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Defense Acquisition University

Systems Engineering– Everyone's Business

for the Executive Refresher Course

What We Will Discuss

- Definitions–Systems Engineer, Systems Engineering
- Some Root Causes for Program Failure and Success
- DoD Systems Engineering Priorities
- DODI 5000.02 Enclosure-3
- Your Role in Systems Engineering
- Take-Aways and Additional Resources

What is Systems Engineering?

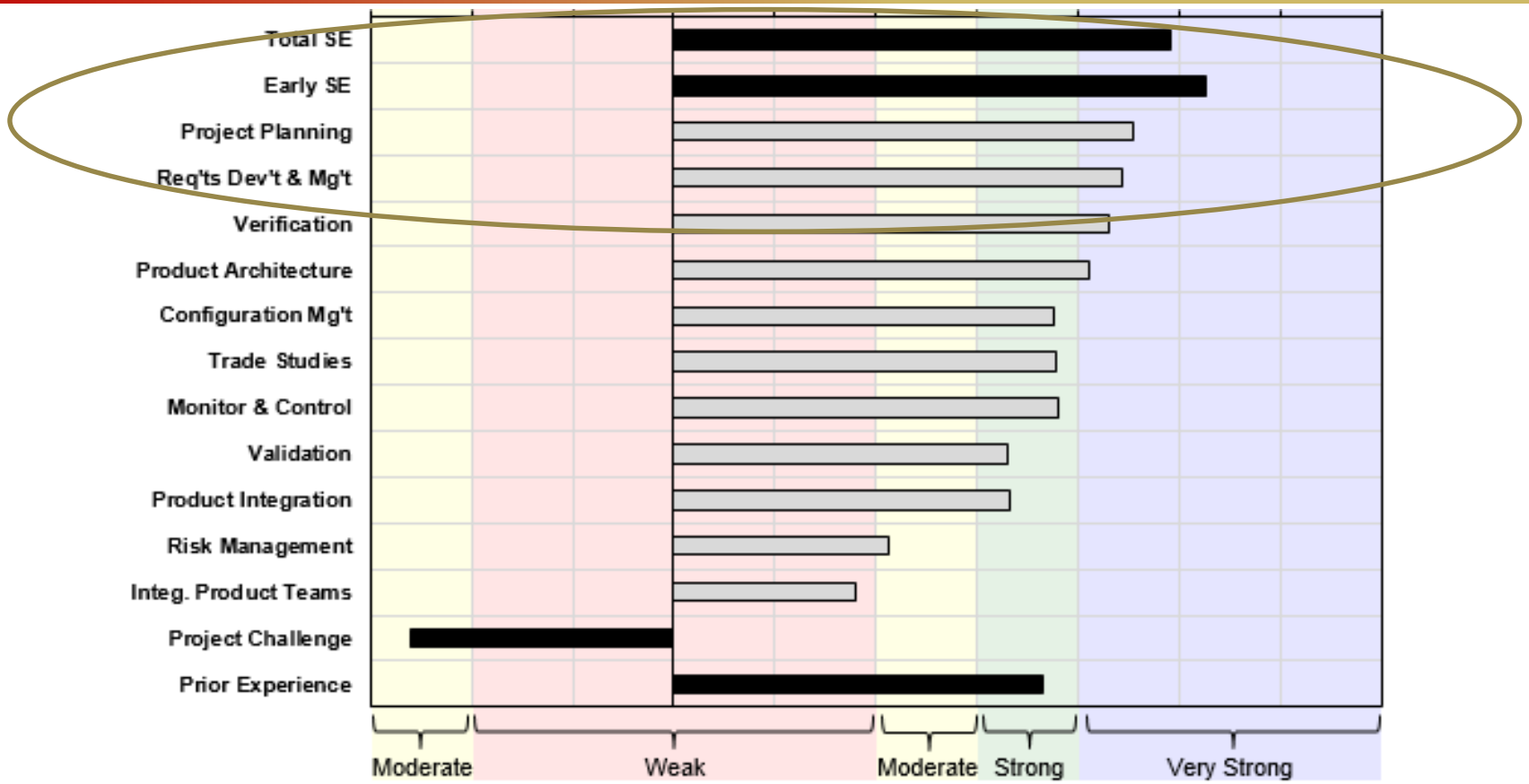
Systems engineering provides the integrating technical processes and design leadership to define and balance system performance, life-cycle cost, schedule, risk, and system security within and across individual systems and programs. The Program Manager, with support from the Lead Systems Engineer, will embed systems engineering in program planning and execution to support the entire system life cycle.

DoDI 5000.2 definition

Systems Engineering: interdisciplinary approach governing the total technical and managerial effort required to transform a set of stakeholder needs, expectations, and constraints into a solution and to support that solution throughout its life.

IEEE 15288:2015

SE Contribution to Program Success



Correlation of SE Activities to Program Success

© 2013 Carnegie Mellon University

Root Cause Analysis of Nunn-McCurdy Breaches

- ***Poor Government and/or Contractor Management Performance – 45%***
- ***DoD Actions Based on Root Cause Analysis***
  - **Assess Framing Assumptions**
    - **25% of Programs (5/20)**
    - **New DoDI 5000.2 MS Requirements**
  - **Improve Systems Engineering**
    - **40% of Programs (8/20)**
    - **Requirements Management, Interface and Environmental Management, Holistic Performance Attributes, Risk Assessments**
    - **Increased Training, New Standards**
  - **Improve Contractor Incentives**
    - **35% of Programs (7/20)**
    - **New guidance in work**
  - **Improve Execution Monitoring**
    - **35% of Programs (7/20)**
    - **Increased Data Availability, Integrated Master Schedule**

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DoD SE Priorities

- **Support the current fight**
- **Manage risk *(and Opportunity)* with discipline**
- **Grow engineering capabilities to address emerging challenges**
- **Support realistic program formulation through the application of development planning and early systems engineering**
- **Increased focus on reliability, affordability, and total ownership cost**
- **Champion systems engineering as a tool to improve acquisition quality**
- **Develop future technical leaders across the acquisition enterprise**

Source: DASD(SE) http://www.acq.osd.mil/se/index.html

SE and DODI 5000.02

- Systems Engineering Plan (SEP)
- Development Planning
- Trade-Off Analyses
- Technical Risk and Opportunity Management
- Technical Performance Measures and Metrics
- Technical Reviews
- Configuration Management
- Modeling & Simulation
- Manufacturing and Producibility
- Software
- Reliability and Maintainability
- Program Protection
- Open Systems Architecture
- Corrosion Prevention and Control
- Environment, Safety, and Occupational Health
- Insensitive Munitions
- Item Unique Identifier
- Spectrum Supportability
- Design Reviews
- Program Assessments

Source: DoDI 5000.02 ENCLOSURE-3 dated January 07, 2015

Let's Discuss Five of These Topics

SE, Everyone's Business– Interactions

"The Systems Engineer provides the X with Y. The X provides the Systems Engineer with Z."

