



DoD Systems Engineering Major Program Support Overview

Mr. Rick Muldoon

**Office of the Deputy Assistant Secretary of Defense for Systems
Engineering**

**Major Program Support
(Contractor Support)**

**On Site Representative for
NAVAIR MDAP Programs**

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DASD, Systems Engineering Mission



Develop and grow the Systems Engineering capability of the Department of Defense – through engineering policy, continuous engagement with component Systems Engineering organizations and through substantive technical engagement throughout the acquisition life cycle with major and selected acquisition programs.

A Robust Systems Engineering Capability Across the Department Requires Attention to Policy, People and Practice

We apply best engineering practices to:

- Support and advocate for DoD Component initiatives
- Help program managers identify and mitigate risks
- Shape technical planning and management
- Provide technical insight to OSD stakeholders
- Identify systemic issues for resolution above the program level





DASD, Systems Engineering



DASD, Systems Engineering
Stephen Welby

Principal Deputy
Kristen Baldwin



Systems Analysis
Kristen Baldwin (Acting)

Addressing Emerging Challenges on the Frontiers of Systems Engineering

Analysis of Complex Systems/Systems of Systems

Development Planning/Early SE

Program Protection/Acquisition Cyber Security

University and Industry Engineering Research

Modeling and Simulation



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



Mission Assurance
Nicholas Torelli

Leading Systems Engineering Practice in DoD and Industry

Systems Engineering Policy & Guidance

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



Systems Engineering Support to Acquisition Programs



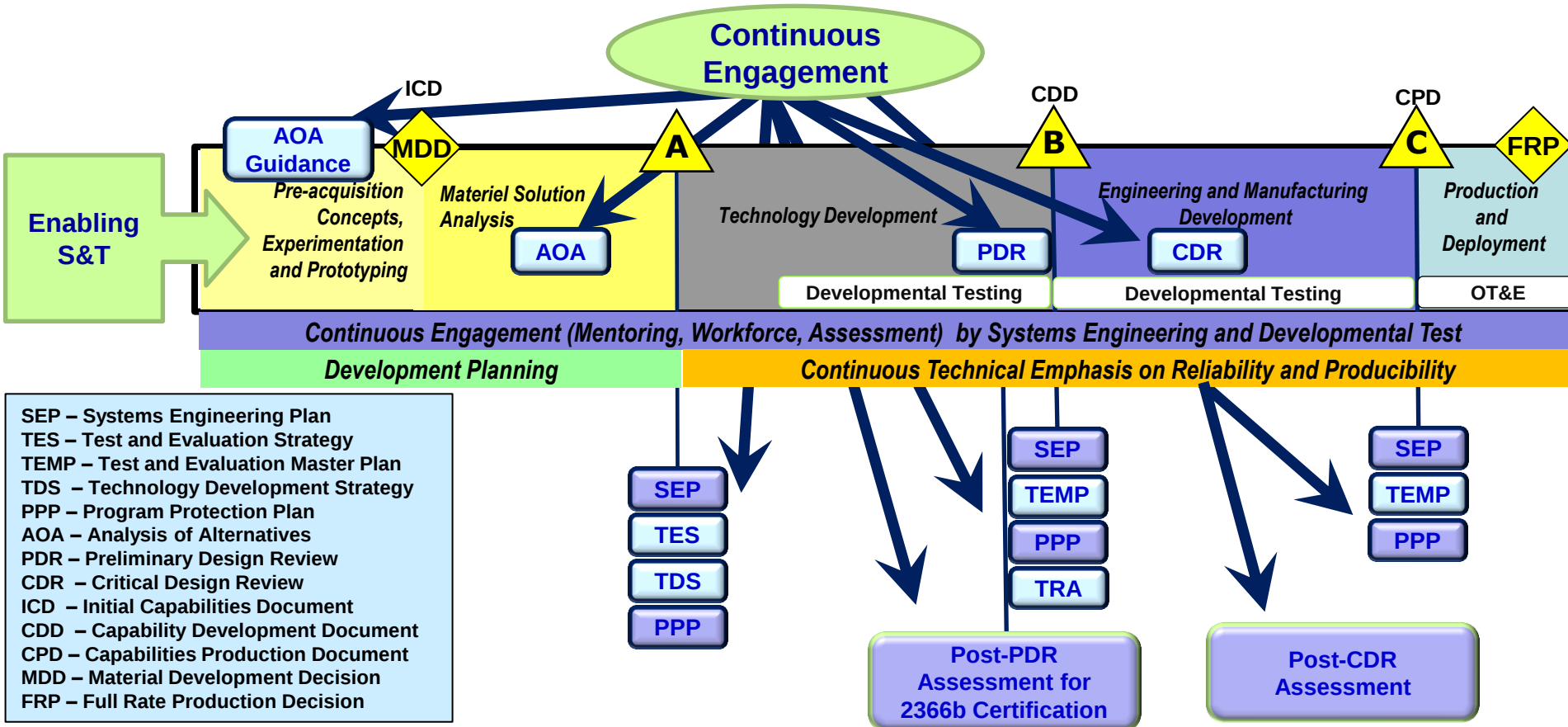
Implementing Statutory Authorities Provided under WSARA:

- **Continuous Technical Engagement, Oversight and Review of Service Acquisition Programs' SE and Development Planning Capabilities**
 - Continuous, Constructive Engagement with Service Product Centers
 - Directed and Event-driven Technical Reviews
 - Sharing Best Practices across the Department
- **Advising USD(AT&L) on SE and Development Planning**
 - Active Participant in MDAP and MAIS Major Milestone Decision making
 - Program Support Reviews
 - PDR and CDR assessments
- **Reviewing /Approving MDAP and MAIS Systems Engineering Plans (SEPs)**
- **Developing SE and Development Planning Policy and Guidance**
 - Development Planning Directive-Type Memorandum (DTM) released September 13, 2010
 - Reliability, Availability and Maintainability DTM released March 21, 2011
 - AT&L Expected Business Practice Memos regarding Technology Development Strategy/Acquisition Strategy, Systems Engineering Plan, and Program Protection Plan policy and guidance released
 - Instruction Codifying DASD, Systems Engineering Functions released August 2011
 - New and Revised Systems Engineering Guidance and Handbooks



Acquisition Process Engagement

SE has a role in all major acquisition program milestone decisions and oversees and executes critical acquisition risk management processes to reduce program cost, acquisition time and risk.



Cross-Cutting Efforts: Acquisition Workforce Management, Engineering Policy and Guidance, Advocacy for Service Competencies and Initiatives, STEM Initiatives



Program Support Applications

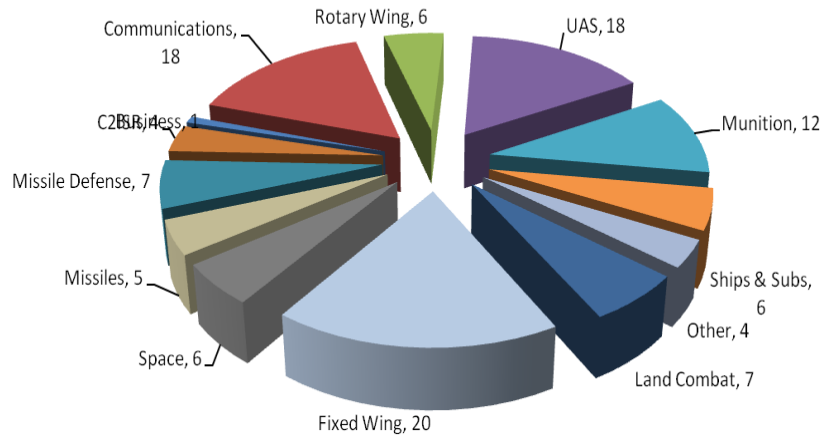
- **Program Support Review (PSR)**
 - Detailed, cross-cutting assessment to support major program decisions (Pre-A, Pre-B, Pre-C, FRP)
 - Other times as directed/required
- **Tailored Assistance**
 - Deep dive on particular issue or PM request, e.g. software, manufacturing, RFP review, IMP/IMS
 - PDR, CDR, SE WIPT, T&E WIPT
- **Special Purpose**
 - Nunn-McCurdy
 - Non-Advocate Review (PM funded)
- **Systemic Root Cause Analysis (SRCA)**
 - Identify systemic issues at the root cause level
 - Mitigate problems at the source
 - Inform best practices/inform policy

