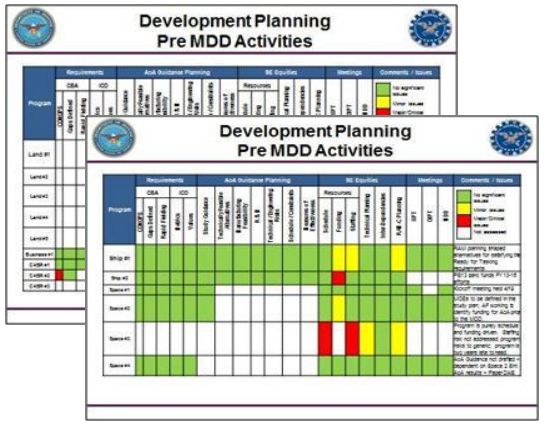
- OTRR: Operational Test Readiness Review
- IOC: Initial Operational Capability
- FOC: Full Operational Capability

Early SE Program Engagement Scorecard
Pre-MDD



- **Pre-Materiel Development Decision Engagements**
  - Engaged ***29*** programs in FY11-12
  - ***15*** programs held Materiel Development Decisions in FY11-12
  - Identified issues on ***43%*** of ICDs reviewed
  - Identified issues on ***58%*** of AoA Study Guidance documents reviewed
- **Pre-Materiel Development Decision Recognized Issue**
  - Seven programs identified with ***Scheduling Viability*** issues
  - Thirteen programs identified with ***Funding*** issues
  - Two programs identified with ***Interdependency*** issues
  - Nine programs identified with ***ICD Metrics/Value*** issues
  - Seven programs identified with ***Technical Engineering*** or ***Planning*** issues
  - Six programs identified with ***Staffing*** issues





Capabilities-Based Assessment (CBA) & Initial Capabilities Document (ICD)

Capabilities Based Assessments:

- Identification of capability requirements and associated gaps
- Clear description of the mission or military problem to be assessed, the timeframe in which the problem is being assessed, risks, and the scope of the assessment
- Clear description of the CONOPS and objectives

Joint Staff incorporated our CJCSI 3170.01 recommendations to have:

- A Service validated draft CDD which includes proposed KPPs and KSAs prior to Milestone A to inform specification
- A minimum number of KSAs to maintain program flexibility
- That "FCBs will work within the Capability Portfolio Management system to maintain awareness of cross-portfolio interdependencies in order to understand performance capability shortfalls of complementary programs

What we could do better:

- CBA insights currently limited, but expected to improve
- Early dialog between user, Joint Staff and acquisition community
  - Early / better understanding of capability needed
  - Better understanding of what may be possible for the user

Initial Capabilities Document:

- Summarizes the results of the CBA
- Describes all capabilities gaps in sufficient detail for the acquisition community to understand
- Operational risk associated with gaps
- Describes the capability - Root cause clearly identified
- Documents the evaluation of materiel and non-materiel approaches proposed to provide the required capability

What we have seen:

- ICDs not traced to a CBA or other source
- Overarching ICDs (e.g. FoS) that:
  - Do not map capability gaps to the specific domains (air, ground, maritime)
  - Lack measures/context and specific mission to identify appropriate MOEs
  - The CONOPS are not well developed nor complete
- New programs linked to inappropriate ICD

Capability Requirements			Current Capabilities (if applicable)	
Capability Requirements	Metrics	Minimum Value	Metrics	Value
Capability 1				
Attribute 1.1	Description	Value (No TBD)	Description	Value (No TBD)
Attribute 1.n	Description	Value (No TBD)	Description	Value (No TBD)
Capability 2				
Attribute 2.1	Description	Value (No TBD)	Description	Value (No TBD)
Attribute 2.n	Description	Value (No TBD)	Description	Value (No TBD)
Capability n				
Attribute n.n	Description	Value (No TBD)	Description	Value (No TBD)

What we could do better:

- Capability definitions should contain attributes with appropriate qualitative parameters and metrics
- Capability definitions general enough so as not to prejudice development decisions in favor of a particular means of implementation yet specific enough to evaluate alternatives