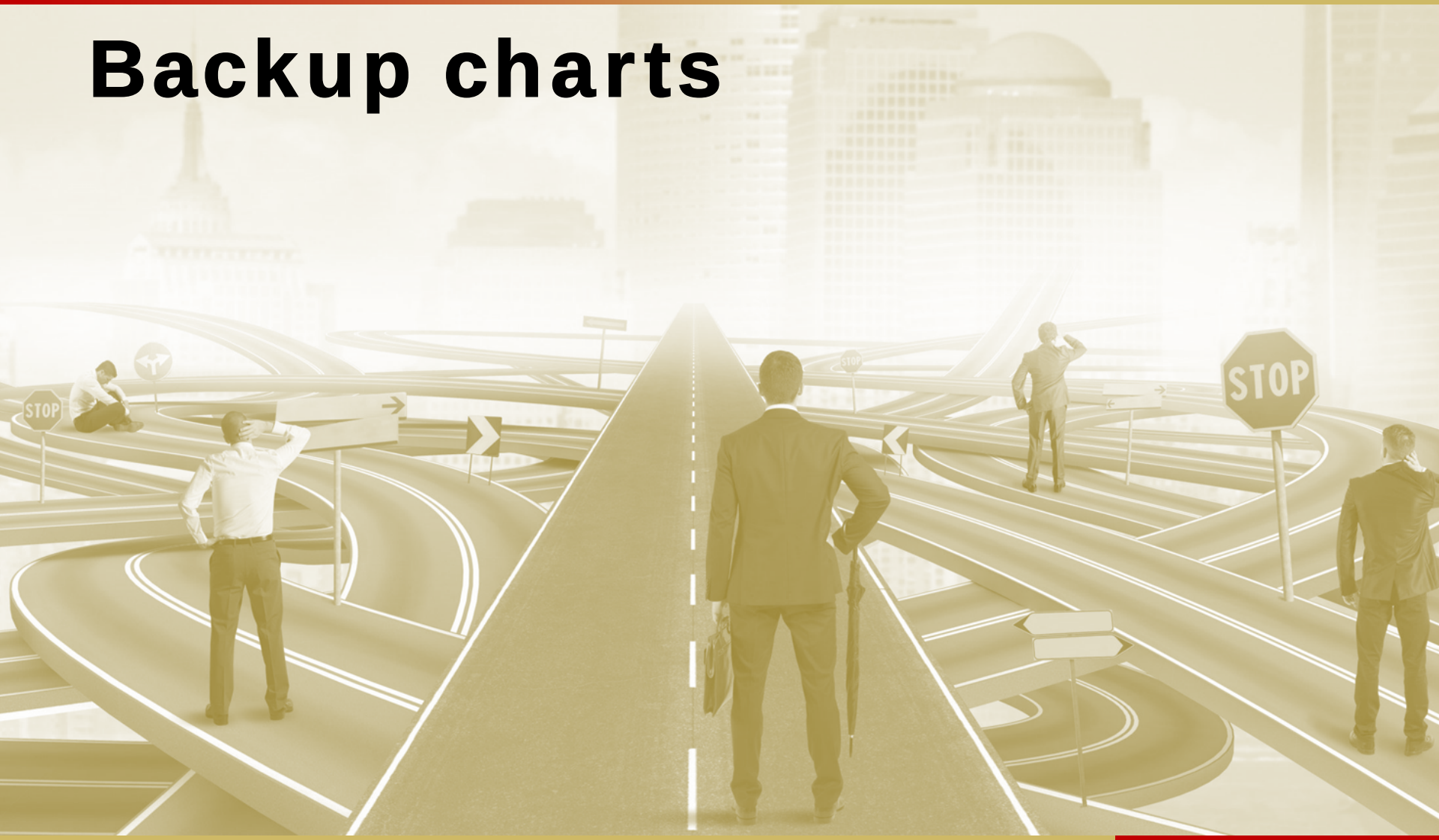
- Auditing
- Business
- Contracting
- Facilities
- Industrial Property
- Information Technology
- Life Cycle Logistics
- Production, Quality, Manufacturing
- Program Manager
- Requirements Manager
- Science & Technology
- Test & Evaluation

System Engineering Resources

- **Can be found online at http://www.acq.osd.mil/se**
- **Mobile applications**
  - Systems Engineering handy reference https://acc.dau.mil/techrev
  - The new Milestone Document Identification (MDID) tool at https://dap.dau.mil/mdid lets you view and filter a list of documents prescribed by DoDI 5000.02 for programs at specific milestones, and for specific ACAT levels
- **Aligns with policy and guidance**
  - DoDI 5000.2 – DoDI 5000.02 update this year
  - Defense Acquisition Guide (DAG), chapter 4 – https://akss.dau.mil/DAG/DoD5000.asp?view=document

Thoughts?

Backup charts



DoDI 5000.02 Engineering Policy & Guidance Highlights

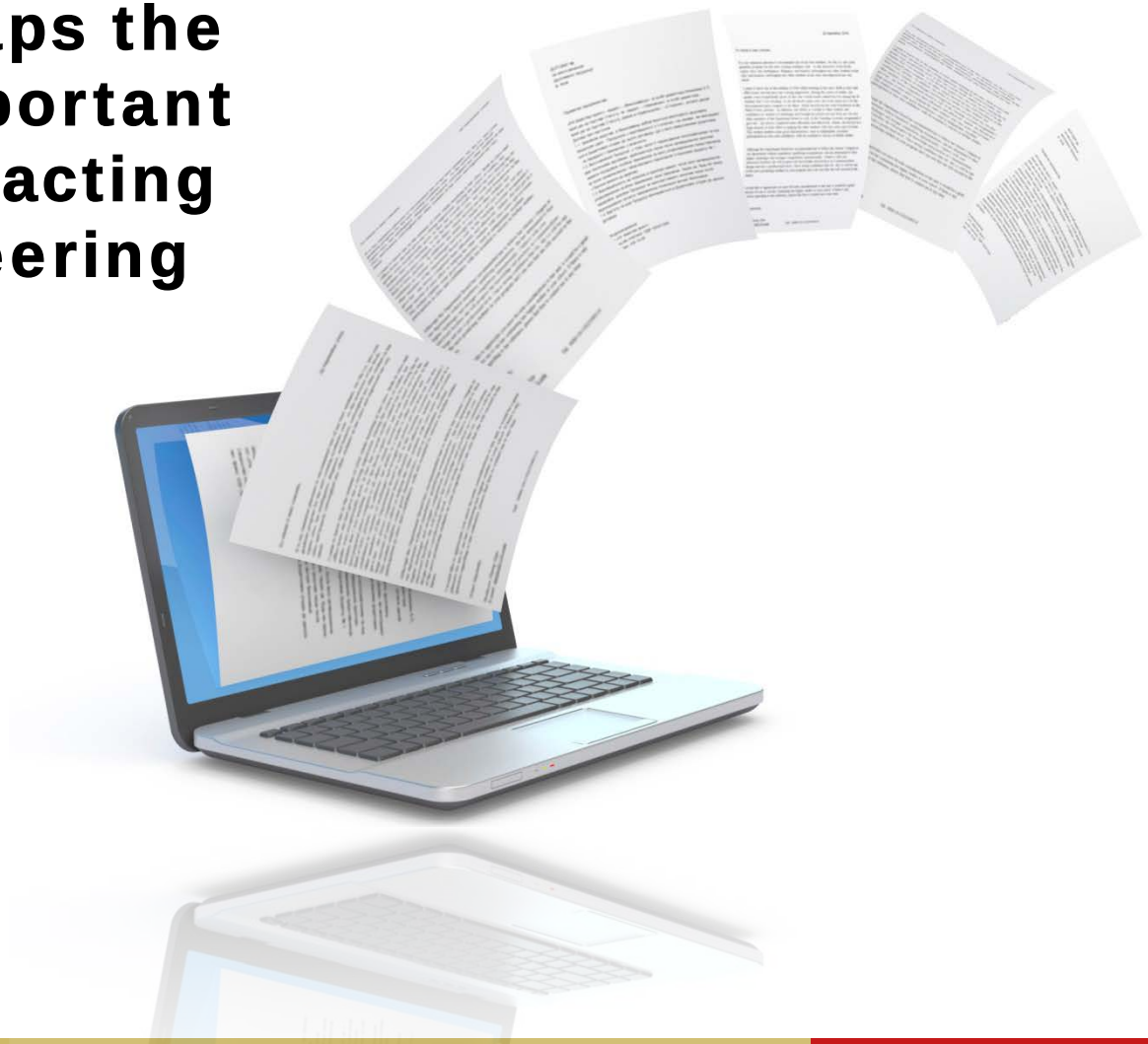
- **DTMs cancelled as a result of DoDI 5000.02, November 25, 2013**
  - DTM 09-027 – Weapons Systems Acquisition Reform Act 2009
  - DTM 10-017 – Development Planning
  - DTM 11-003 – Reliability Analysis Planning, Tracking and Reporting
- **DTM 09-016 Supply Chain Risk Management, cancelled as a result of DoDI 5200.44**
- **Document Streamlining Memorandum incorporated into DoDI 5000.02, Enclosure 1, Table 2**