**Transparent, Continuous Engagement with Programs
to Ensure Program Success**

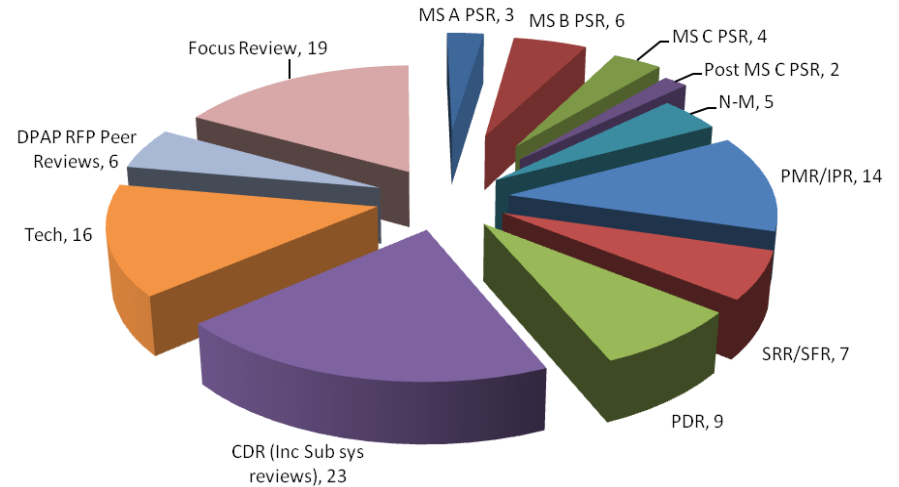


FY11 DASD(SE) Program Engagements

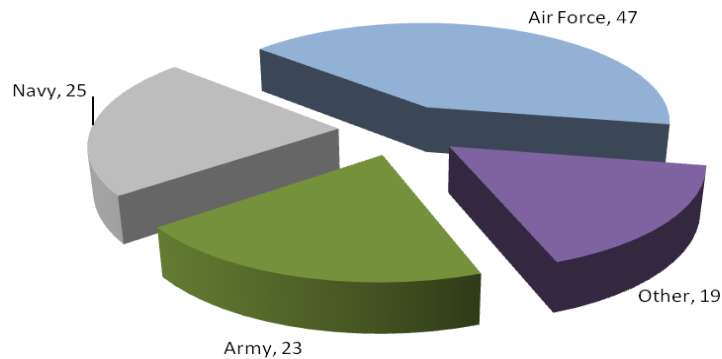
Domain



SE Touch Point



Service





2011 Systemic Findings

Aug 2011

Rank	Negative Systemic Finding	% Reviews
	Staffing – 64%, 5 (%of reviews, # of Systemic Findings)	
1	Marginal program office and contractor staffing levels	39
	Budget – 36%, 2	
2	Program suffers from lack of funding stability	29
	Management Structure/Communications – 59%, 10	
3	Progress is impeded by lack of good communications between Government and contractors	25
	Program Plan/Schedule – 65%, 6	
4	Program is unlikely to achieve schedule	26
11	Program has an inadequate system engineering process	20
	Design Verification – 61%, 5	
5	TEMP/TES is immature or late	25
9	Testing is incomplete or inadequate	23
10	Testing schedule is aggressive/success-oriented / and highly concurrent	22
	Capabilities/Requirements – 44%, 4	
6	Requirements are not stable and continue to churn	24
	Acquisition Strategy – 43%, 4	
7	Acquisition Strategy needs to be restructured or updated	24
	Management Methods & Metrics – 69%, 10	
8	Risk management tools and methodology are not sufficient	23



Annotated Outlines Released as “Expected Business Practice”