Analysis of Alternatives (AoA)
- Study Guidance and Post-MDD Execution -

What we want to see:
- Well defined set of Measures of Effectiveness
  - Traceable to CBA and ICD
- Study guidance requires sufficient technical basis to assess alternatives, including:
  - Technically feasible system alternatives
  - Operational effectiveness, engineering trades, performance, cost, and schedule risks
  - Manufacturing feasibility
  - Alternatives' constraints such as schedule and other resources
  - Inputs to RAM-C analysis
- Cost drivers and other inputs to a Cost Analysis Requirements Document (CARD)
  - Cost drivers: weight, software lines of code, etc.
- Less redundancy within warfighter portfolios
- Ensure Service SE involvement with the AoA Study Guidance and Plan to ensure proper scope (alternatives, risk, etc.), completeness, and proper MOEs

What we have seen:
- Well informed decision-makers regarding the preferred system concept
- Insight to trades and sensitivity analysis
- Performance attributes necessary for the acquisition community to design and propose systems and to establish programmatic baselines
- AoA trade space/ alternatives limited
- Limited data on foreign systems
- MOEs for alternatives not complete
- CONOPS not well defined
- Critical Technologies not identified
- Schedule not realistic or technical reviews not planned
- Cost is not fairly considered
- Risk identification not complete

What we could do better:
- Ensure the analysis constrains the new development alternative to what's affordable
- Use comprehensive metrics in trade studies, sensitivity analyses
- Assess cost/schedule of modifications to COTS; performance and obsolescence issues
- Designate SMEs to assess manufacturing feasibility
- Accept balanced design - 85% solution
- Defer planning activities until the preferred alternative is selected

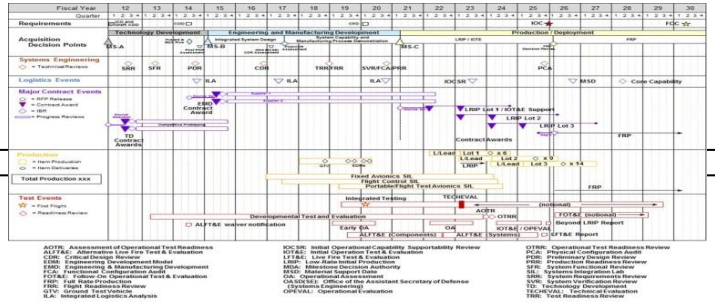
Shaping Technical Planning
- Schedule Development -

What we want to see:

- Reasonable schedules developed early in the program to provide a foundation for the program
  - Should be representative of historical programs
  - Plan to conduct the full suite of SE technical reviews; Ensure appropriate phasing
  - Concurrency should be minimized
  - Sufficient time for integration, test, and corrective actions
  - Schedule margin to accommodate contingencies
- Performance should be demonstrated prior to financial commitment

What we have seen:

- Early program scheduled driven by external leadership vice underpinning
- Being event driven is difficult in an environment of a schedule driven budgeting system
- Schedules not reflective of historical programs
- High levels of concurrency
- Optimistic development times for technologies

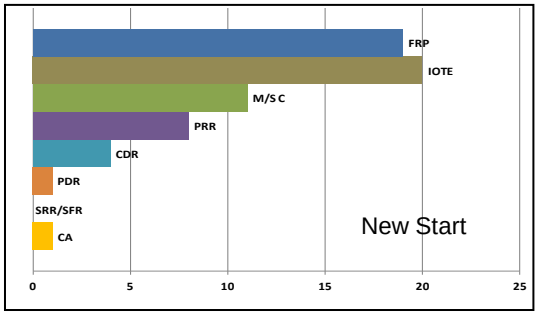


What we could do better:

- Ensure programs are event driven
  - Decisions to expend resources should be underpinned by demonstrated performance reviews
- Ensure programs and leadership understand schedule metrics based on past programs and benchmarks
  - Allow low risk schedule - margin to respond to realized risks
- Plan to contract for all SE Technical Reviews and document schedules in Systems Engineering Plan (SEP), Technology Development Strategy or Acquisition Strategy, Acquisition Program Baseline (APB)
  - SEP and APB should facilitate assessing performance to plan and benchmarking
  - Update SEP after contract award
- Develop Program Office Integrated Master Schedule – update after contract award

Schedule
- FY12 Benchmarking Effort – (1 of 2)

- **Review of 109 MDAPs' planned program schedules show:**
  - Planned schedule are overly optimistic; as the median actual time to execute exceeds planned time by 6 (for new starts) to 8 months (modifications).
  - Unrealistic schedule planning can lead to cost growth and does not allow adequate time to fix problems that arise.
- **Benchmarks developed using historical data can assist in planning more realistic schedules during development**
  - Can assure a more executable schedule
- **Planning slips are longer later in the acquisition process**
- **Proper phasing of funding with a low risk schedule is critical**
- **Some Caveats:**
  - RDT&E expenditures assumed to be expended uniformly over time. Expenditures are allocated to key SE events
  - The data in the schedule database is less well populated prior to PDR