DoDI 5000.02 Engineering Policy & Guidance Highlights

- **Enclosure 3, Systems Engineering**
- **Prior to completion of MS Phase, Component combat developer will prepare an Operation Mode Summary/ Mission Profile (OMS/MP)**
- **PMs "should include" SEP and PPP (either approved or draft) in the RFP (update after contract award)**
  - Information Systems – may adopt a portfolio, organizational, enterprise level
  - Defense Business – include in business case and program charter
- **Any program not initiated at MS C will include a PDR and CDR**
  - For MDAPs and MAIS – PDR prior to MS B
  - Post-PDR and CDR Assessments still conducted

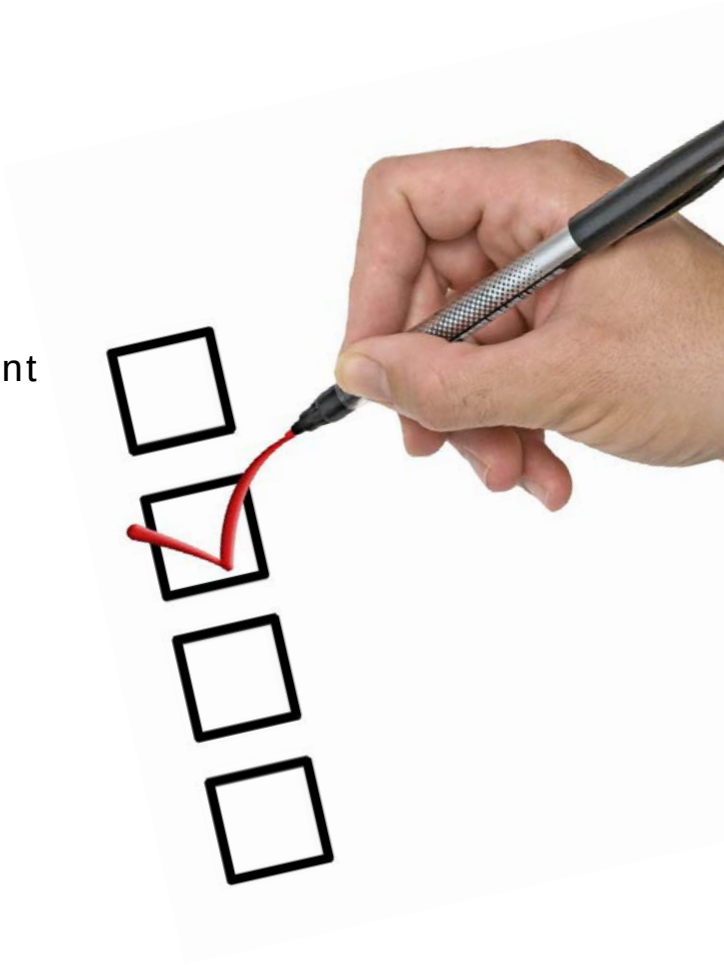
System Engineering Focused Documents

What are perhaps the seven most important documents impacting systems engineering processes?



SEP Structure

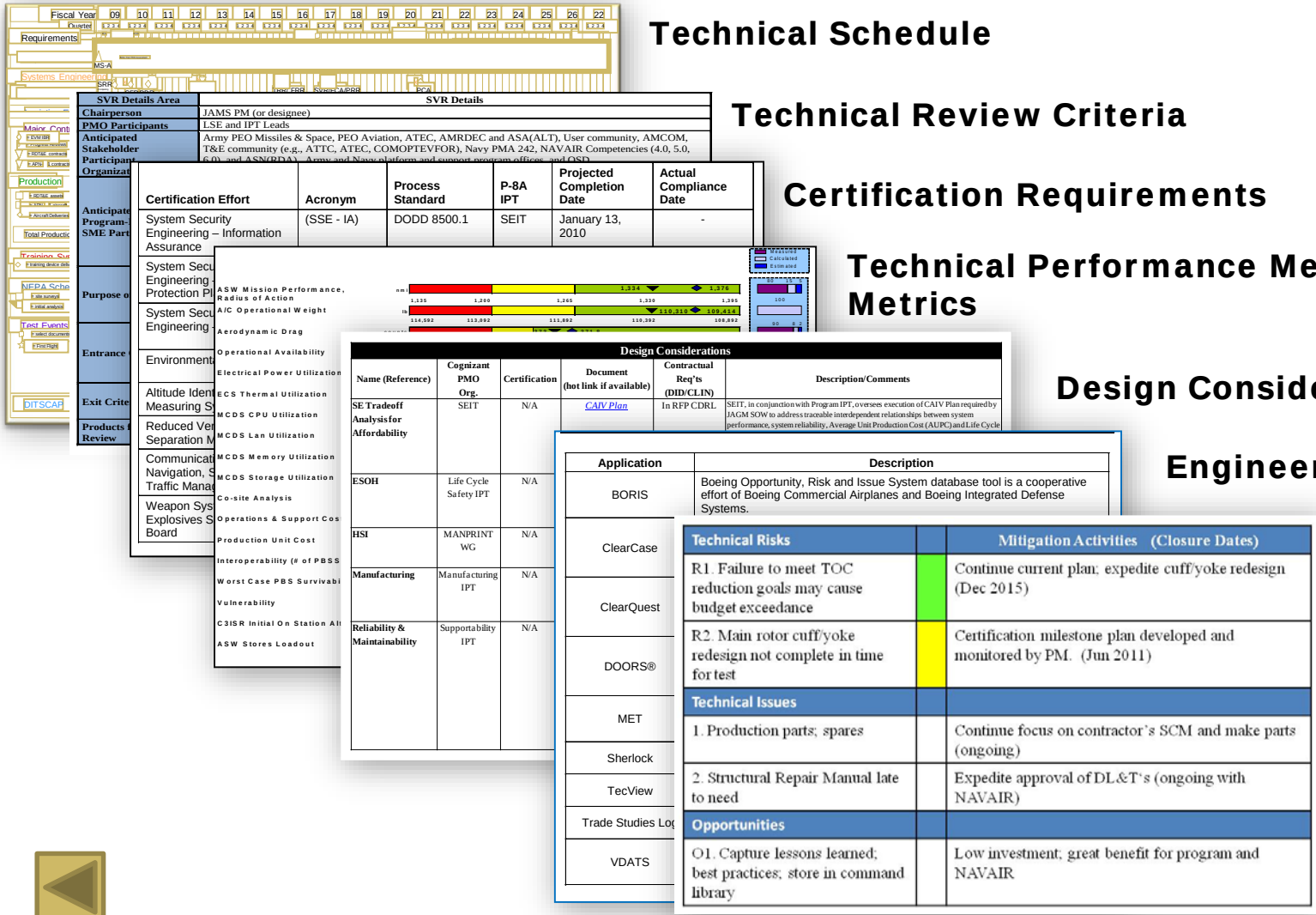
1. **Purpose and Update Plan**
2. **Requirements**
   1. Interfaces
   2. Certifications (technical)
3. **Resources / Management**
   1. Schedule (technical)
   2. WBS, IMP, IMS, EVM oversight and management systems
   3. Risk (threats and opportunities) management
   4. Organization
   5. External relationships (including a schedule)
   6. Measures
4. **Activities**
   1. History
   2. Future
   3. Requirements traceability
   4. Design Reviews
   5. Configuration Management
   6. Design considerations (DAG section 4.4)
   7. Tools



SEP Bookends

- **A Picture**
  - Operational View (OV-1)
  - Word Picture connecting the Concept of Operations
- **A Sand Chart**
  - Manpower/Skills

