

Aeronautical Systems Center

Dominant Air Power: Design For Tomorrow...Deliver Today



U.S. AIR FORCE

Mind The Gaps – A Systems Engineering Implementation of DODI 5000.02

**RMS Conference
17-18 Nov 09**

**Air Force Panel
Ms. Janet Jackson, Chief, Systems
Integration, ASC/EN**



U.S. AIR FORCE

Overview

Dominant Air Power: Design For Tomorrow...Deliver Today



- **Purpose**
- **Background**
- **ASC Engineering Assessment**
- **RAM Implementation**
- **Summary**



U.S. AIR FORCE

Purpose

Dominant Air Power: Design For Tomorrow...Deliver Today



**To present Air Force's unique approach to
implement current policy DODI 5000.02**



Background



- **DoDI 5000.02 released in Dec 2008**
- **To identify if any policy impacts and implementation**
- **Conducted a preliminary assessment in early 09 and recommended an offsite for a gap analysis**
- **Held an ASC engineering offsite in Mar 09**
 - Members: Engineering Senior Leaders, Wing DOEs, ASC/EN division chiefs/tech directors, XR, AQ DOEs, and ASC/AQ staff



U.S. AIR FORCE

Background con't



Dominant Air Power: Design For Tomorrow...Deliver Today

- **Promulgated across AF to raise awareness**
 - Resulted in other functionals to do the same
- **Presented results at the SAF/AQR ILCM Tech Forum and HQ AFMC Engineering Council in May 09**



U.S. AIR FORCE

Dominant Air Power: Design For Tomorrow...Deliver Today



ASC Engineering Assessment



U.S. AIR FORCE

ASC/EN Assessment Approach



Dominant Air Power: Design For Tomorrow...Deliver Today

- **Evaluated 5000.02 changes for each Milestone and Phase**
- **Identified gaps (processes/tools/training) between DoDI 5000.02 and current ASC systems engineering processes/toolset**
- **Consolidated and prioritized gaps**

Goal: To meet statutory and regulatory requirements



Requirements Flow-Down



- **OSD**
 - DoDI 5000.02
 - DAG being updated

- **AF**
 - AFPD 63/20-1 and AFI 63-101, 63-1201
 - D&SWS initiatives
 - SAF/AQ policy memos