Average Key Event Slippage (in months)

Approximate Cumulative % RDT&E Expenditures by Key SE Events

Domain	PDR	CDR	MS C	FRP
Land Combat	18%	38%	67%	100%
Fixed Wing Aircraft	13%	26%	81%	100%
C4ISR	19%	35%	92%	100%
Missiles	40%	59%	81%	100%
Rotary Wing	25%	34%	70%	100%
Space & Missile Def	24%	40%	69%	100%
Unmanned Aircraft	28%	40%	87%	100%
ALL DOMAINS	24%	39%	78%	100%

CA	– Contract Award
SRR	– System Requirements Review
SFR	– System Functional Review
PDR	– Preliminary Design Review
CDR	– Critical Design Review
PRR	– Production Readiness Review
M\SC	– Milestone C
IOT&E	– Initial Operational Test and Evaluation
FRP	– Full Rate Production

Average Key Event Slippage (in months)

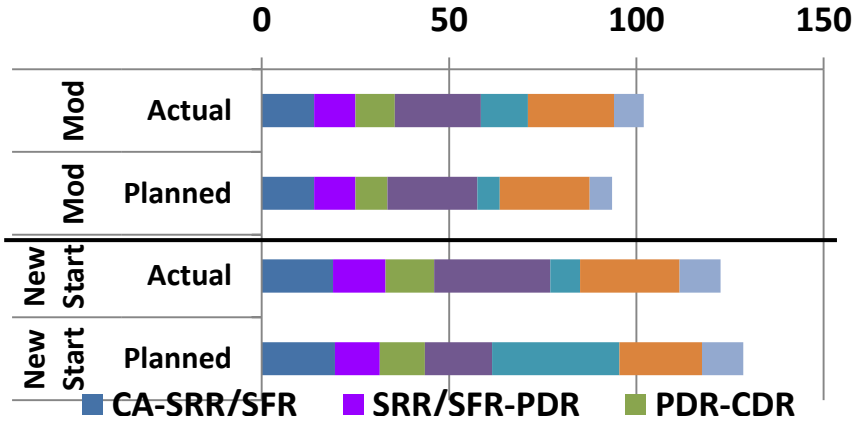
MDAPs	PDR	CDR	PRR	M/S C	IOTE	FRP
New Start	1	4	8	11	20	19
Mod	1	6	4	7	11	16

Average Key Event Slippage For Services (in months)

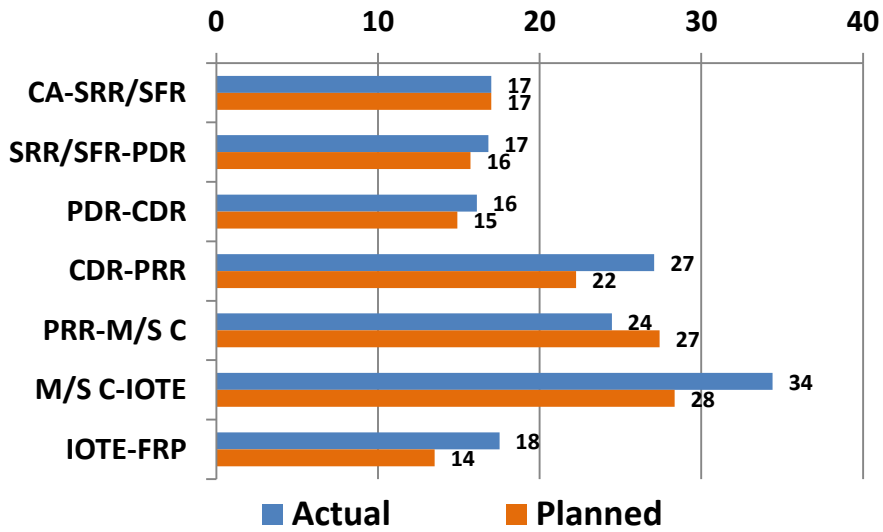
Component	PDR	CDR	PRR	M/S C	IOTE	FRP
Army	1	5	18	12	13	20
Navy	0	6	3	8	12	13
Air Force	1	7		21	29	34
DoD	1	4	6	7	19	18