SEP: Systems Engineering Tables



Technical Schedule

Technical Review Criteria

Certification Requirements

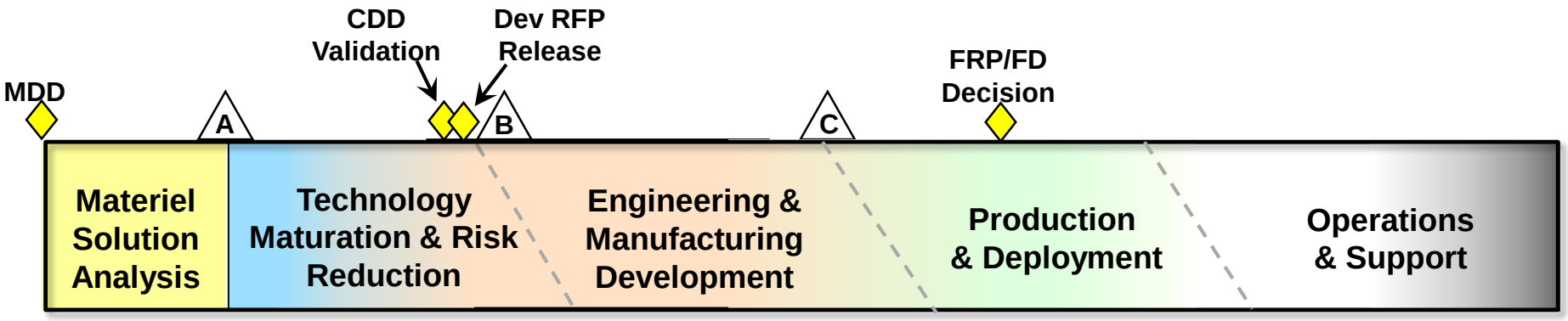
Technical Performance Measures and Metrics

Design Considerations

Engineering Tools

Risks, Issues, and Opportu-nities

Development Planning



- **Prior to Materiel Development Decision**
  - Technical feasibility of candidate materiel solution approaches
  - Desired operational attributes and external dependencies
- **During Materiel Solution Analysis**
  - Informed by and in support of the Analysis of Alternatives
  - Engineering analyses of a preferred materiel solution
- **In preparation for MS-A**
  - Assessment of technical risks and develop the technical approach

What are the Challenges of Performing Development Planning from Your Career Field Perspective?

Trade-Off Analyses

- **In support of Capability Development Document (CDD)**
  - Show how costs varies as a function of system requirements, major design parameters, and schedule
- **During the Acquisition Life-Cycle**
  - Depict the relationships between system life-cycle cost and system performance requirements, design parameters, and delivery schedule.

What Best Practices Have You Seen?

Technical Risk & Opportunity Management

- **Technical risks quantified and implications reflected in the Integrated Master Schedule and Integrated Master Plan**
- **Work with S&T community to influence technology investment planning**
- **Assessed at technical reviews and will include specific cost and schedule implications**

Department of Defense Risk, Issue, and Opportunity Management Guide for Defense Acquisition Programs, June 2015

What Best Practices Have You Seen?

Technical Performance Measures and Metrics

- Assess the technical progress
- Measure progress against established plans
- Tied-into Risk and Opportunity Management

What Metrics do you need from SE?

Technical Reviews

- Conduct Technical Reviews (for example PDR and CDR)
- System development progress & affordability
- Basis for transitioning between phases
- Event-driven with entrance criteria as documented in the SEP

Your Experience with Technical Reviews?

Technical Reviews

- IEEE Standard for Technical Reviews and Audits on Defense Programs, IEEE 15288.2, May 2015
- DoD Employee Access to IEEE 15288.1 and 15288.2
- Guidance for Utilizing Systems Engineering Standards (IEEE 15288.1 and IEEE 15288.2) on Contracts for Defense Projects. July 23, 2015

NEW Optional, but Recommended SE Standard

Configuration Management

- Establish and control product attributes and the technical baseline across the total system life cycle
- Provide an audit trail of program design decisions and design modifications
- Integrated with the SEP and consistent with the Intellectual Property Strategy

When does control of the Product Baseline transition to the Government? Any challenges with this?

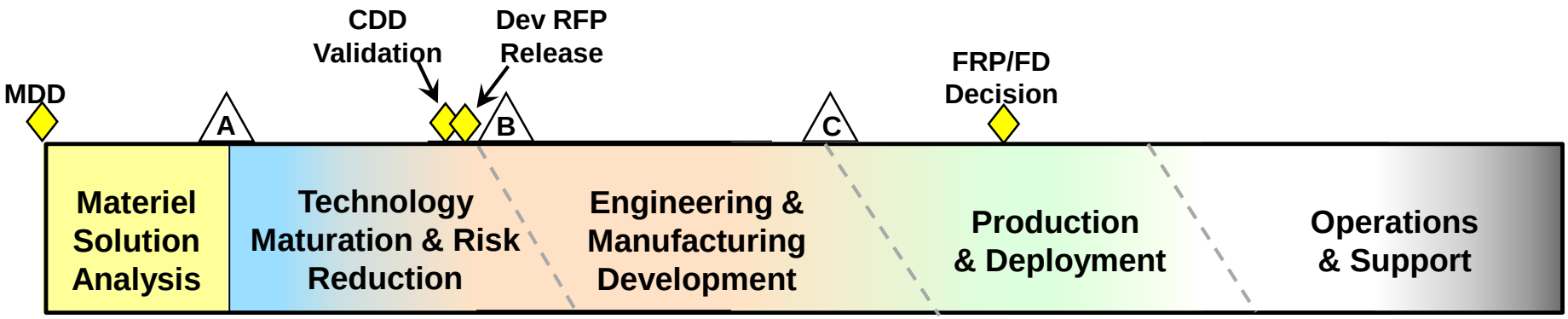
Modeling and Simulation

- **Models, data and artifacts will be integrated, managed, and controlled to ensure consistency**
- **Provide a comprehensive view of the program**

Identification of Modeling and Simulation Capabilities by Acquisition Life Cycle Phase, NDIA SE Division 2014

Why do we perform Modeling and Simulation?

Manufacturing and Producibility



- **Beginning in the Materiel Solution Analysis Phase**
  - Assess and document manufacturing readiness and risk in the SEP
- **By the end of TMRR Phase**
  - Manufacturing processes assessed and demonstrated to verify risk has been reduced to an acceptable level
- **During EMD Phase**
  - Assess maturity of critical manufacturing processes for affordability and executability
- **Prior to a production decision**
  - Manufacturing and producibility risks are acceptable
  - Supplier qualifications complete
  - Manufacturing processes under statistical process control

What are some manufacturing best practices?

Software

- **Considered at every decision point in the acquisition life cycle**
- **Phased software development approach using testable builds or fieldable software increments**
  - Manageable series of deliveries
  - Gain user acceptance and feedback
  - Reduce overall risk
- **Planning information documented in the SEP**
- **Links to the Program Protection Plan**

Why all the fuss about Software?

Reliability and Maintainability (R&M)

- **Extensive engineering activities focused on R&M**
  - Allocations, predictions, failure definition and scoring criteria
  - Failure Modes Effects and Criticality Analysis
  - Maintainability and Built-In-Test Demonstrations
  - Reliability testing at the system and subsystem level
- **Reliability, Availability, Maintainability and Cost Rationale (RAM-C) Report**
  - Quantitative basis for reliability requirements
  - Supports Milestone-A, updated with the SEP at subsequent decision points
- **Reliability Growth Curves**
  - Fully integrated, system level test and evaluation events
  - Demonstrate increased reliability at least to the Threshold requirement

Can this be a source of conflict between stakeholders?

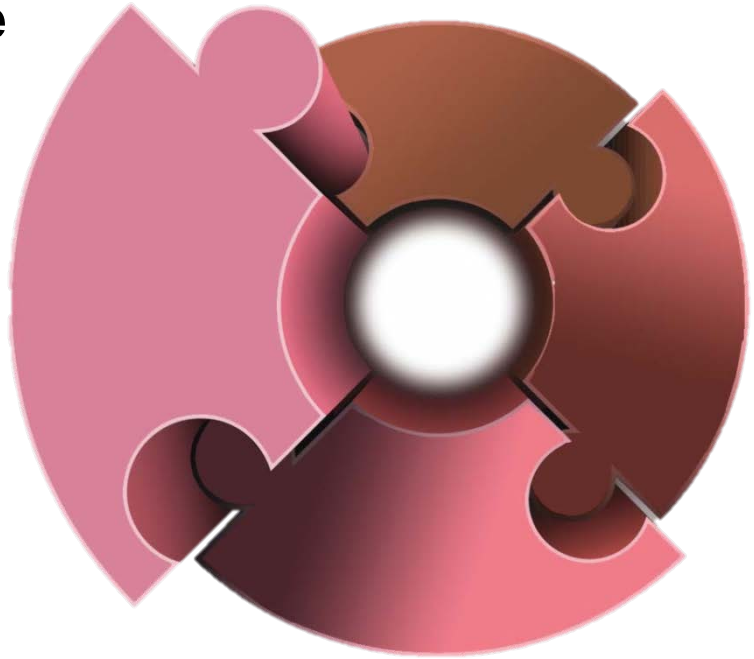
Program Protection

- **Integrating function for managing risks from:**
  - Foreign intelligence collection
  - Hardware, software, and cyber vulnerability or supply chain exploitation
  - Battlefield loss
- **Program Protection Plan**
  - Manage the risks to critical information and mission-critical functions
  - Submitted at each Milestone review
  - Updates after every contract award
  - Countermeasures – anti-tamper, exportability features, security, secure system design, supply chain risk management, software assurance, anti-counterfeit practices

Who has had experience with a PPP?