**Systems
Engineering Plan**
Annotated Outline

TDS/AS, SEP, PPP,
and LCSP outlines
signed
this year

**Program Protection
Plan**
Annotated Outline

**Technology
Development
Strategy [or]
Acquisition Strategy**
Annotated Outline



April 20, 2011

FOR OFFICIAL USE ONLY
**Life-Cycle
Sustainment Plan**
Annotated Outline



September 14, 2011

<http://www.acq.osd.mil/se/pg/index.html>



New SEP Outline Content and Purpose

Key Sections	Rationale
1. Introduction	• Tracks revision control
2. Program Technical Requirements 2.1. Architectures and Interface Control 2.2. Technical Certifications	• Summarizes the expected architecture products, external interfaces, and links to common architectures • Identifies required system-level certifications
3. Engineering Resources and Management 3.1. Technical Schedule and Schedule Risk Assessment 3.2. Engineering Resources and Cost/Schedule Reporting 3.3. Engineering and Integration and Risk Management 3.4. Technical Organization 3.5. Relationships with External Technical Organizations 3.6. Technical Performance Measures and Metrics	• Documents integrated, event-driven system development schedule including WBS and IMP/IMS • Describes risk management process and organization; identifies system-level technical risks and opportunities • Diagrams technical structure and staffing (e.g., IPTs, Working Groups, etc.) • Identifies management of outside organizational interfaces • Describes program's use of metrics to measure technical progress
4. Technical Activities and Products 4.1. Results of Previous Phase SE Activities 4.2. Planned SE Activities for Next Phase 4.3. Requirements Development and Change Process 4.4. Technical Reviews 4.5. Configuration and Change Management Process 4.6. Design Considerations 4.7. Engineering Tools	• Summarizes completed system-level technical reviews, independent reviews, and trade studies and analogous plans for the next phase • Describes processes for requirements analysis, decomposition, and change management • Summarizes technical review planning details and responsibilities • Lists technical baseline artifacts and describes their management • Identifies relevant design considerations and linkage to contracts • Lists tools and required tool interfaces, if necessary



SEP: Systems Engineering Tables

Technical Schedule

Technical Review Criteria

Certification Requirements

Technical Performance Measures and Metrics

Design Considerations

Engineering Tools

Risks, Issues, and Opportunities

Fiscal Year	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Quarter	4201	1224	1224	1224	1224	1224	1224	1224	1224	1224	1224	1224	1224	1224	1224	1224	1224	1224	1224
Requirements	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Acquisition Milestones	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Systems Eng	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Logistics Ev	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Major Contra	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Production	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Production	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Training Syst	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEPA Sched	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Test Events	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DITSCAP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Technical Schedule

Technical Review Criteria

Certification Requirements

Technical Performance Measures and Metrics

Design Considerations

Engineering Tools

Risks, Issues, and Opportunities



Responsibilities of DASD(SE) On Site Representative



- **Provide a two way conduit - promote the dissemination & compliance with OSD SE policy & obtain feedback to improve policy, guidance, and best practices**
- **Educate, inform, monitor, & assess the implementation of SE policy and best practices to programs, PEOs, and competencies**
- **Interface across the PEOs & Competencies to manage expectations and standardize products**
- **Provide engaged SE support to NAVAIR programs on OSD SE oversight as required**
- **Position adaptable to needs of OSD SE and NAVAIR**



Engagement Areas

SE WIPTs establishment & participation	Review planning & participation; SRR, PDR, CDR, PRR, IDR, & PSR
SEP development and approval	PDR and CDR Assessments
Metrics Collection, Analysis & Reporting	Pre-MDD planning
Reliability Growth Planning, Analysis & Reporting	Acquisition document development, review, and submission
Schedule Risk Assessment and planning	MS Prep & OSD Oversight reporting assistance /participation; IIPT, OIPT, DAB, and DAES
Program Technical Planning	RFP development and review

Based on program engagement, make recommendations to improve and update:

SE Policy, DoDI 5000.02, Defense Acquisition Guide, Defense Acquisition Program Support Methodology



Leadership Engagements Completed

- **VADM Architzel**
- **RADM Steve Eastburg**
- **RADM Bill Shannon**
- **RDML Randy Mahr**
- **Jessie McCurdy**
- **Lisa Nyalko**
- **Keith Sanders**
- **Glenn Perryman**
- **Mike Erk**
- **Stu Young**
- **Dave Wooten**
- **Leadership Feedback**
 - Supportive & enthusiastic about position & opportunities
 - Any reduction in “OSD churn” is a win
 - See most value in Competency & PEO level engagement
 - Two way learning – leverage: SESG, SEDIC, NSERC
 - Regular meetings with APEO(SE)s would be valuable
 - May be value in an SE drum beat between services & ODASD(SE)
 - Need to engage Mary Lacy, DASN (RDT&E)
 - Need to remain mindful of chain of command