Schedule Planning
- FY12 Benchmarking Effort - (2 of 2)

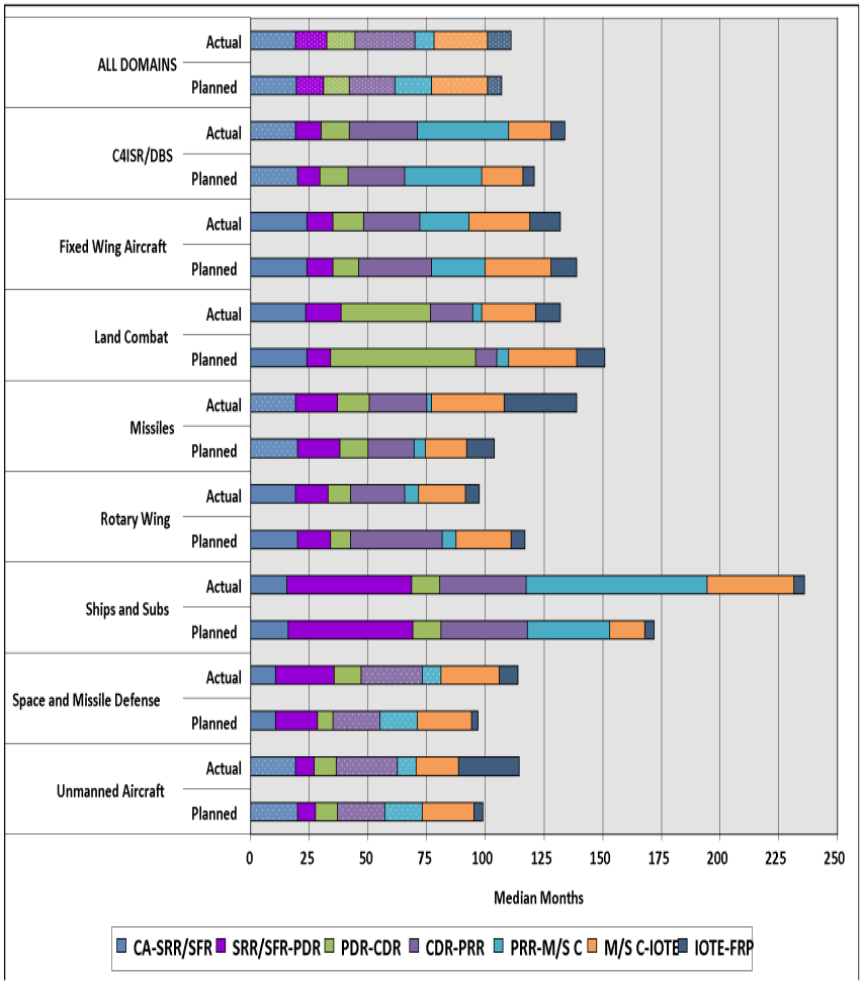
Comparison of Planned vs. Actual Technical reviews



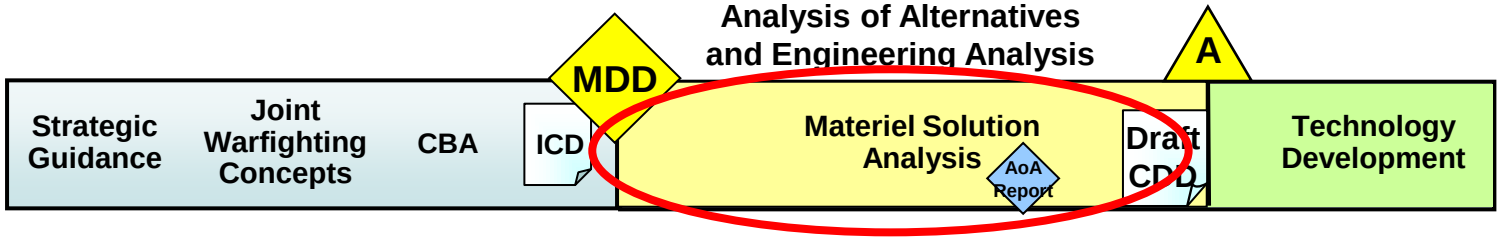
Average Months Between Technical Reviews