Open Systems Architecture

- **Apply open systems approaches in product designs where feasible and cost-effective**
- **Mechanisms for continuing competition and incremental upgrades**
- **Leverage the guidance and procedures in the *DoD Open Systems Architecture Contract Guidebook for Program Managers* *https://acc.dau.mil/OSAGuidebook***



How can we use MOSA to increase competition in our acquisition strategies?

Corrosion Prevention and Control

- Identify and evaluate corrosion considerations throughout the life cycle
- Part of the SEP and the Life Cycle Sustainment Plan
- Corrosion control requirements must be in the design and verified as part of testing and acceptance.
- MDA reviews and approves at each Milestone Review

How much does corrosion cost the DoD each year?

ESOH

- Use methodology in MIL-STD-882E *DoD Standard Practice for System Safety*
- Eliminate ESOH hazards or manage risks where they cannot be eliminated
- Risk acceptance authorities:
  HIGH Risk = CAE;
  SERIOUS RISK = PEO;
  MEDIUM and LOW Risk = PM
- Documented in the Program ESOH Evaluation (PESHE)

What other program documents will you find ESOH requirements?

Insensitive Munitions

- **Applies to all systems containing energetics**
- **Comply with 10 U.S.C 2389**
- **Minimize the risk of inadvertent initiation and the severity of subsequent collateral damage**

Camp Do Ha, Kuwait

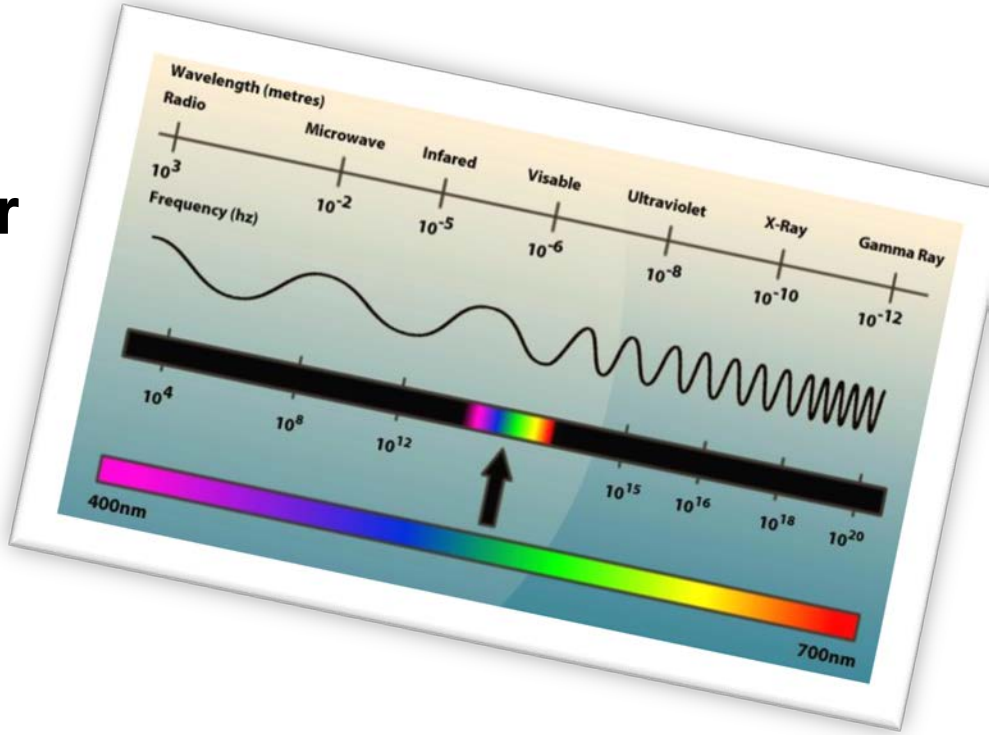
Item Unique Identification

- Identify and track applicable major end items, configuration-controlled items. And government-furnished property
- Item Unique Identification Implementation linked to the SEP
- Enhance life-cycle management of assets and provide accurate asset valuation and accountability
- IUID Toolkit
  http://dodprocurementtoolbox.com/page/unique-id

When is IUID required?

Spectrum Supportability

- Comply with U.S. and host nation electromagnetic spectrum regulations
- Certify that the spectrum required for the system will be available during the system's expected life-cycle



Design Reviews

- **Design review planning included in the SEP**
- **Any program not initiated at MS C will include the following design reviews:**
  - Preliminary Design Review = confirm that the system is ready to proceed into detailed design
  - Critical Design Review = confirm that the system is ready for development
- **ACAT-ID and IAM programs DASD(SE) performs a CDR assessment. CAEs perform the CDR assessment for ACAT-IC and IAM programs.**

Program Support Assessments (PSAs)

- DASD(SE) will conduct independent cross-functional PSAs of programs
- Assist PMs technical planning and improve execution by sharing best practices and lessons learned
- Risk identification and mitigation will be one focus
- Support acquisition milestones, decision reviews, or in response to technical issues on ACAT ID and IAM programs

Defense Acquisition Program Support Methodology

Who can share their experiences with PSAs?

Auditing

The Systems Engineer provides the X with Y.

- Contractor's assertions of technical criteria
- Required contractor capabilities—systems, operations, finances
- Proposals received from industry
- Changes in conditions (laws, regulations, standards, requirements)
- Incurred costs

The X provides the Systems Engineer with Z.

- Evaluation of the contractor's assertions against established criteria
- Assessment of contractor's financial condition and capacity
- Evaluation of proposals
- Review of claims for abnormal conditions
- Review incurred costs

Business

The Systems Engineer provides the X with Y.

- Scope of the technical work
- Time-phasing of the technical work and technical expertise for Initial Baseline Reviews And the Earned Value assessments (% complete)
- Relevant historical or analogous technical information for cost estimates—worst case, best case, and most-likely
- Technical risk assessments
- Technical contingencies and fallbacks
- Contractor technical progress reports and results from design reviews

The X provides the Systems Engineer with Z.

- Life Cycle Cost estimates and analysis of technical products and services
- Financial plans—internal Program office and external reporting
- Evaluation of technical performance against the financial plan
- Financial options for technical contingencies and fallbacks

Contracting

The Systems Engineer provides the X with Y.

- Requirements for technical contract deliverables
- Required technical risk and opportunity options
- Requirements for Government capabilities

The X provides the Systems Engineer with Z.

- Technical contract deliverables
- CLINs and options to manage technical risks and opportunities
- Purchase orders and contracts for technical products and services

Facilities

The Systems Engineer provides the X with Y.

- Requirements for facilities to support the system's development, testing, operations and maintenance
- A description of the intended system solutions

The X provides the Systems Engineer with Z.

- Facilities designs to support the system and its users for the lifecycle of the system
- Environmental impact mitigation or elimination

Industrial Property

The Systems Engineer provides the X with Y.

- Requirements for contractors to manage Government-owned property
- Requirements that may be met with Government-owned property
- Requirements that may be met with Government-Owned-Contractor-Operated facilities

The X provides the Systems Engineer with Z.

- An assessment of the contractor's accountability systems for managing Government-owned property
- Counsel and direction for managing Government-owned property
- Review of solicitations and proposals that include Government-owned property

Information Technology

The Systems Engineer provides the X with Y.

- Requirements for hardware, software, firmware
- Requirements for data creation, storage, dissemination, display
- Requirements for network/communications

The X provides the Systems Engineer with Z.