- **HQ AFMC**
 - AFMCI 63-1201
 - AFMC policy memos

- **ASC**
 - PEO Memos
 - ASC/EN SE Toolset

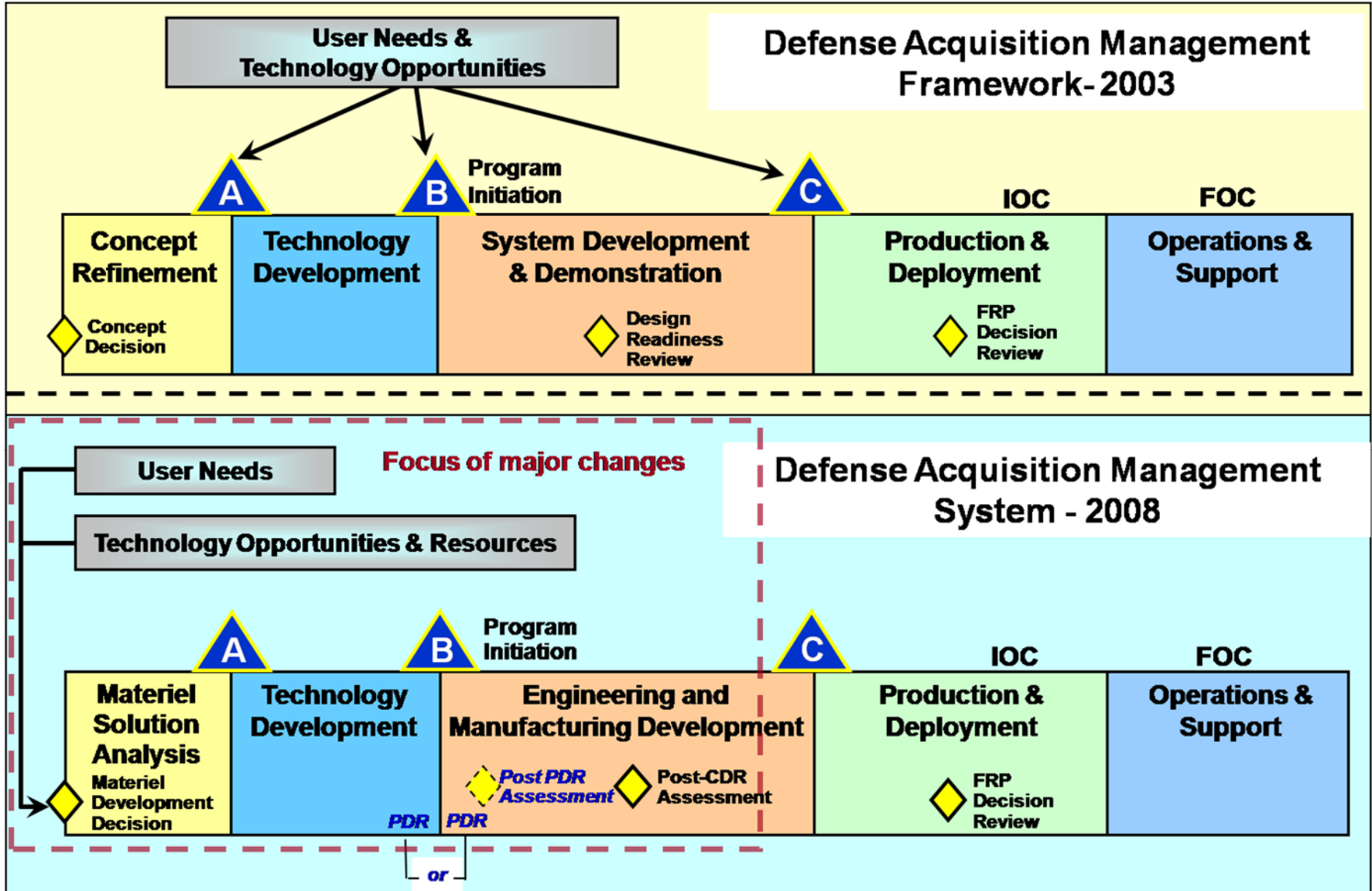


5000.02 Major Changes



U.S. AIR FORCE

Dominant Air Power: Design For Tomorrow...Deliver Today





U.S. AIR FORCE

5000.02 Key Emphasis for Engineering



Dominant Air Power: Design For Tomorrow...Deliver Today

- **More Robust Systems Engineering**
 - Emphasis much earlier in life cycle
 - More robust Analysis of Alternatives (AoA)
 - Manufacturing emphasis
- **Technical Risk Reduction**
 - Competitive prototyping
- **Independent SME Reviews**
- **Additional Program Documentation**
 - Technology Development Strategy
 - PDR assessment report
 - CDR assessment report



Prioritized Gaps



Near Term Efforts:

- **Engineering Manpower Strategy**
 - PDR Bfr MS B Gap: No manpower allocations to execute TD phase objectives (i.e., prototyping/PDR)
 - PDR Bfr MS B Gap: Independent SME manpower driver, to include RFP prep, source selection support, and other predecessor PDR reviews (i.e., SRR)
 - EMD Gap: Independent SME manpower driver (EN HO and Wings)
- **MDD Gap: No technical planning document exists to guide early systems engineering activities – ASC/EN and XRE**
- **TD Gap: RAM strategy not uniformly implemented across all programs**
- **TA Gap: Lack of EN-corporate process for TRA/MRAs**
- **EMD Gap: No template for PDR/CDR Reports**

Long Term Efforts:

- **MS A Gap: No template for Technology Development Strategy (TDS)**
- **TR Gap: Lack of definition for “independent SME”**
- **MDD Gap: Lack of formalized process for engineering SME reach-back support**
- **MSA AoA Execution Gap (process): Lack of formalized process for engineering SME reach-back support**
- **MSA Gap: New requirement (SAF/AQR/AFMC/EN) to develop Organizational SEP (O-SEP) or Operating Instructions (OIs)/training**
- **TD Gap: Lack of decision analysis guidance on determining requirements for maturity of critical technologies and/or competitive prototyping**
- **TD Gap: No template for Data Management Strategy**



U.S. AIR FORCE

Dominant Air Power: Design For Tomorrow...Deliver Today



On-going RAM Activities



Requirements Flow-Down



- **DoDI 5000.02, Enclosure 2**
 - 5. TECHNOLOGY DEVELOPMENT PHASE (TDS)**
 - (5) PMs for all programs shall formulate a viable **Reliability, Availability, and Maintainability (RAM)** strategy that includes a **reliability growth** program as an integral part of design and development. **RAM** shall be integrated within the **Systems Engineering processes**, documented in the program's **Systems Engineering Plan (SEP)** and **Life-Cycle Sustainment Plan (LCSP)**, and assessed during technical reviews, test and evaluation (T&E), and **Program Support Reviews (PSRs)****



DoDI 5000.02 con't



6. ENGINEERING AND MANUFACTURING DEVELOPMENT (EMD) PHASE

.....and an estimate of **system reliability** based on demonstrated reliability rates.

7. PRODUCTION AND DEPLOYMENT PHASE

.....demonstrated control of the manufacturing process and **acceptable reliability**

8. OPERATIONS AND SUPPORT PHASE

.....evolving **life-cycle product support availability, reliability, and affordability parameters.**



AF RAM Implementation



- **Strengthen RAM considerations and organizational responsibilities**
 - **AFPD-63-1 and 20-1, Acquisition and Sustainment Life Cycle Management codified**
 - **AFI 63-101/1201, Life Cycle Systems Engineering published**
 - **AF Reliability Handbook drafted**
 - **Risk Identification: integration and ilities (RI3) tool developed (reliability, producibility, testability, sustainability)**
 - **Web-based Risk ID Calculator tool – in use**



AF RAM Implementation con't



- **Review and revise acquisition program documentation requirements, program reviews to include RAM requirements**
 - **Joint Program Review and Assessment (JPRA) to include RAM initiated**
 - **SAF/ACE program review templates**
 - **PSR review of RAM activities**
 - **Program technical reviews (PDR, CDR..)**
 - **RFP language/template**



- **Systems Lifecycle Integrity Management (SLIM) initiative**
 - **Standardized Processes**
 - **Weapon Systems Integrity program (ASIP, ENSIP, AVIP, MECSIP)**
 - **Acquisition Sustainment Toolkit Checklists**
 - **Improved Training**
 - **Improved data transparency and access**
 - **Automated feedback of engineering analysis**

**LEADS TO PROACTIVE WEAPON SYSTEM
MANAGEMENT AND PRODUCT IMPROVEMENT!!!**



U.S. AIR FORCE

Path Forward



Dominant Air Power: Design For Tomorrow...Deliver Today

- **Institutionalize RAM process across AF**
- **Continue to mature SLIM initiative**
 - Simplify implementation
 - Provide template to follow
 - Will have additional training



Summary



- **Better understanding of 5000.02 impacts**
- **Focusing on near term efforts**
- **Still in flux – additional guidance will follow**
 - Weapon Systems Acquisition Reform Act of 2009, dated May 09
 - Will implement as additional guidance becomes available

- **May drive additional manpower**