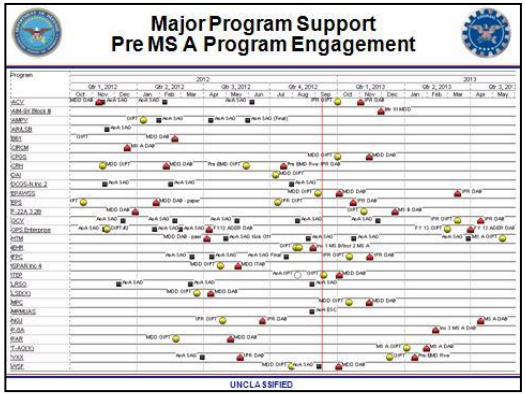
Planned vs. Actual Technical Reviews by Domain

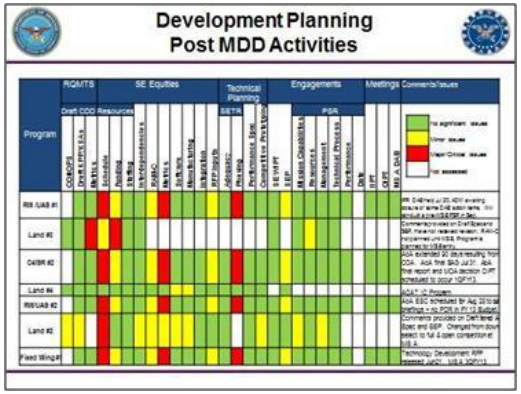


Early SE Program Engagement Scorecard
Post MDD



- **Post Materiel Development Decision Engagements**
  - Engaged ***22*** programs in FY11-12
  - Identified issues in ***67%*** of Draft CDDs reviewed
  - Identified issues in ***63%*** of Technology Development Strategies reviewed
  - Identified issues in ***63%*** of SEPs reviewed
  - Identified issues in ***71%*** of PSRs conducted
- **Post Materiel Development Decision Recognized Issues**
  - Ten programs identified with ***Draft CDD*** issues
  - Seven programs identified with ***Scheduling Viability*** issues
  - Seven programs identified with ***Funding*** issues
  - Three programs identified with ***Prototyping*** issues
  - Three programs identified with ***Staffing*** issues





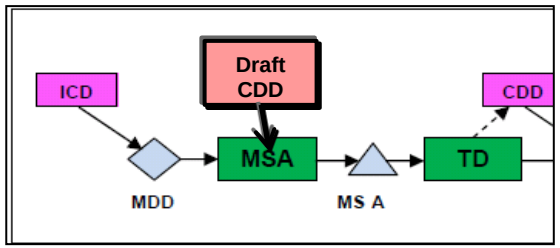
Draft Capability Development Document

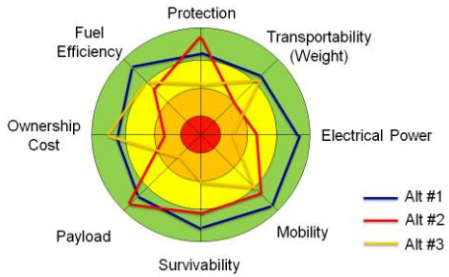
What we want to see:

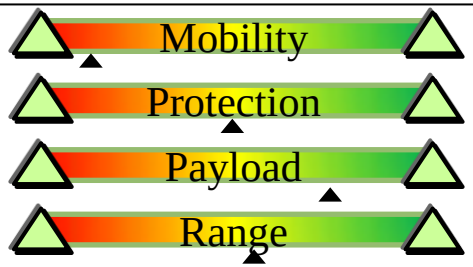
- Authoritative, measurable, and testable parameters
- Minimized number of KPPs, KSAs and performance attributes
  - Support development of a system specification
  - Allows trade space for the acquisition community and contractor to achieve a balanced design
- Informed engagement between the Acquisition community and the Services, Combatant Commands, and other DOD Components to agree on requirements and trades prior to RFP release
  - Crosswalk draft CDD and performance specification
- Contractor insights solicited via industry days

What we have seen:

- KPPs that are not measurable
- KPP threshold and objective values not provided, or they are equal – restricting trade space
- Sustainment KPP and reliability and maintainability KSAs do not properly consider government furnished equipment
- Excessive KSAs that restrict trade space
- Hesitancy to trade requirements
  - Insistence on 100% solution
- Open systems approach not required
- Unrealistic operational need dates







Constructive and collaborative dialog between warfighters, Joint Staff, and acquisition community as they work together early to mature requirements