- IT architecture options
- Information Assurance/Risk assessments
- IT lifecycle management and support (operations, maintenance, and replacement) assessments
- IT-related cost, schedule, performance, estimates

Life Cycle Logistics

The Systems Engineer provides the X with Y.

- Requirements for reliability, availability, and maintainability
- Requirements for mission effectiveness and affordability
- Requirements for network/communications

The X provides the Systems Engineer with Z.

- Logistics design influence
- Integrated product support planning
- Configuration Management
- Reliability and maintainability analysis
- Technical/Product data management
- Supportability analysis

Production, Quality, Manufacturing

The Systems Engineer provides the X with Y.

- Requirements for quality assurance
- Product specifications
- Timing and objectives for design reviews

The X provides the Systems Engineer with Z.

- Assessments of the contractor's production and manufacturing capabilities
- Quality assurance plans
- Policies, procedures, test provisions, and quality requirements for solicitations
- Functional and configuration audits
- Production readiness reviews

Program Manager

The Systems Engineer provides the X with Y.

- Technical data to support decisions
- Technical contingencies and fallbacks
- Trade-Space across the triple constraint and DTLOMP-FP
- Constant pulse of the user's requirements
- Risk and Opportunity Management

The X provides the Systems Engineer with Z.

- Program Goals, Objectives, and Constraints
- The definition of "done"
- Liaison with interfacing programs and other stakeholders
- The resources to get the technical work done

Requirements Manager

The Systems Engineer provides the X with Y.

- Materiel solution alternatives
- Achievable, testable, and affordable technical requirements
- Risk and Opportunity Management
- Operational-to-Technical requirements traceability

The X provides the Systems Engineer with Z.

- Operational requirements
- Operational concepts
- Operational scenarios and use cases
- DTLOmP-FP trade space

Science & Technology

The Systems Engineer provides the X with Y.

- Technical risks and opportunities
- Requirements for the services of expert scientists

The X provides the Systems Engineer with Z.

- In-house research and design
- Technical support personnel
- Technology Readiness Assessments
- Technology Transition Agreements

Test & Evaluation

The Systems Engineer provides the X with Y.

- Technical requirements and scenarios
- Timing and goals of technical reviews
- Test Articles

The X provides the Systems Engineer with Z.

- Test requirements and plans
- Analysis, assessment, and evaluation of test plans
- Assessment of verification method alternatives—design, analysis, inspection

Major Initiatives:
Reinvigorating Defense Standardization

Standards provide our Corporate Technical Process Memory and Enable Communication Between and Across the Department, Industry and our Allies

- **Acquisition Reform efforts cancelled tens of thousands of Mil Standards**
- **Mil Standards partially replaced with Voluntary Consensus Standards**
  - VCS proponents may not fully capture US Governments interests and equities
- **Services Product Centers are currently pursuing independent efforts to reinvigorate standards processes**
  - Opportunity for SE to advocate for and coordinate service efforts
- **Recent USD(AT&L) Appointed D,SE Defense Standardization Executive (was LM&R, Standardization staff still at DLA)**
  - Standards, GIDEP, Interagency Coordination
- **STATUS: SE Still Digesting new Standardization Role, Goal is to make standardization efforts an effective Engineering coordination tool**

Major Initiatives:
Program Protection

- **Implementing 5200.39 and 5000.02 Program Protection Policy**
  - Review/coordination of PPPs for ACAT I programs
  - Guidance and best practice countermeasures, education and training, industry outreach, to assist PMs with CPI protection
- **Supply Chain Risk Management**
  - Procedures, capability to utilize threat assessments in acquisition
  - Vulnerability assessment methodology, pilots, Centers of Excellence
  - Commercial standards for secure components
- **Horizontal Protection Procedures**
  - Acquisition Security Database (ASDB) adoption and implementation
- **System Security Engineering**
  - System Assurance Guidebook, adopted by NATO, foundation for ISO 15026
  - SERC research topic – “Security Engineering”
  - INCOSE Working Group on System Security Engineering
  - DoD Criticality Analysis Working Group

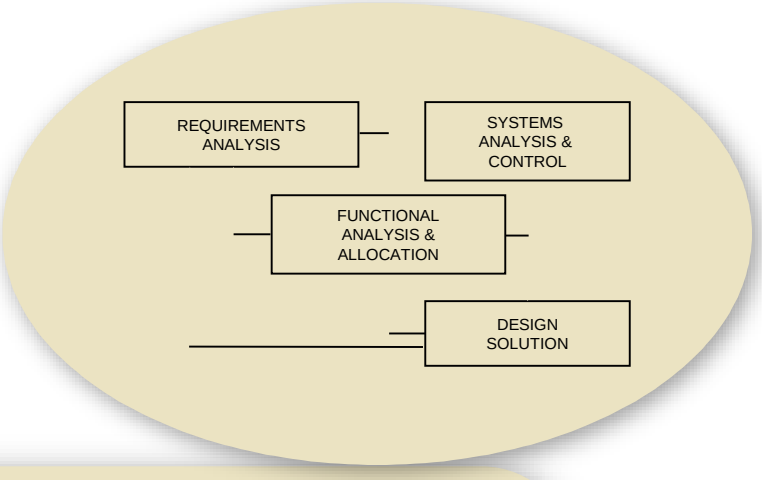
Systems Engineering: the Affordability Secret Weapon

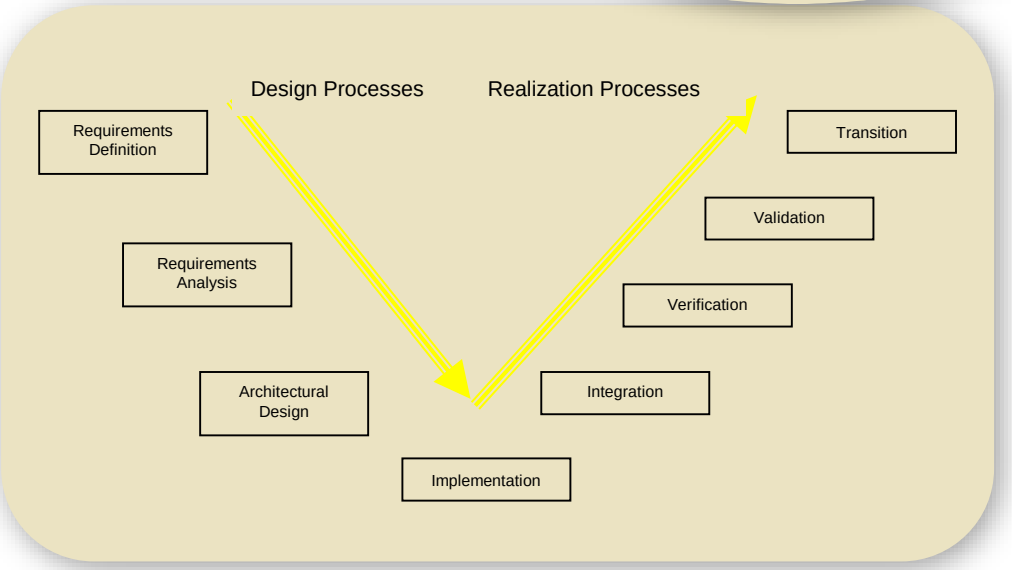
- Is systems engineering really a functional team sport?
- As functional leads have you felt engaged in systems engineering as the article suggests?
- From your functional perspective how do you know if systems engineering is occurring on your program?
- How do you execute successful systems engineering?

Successful Systems Engineering?

Technical Processes:

- Stakeholders Requirements Definition
- Requirements Analysis
- Architectural Design
- Implementation
- Integration
- Verification
- Validation
- Transition





Things to Watch

- Major discussions taking place regarding Better Buying Power
- Reductionism vs. Open Architecture, i.e., capability on demand https://acc.dau.mil/osaguidebook
- Data rights aligned to product support strategy
- Technical Measures
- Trade Study Applicability
- Organizational Capability
- Anti-tamper
- Obsolescence (development and sustainment)

DoDI 5134.16, Deputy Assistant Secretary of Defense for Systems Engineering

- **Implementing statutory authorities provided under WSARA:**
- **Performing continuous technical engagement, oversight, and review of Service acquisition programs' SE and Development Planning capabilities**
  - Continuous engagement with Services' acquisition enterprises
  - Sharing best practices across the department
- **Directly advising USD(AT&L) on SE and Development Planning (including Defense Business Systems and National Intelligence Programs)**
  - Active participant in MDAP and MAIS major milestone decision making
- **Reviewing and approving MDAP and MAIS Systems Engineering Plans (SEPs)**
- **Developing SE, Development Planning, Manufacturing, and Reliability and Maintainability policy and guidance**
- **Influencing Pre-MDD and MS A activities (CAPE and JROC)**
- **Participating in AoA policy, guidance, and oversight**
- **Participating in MDAP PDR/CDR's and provide the Post-CDR assessment in support of 2366(b) certification**
- **Delivering Annual Joint SE/DT&E Report to Congress**

WSARA – Weapon Systems Acquisition Reform Act of 2009

Engineering Engagement to Support MS A

- **Track the AoA to ensure the following occurs for each alternative**
  - Assess ability to meet capability need within required timeframe
  - Identify key technologies and risks
  - Estimate the life cycle cost
- **Conduct the necessary technical and engineering affordability analysis to best balance cost, schedule, performance, and risk of the preferred alternative**
  - Refine key performance attributes
  - Identify technical and engineering risks to support Technology Development Phase planning
  - Perform criticality analysis for Program Protection Plan (PPP)
  - Perform reliability analysis for the Reliability, Availability, Maintainability-Cost Rationale Report
- **Perform engineering analysis to support development of the Technology Development Strategy (TDS), Test and Evaluation Strategy (TES) and Systems Engineering Plan (SEP)**

Defense Acquisition Guidebook Section 4.1.3.1.2

DASD/SE Development Planning Program Support

MDD

A

ICDs Reviewed

MDD DAB Preparation

Analysis of Alternatives (AoA)

Pre-Milestone A Engineering Analysis

ICD Reviews for DP Equities
- 5th Generation Fighter Modernization
- Amphibious Combat Vehicle
- Airborne ISR to SOF
- Army Aircraft Survivability
- Army Operational Energy
- Forensics Support Across the RoMO
- Joint Cyber Situational Awareness
- USMC SCI Communications Enterprise
- USMC Aerial Delivery
- Low Slow Airborne Threat Response (LSATR) Capability
- Tactical Air Control Party Modernization
- Cyber Attack
- USMC Expeditionary Energy, Water and Waste
- Personnel Recovery
- Dock Landing Ship (LSD(X))
- Submarine Communications
- Navy Networking
- Army Unmanned Systems (Air, Ground, Maritime)
- Multimission Unmanned Ground Vehicle (MMUGV)
- Navy Unmanned Carrier Launched Aerial Strike and Surveillance (UCLASS)
- AF Long Range Strike
- IFPC-2
- Maritime ISR Support to SOF (for MRMUAS)

DP Support to MDD DAB
- F-22A Mod
- HFDS
- LRSO
- MRMUAS
- AIM-9X
- IFPC2-I
- T-AO(X)
- OASuW
- JMS
- LSD(X)
- UCLASS
- NIK
- MMUGV
- DCGS-N Inc 2
- CVM
- ACV
- B-61 TKA
- EPS
- JPALS Inc 2
- DWSS
- AMPV

DP Support to AoA
- OASuW
- T-AO(X)
- APT
- LRSO
- MRMUAS
- IFPC2-I
- UCLASS
- DCGS-N Inc 2
- JC2C
- GCV IFV Dynamic AoA Update

TDS/AS Reviews
- B-61 TKA
- MGUE
- GCV IFV
- B-2 DMS
- T-AO(X)

SEP Reviews
- B-61 TKA
- MGUE
- GCV IFV
- B-2 DMS
- T-AO(X)
- CIRCM

Fiscal Year 2011
- **ICDs Reviewed: 23**
- **MDDs Supported: 21**
- **AoAs Supported: 10**
- **MS A TDS/AS Reviewed: 5**
- **MS A SEPs Reviewed: 6**

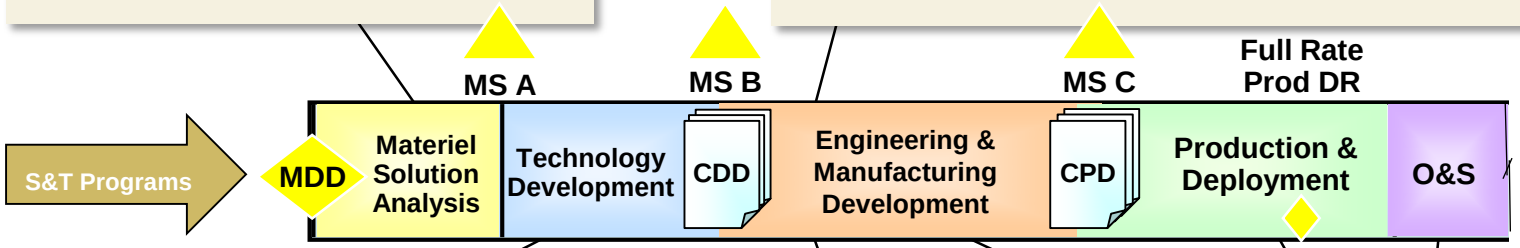
Source: DASD/SE, as of 5 June 2012

Early, Designed-In Program Protection

Streamlined Program Protection Plan
- **One-stop shopping for documentation of acquisition program security (ISP, IAS, AT appendices)**
- **Living document, easy to update, maintain**

- Identify draft CPI in TDS, estimated protection duration and S&T Lab countermeasures

- Acquisition Strategy, RFP, SEP, and TEMP must be revised to include PPP relevant information
- **Milestone Decision Authority approves PPP in addition to PM**