Technology Development Strategy

What we want to see:

- Rationale for an evolutionary strategy or a single-step-to-full-capability - increments are based on mature technology
- Specific cost, schedule, and performance goals
- Critical Program Information (CPI) and potential countermeasures to inform program protection Plan
- Detailed schedule graphic including program milestones, phases, and key acquisition decision points including:
  - Systems engineering and technical reviews and assessments;
- Two or more competing teams producing prototypes
  - Prototype results used to inform requirements, PDR, and RFP
  - Prototyping enhances competition, reduce technical risk, validate designs, validate cost estimates, evaluate manufacturing processes, and refine requirements
- Plans for managing interdependencies and external interfaces – Identify who controls the interface

What we have seen:

- Schedules not reflective of historical programs
  - Early program schedule driven by external leadership vice underpinning
  - High levels of concurrency
  - Being event driven is difficult in an environment of a schedule driven budgeting system
- Optimistic development times for technologies
- Source selection activities for EMD start prior to completion of PDR
- Inadequate discussion of risk mitigation plans, including lack of key risk reduction events
- Inadequate plans to identify and manage critical interfaces and synchronize schedules of interdependent programs

What we could do better:

- Ensure programs and leadership understand schedule metrics based on past programs and benchmarks
- Use Memorandums of Agreement (MOAs) to identify and manage interdependencies and external interfaces
- Systems Engineering Plan (SEP), and Program Baseline (APB) should facilitate assessing performance to plan and benchmarking

Technology Development Strategy
- Thoughts for Consideration -

Government Acquisition Planning:

- Adopt an incremental vice big bang acquisition approach
- Think “small” vice “BIG” procurement quantities until system is proven
- Plan for margins (schedule, management reserve and performance) to account for contingencies
- Knowledge Point process (or similar) to foster collaboration between material and combat developers, and contractors
  - Early SE feedback to mature the CDD with low risk, achievable requirements
- Develop a plan to manage external dependencies
  - Interface management in place to meet cost, schedule, performance… and program success
  - Interface Control Working Group established
  - Associate Contractor Agreements established
- Transparency among stakeholders is imperative
  - Create an environment where the PMs can be open with an issue and others will be eager to help resolve it should be fostered

Industry Engagement

- The big question is how do we get insights from systems engineers and industry earlier in the process
  - Use Industry Days and Requests for Information to solicit insights into viability of developing/fielding system within cost and systems
  - Host technology demonstration days to gain insights into industries available new technologies; adopt an approach to “appropriate” vice “innovate”
- Ensure bidders understand the requirements before they prepare their proposals
  - Provide a crosswalk of the draft CDD and performance spec with the RFP
  - Provide SEP with RFP; Get SEMP with proposal
- Contractors required to identify cost/schedule drivers and problematic requirements early in the Technology Development phase

Instill a culture for success – motivate staff to persevere through technical issues

Pre- Milestone A System Engineering Plan (SEP)

What we want to see (reference SEP Outline):

- SEP process provides means to develop and document a program's technical strategy
  - SEPs should be a "go to" technical planning and management manual
- 2011 SEP outline intended to reduce confusion about expectations
- Approach to manage external dependencies
  - Tripwires and notification of any significant (nominally > 10%) variance in cost, schedule, or performance
- Performance to plan in SEP (e.g. technical reviews entry and exit criteria, schedule, TPM values)

Emphasis on early Systems Engineering ensures solid technical foundation

What we have seen:

- Program schedules not based on historic similar programs' results – external pressure
- Program staffing insufficient
  - Staffing levels by how many the program can afford, not by program need
- Lack of planned values for metrics
  - TPMs not planned with interim values; not clearly traced to KPPs
- Lack of objective, data driven entry and exit criteria for technical reviews
- Lack of IMS to inform source selection and TD phase execution
- Deferred documents at SEP approval (PPP, CPCP, IUID)

Opportunities for improvement

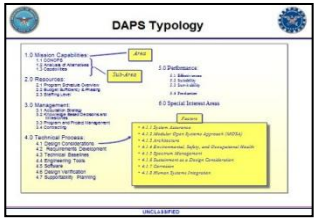
SEP guidance: http://www.acq.osd.mil/se/pg/guidance.html