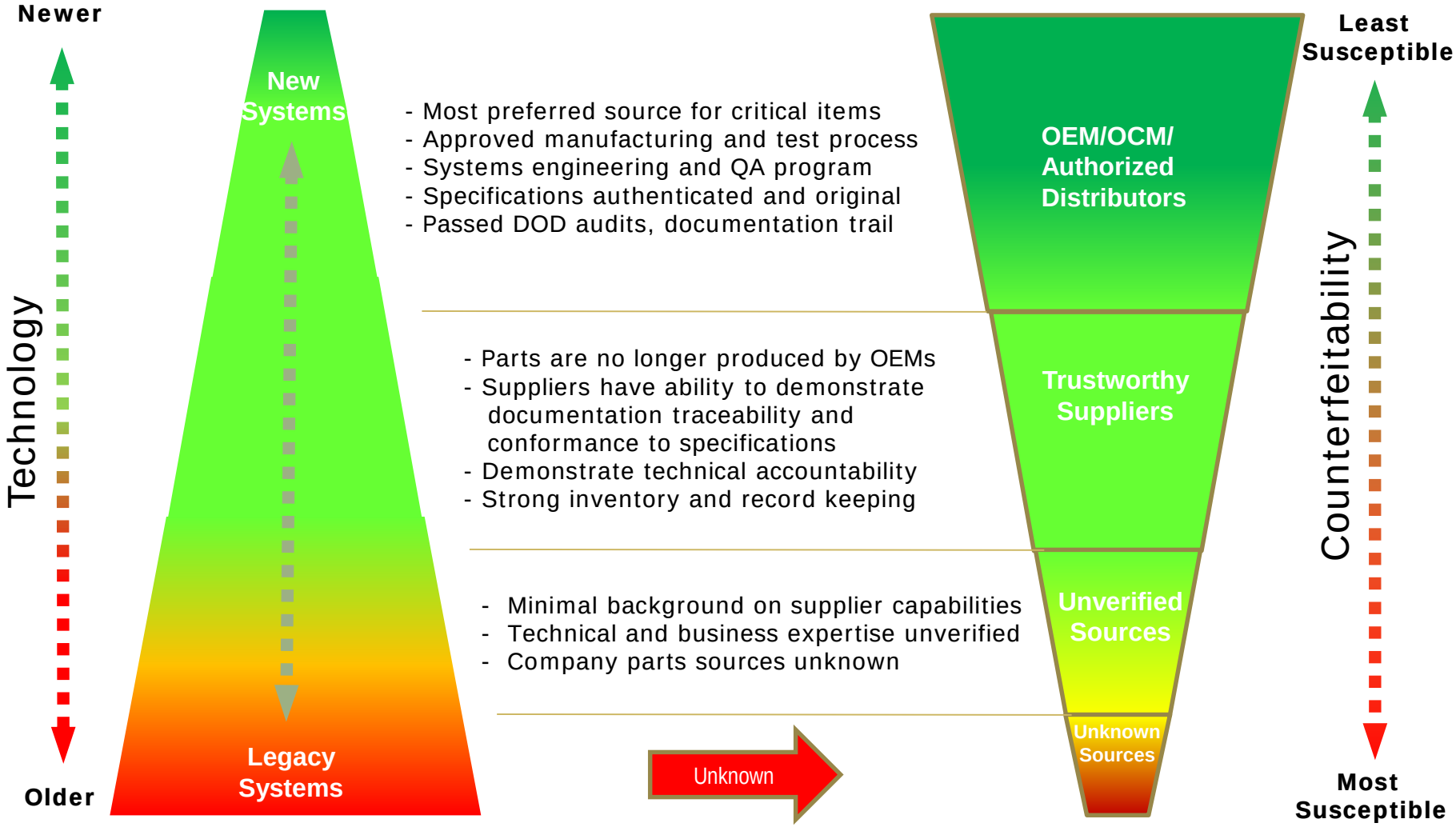


- Obtain threat assessments from Intel/CI, assess supplier risks
- Develop design strategy for CPI protection
- **Submit PPP to Acquisition Security Database (ASDB)**

- Contractor adds detail to Program Protection Plan
- Preliminary **verification and validation** that design meets assurance plans

- Enhance countermeasure information in Program Protection Plan (PPP)
- **Evaluate** that CPI Protection RFP requirements have been met

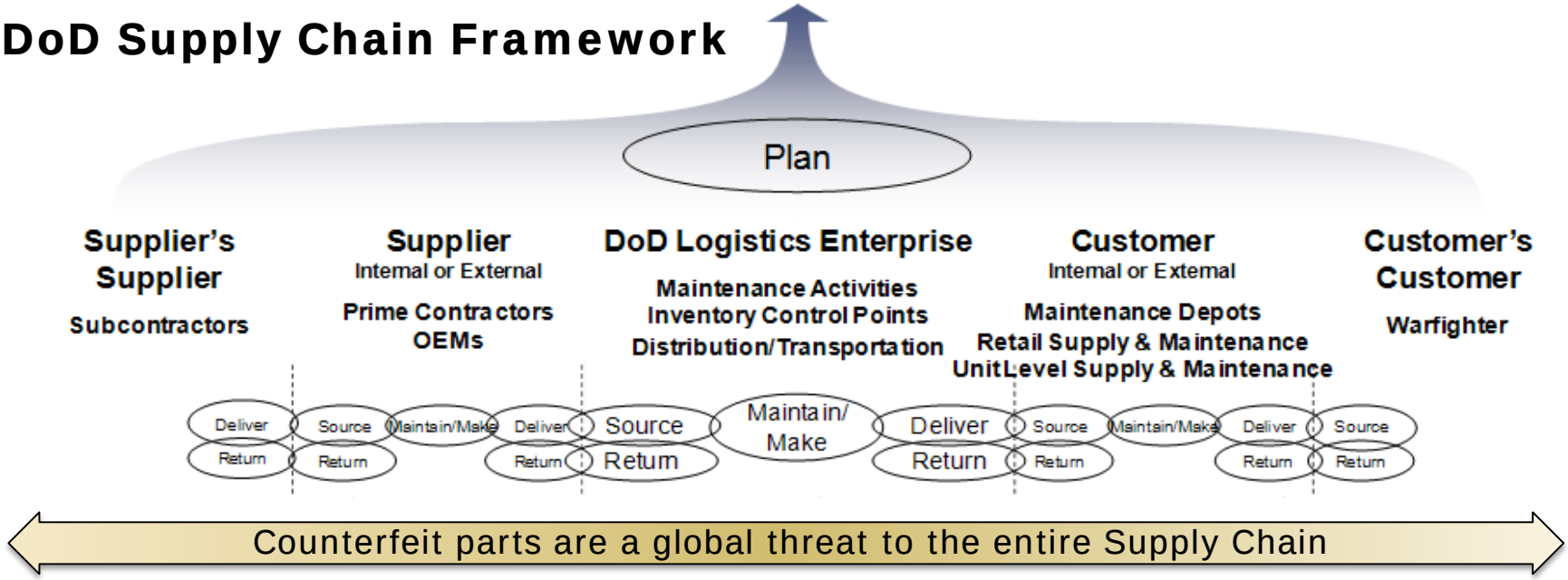
Profile of Counterfeit Risk



Prolonged use of aging systems creates opportunities for counterfeit parts to enter the supply chain

Supply Chain Implications

DoD Supply Chain Framework

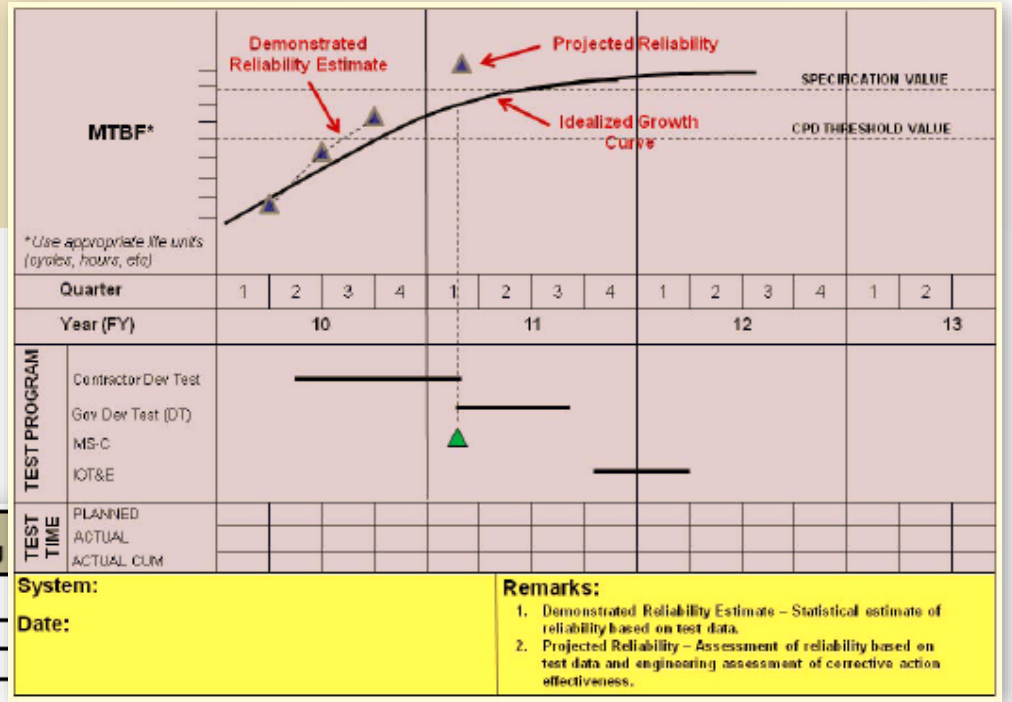


Anti-Counterfeit Touch Points

- Plan: Collaboration with trustworthy suppliers
- Source: Reaches all levels of the supply chain
- Make: Demands traceability of all critical parts
- Deliver: Standards and practice
- Return: Prevent counterfeit reentry into the supply chain

New Reliability Reporting

Document the Reliability Growth Curve beginning at MS A, update at each successive milestone…



Implementation of New Reliability Policy

R&M Engineering Activity	Planning and Timing
R&M Allocations	
R&M Block Diagrams	
R&M Predictions	
Failure Definitions and Scoring Criteria	
Failure Mode, Effects, and Criticality Analysis (FMECA)	
Maintainability and Built-in Test Demonstrations	
Reliability Growth Testing at the System and Subsystem Level	
Failure Reporting , Analysis, and Corrective Action System (FRACAS)	

and report planning to generate R&M artifacts.