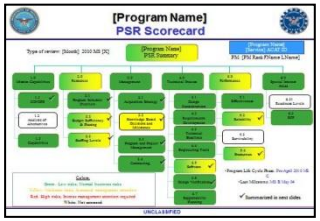
- Ensure that the Chief Engineer/ Lead SE has responsibility for developing the SEP
- Improved planning for schedule risk assessments
- Approved SEP prior to RFP release; Request contractor(s) provide SEMP with proposal
  - Update SEP after contract award (Service approved)
- Better transparency regarding progress to plan through continuous engagement; Conduct SE WIPTs

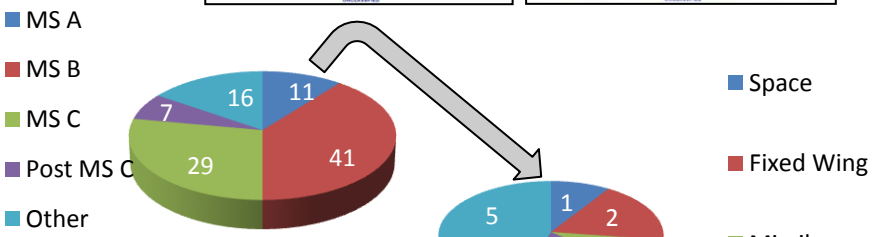
Pre-Milestone A
Program Support Reviews (PSRs)

- PSRs are a risk management tool. Prevent problems through early recognition of risks.
  - Help Program Managers identify & mitigate risks
  - Shape technical planning and management
  - Provide independent, actionable recommendations to facilitate program success
  - Provide insight to OSD stakeholders
  - Identify systemic issues requiring resolution above program

Defense Acquisition Program Support (DAPS) Methodology







104 PSRs have been planned, initiated or completed since 2004

11 MS A PSRs

Top Pre-MS A Program Support Review Findings and Root Causes

Category	Negative Systemic Findings	% MS A Pgms
1.3. Capabilities	Requirements are not stable and continue to churn	63%
3.3.3. Mgmt Structure & Commun	Roles, responsibilities and lines of authority are not clear	63%
4.2. Requirements Development	Requirements are vague, poorly stated, or even not defined	63%
2.3. Staffing	Marginal program office and contractor staffing levels	50%
3.3.3. Mgmt Structure & Commun	Program management structure has major deficiencies	50%
3.3.3. Mgmt Structure & Commun	Progress is impeded by lack of good communications between Government and contractor	50%
1.1. CONOPS	Current employment CONOPs are incomplete	38%
1.3. Capabilities	Requirements cannot be met	38%
2.2. Budget	Current program budget is not sufficient.	38%
3.1. Acquisition Strategy	Acquisition strategy needs to be restructured or updated	38%
3.2. Knowledge Based Decisions	Decision criteria are not established	38%
3.3.1. Program Plan/Schedule	POs have inadequate system engineering processes	38%
3.3.4. Mgmt Methods, Metrics,	Not evident that a formal risk assessment has been performend.	38%
3.3.4. Mgmt Methods, Metrics,	Programs lack a mature risk management program	38%
4.2. Requirements Development	Projected techncial maturtity is unlikely to be achieved	38%
4.6. Design Verification	Testing is incomplete or inadequate	38%

Then and Now

NDIA Conference on Systems Engineering October 23, 2007
Keynote Address: Dr. James I. Finley, USD (A&T)

Impact of Not Starting Programs Right

My observations since last year…

- Programs usually fail because we don't start them right:
  - Requirements instability/creep – not well defined, not understood
  - Inadequate early technical planning
  - Inadequate funding or phasing of funding to properly execute the program
  - Lack of schedule realism – success oriented, concurrent, poor estimation/planning
  - Lack of technical maturity or a credible back-up plan – "we're always optimistic"
  - Limited focus on life cycle issues

Program success depends on rigorous, thorough, technical planning and supportive resources

Slide 5

15th Annual NDIA Systems Engineering Conference
October 28, 2012

Progress since 2007

Review of user defined capability needs

- Improving understanding of user requirements and context - ICD
- Improving understanding of Early Systems Engineering / Development Planning in Acquisition processes and best practices

AoA

- Improved definition and completeness of Measures of Effectiveness
- Improved engagement with CAPE – AoA Guidance / Plan / Process

MDD

- Improved technical understanding by senior leadership
- Improved planning for the upcoming MSA phase

MSA Phase Planning

- Consistent DASD(SE) involvement in AoA steering committees and advisory groups
- Stable MSA phase funding for AoA completion and Technology Development phase planning
- Agreement to have draft CDD inform TD Phase specification

Emphasis on early systems engineering and development planning improves transition from JCIDS to Acquisition process

Questions?

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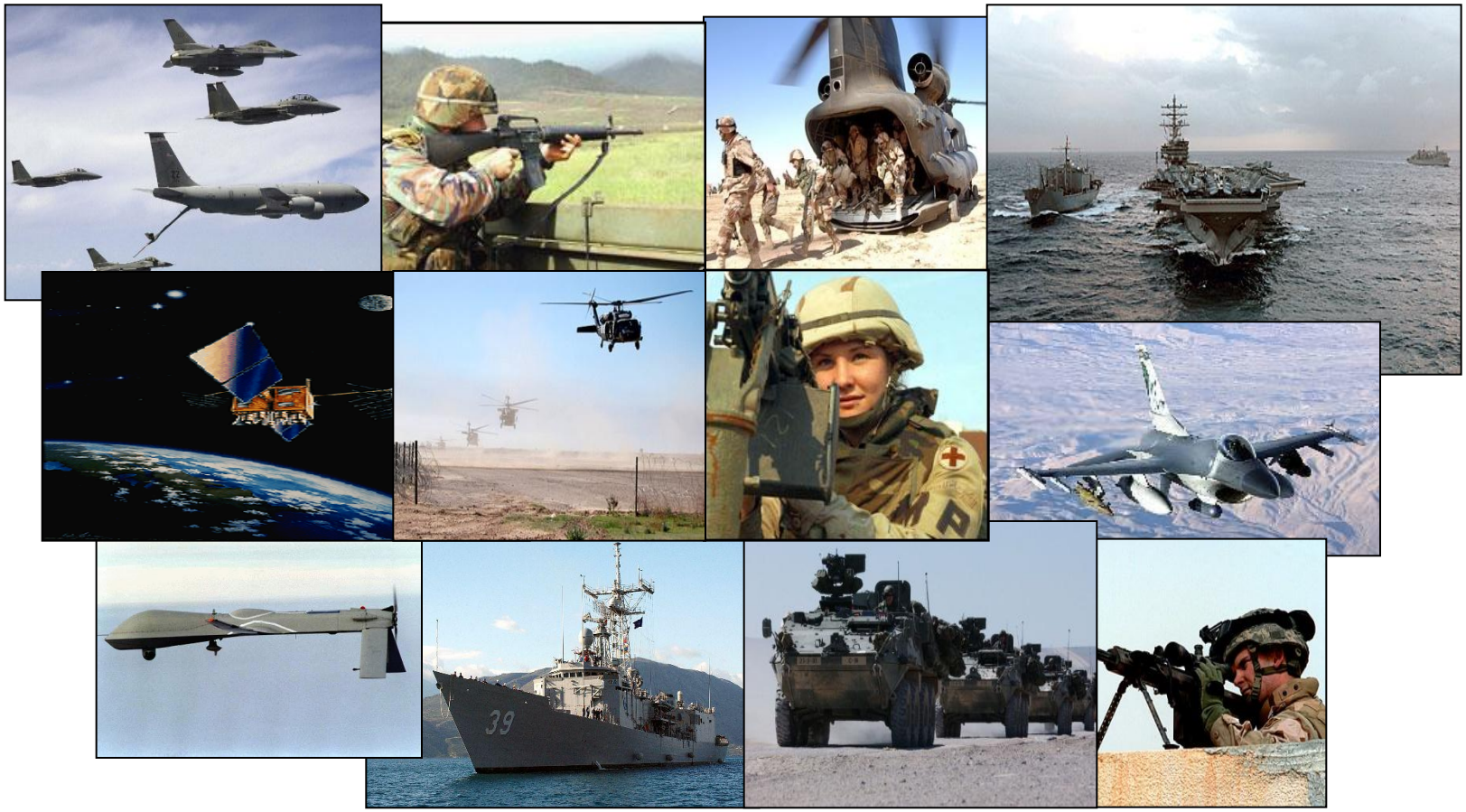
Links:
For SEP Outline, How to build a SEP brief, PDR Report Template, SE WIPT Charter, and Defense Acquisition Program Support (DAPS) Methodology
http://www.acq.osd.mil/se/pg/guidance.html

Systems Engineering: Critical to Program Success



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http://www.acq.osd.mil/se