



## **DoD Instruction 5000.02 2 December 2008**

### **Operation of the Defense Acquisition System Statutory and Regulatory Changes**

3 December 2008

**Bradford Brown**  
Director for Acquisition  
& Program management

## Topics:

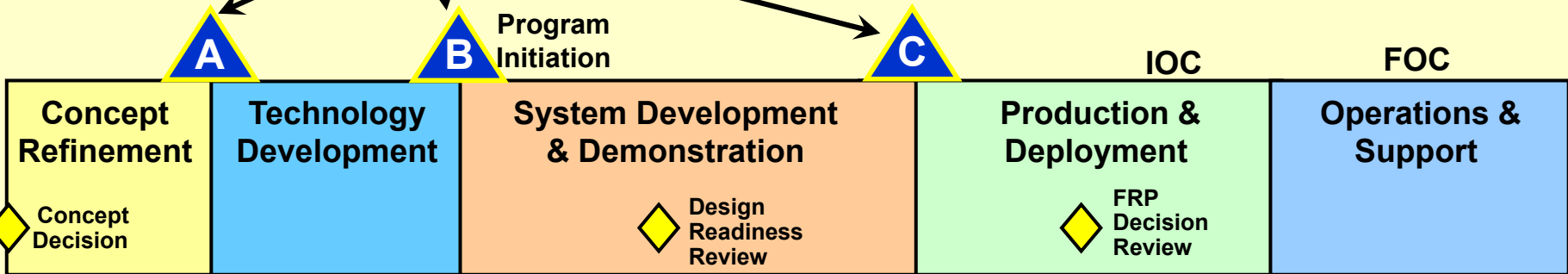
- **DoDI 5000.2: 2003 vs. 2008**
- **New Policy Directed by Congress**
- **New or Revised Regulatory Policy**
- **Statutory & Regulatory Information & Milestone Requirements**
- **New/Revised Enclosures to DoDI 5000.02**
- **The Defense Acquisition Management System - Milestones, Phases and Key Activities**

- **Policy Flowing from Numerous New/Revised sections of Public Law since 2003 (some with Multiple Requirements)**
- **Approved Policy Appearing in over 25 Policy Memos and DoD Responses to the GAO, IG, and Congress**
- **Reference to 10 Updated or Newly Issued DoD Publications**
- **Consideration of Over 700 Defense Acquisition Policy Working Group (DAPWG) Comments**

# Comparison of 2003 vs. 2008

User Needs & Technology Opportunities

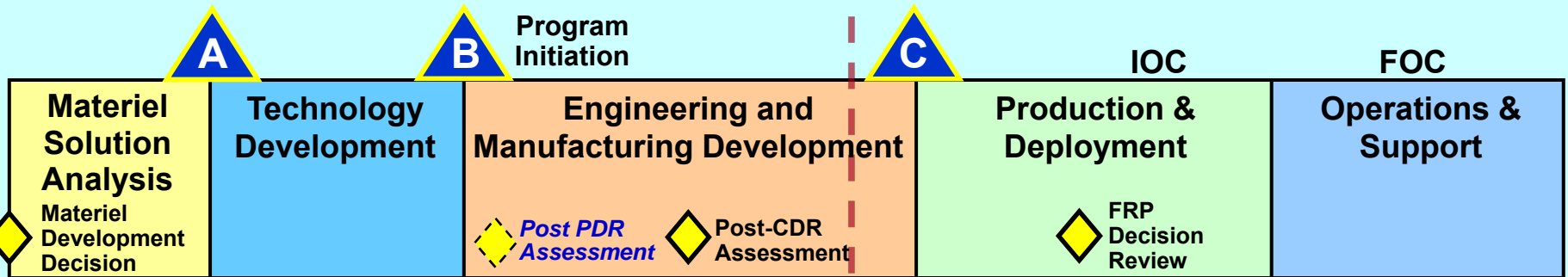
## Defense Acquisition Management Framework- 2003



## Defense Acquisition Management System - 2008

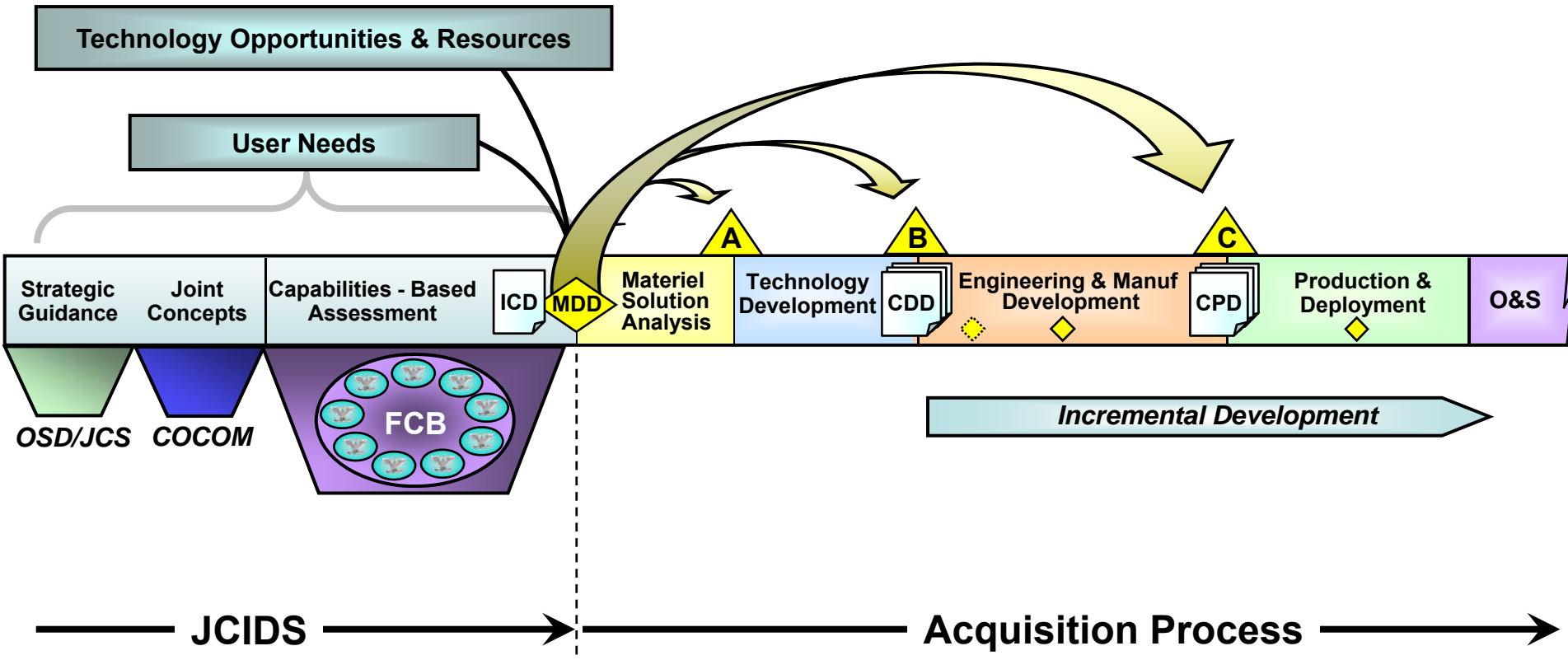
User Needs

Technology Opportunities & Resources



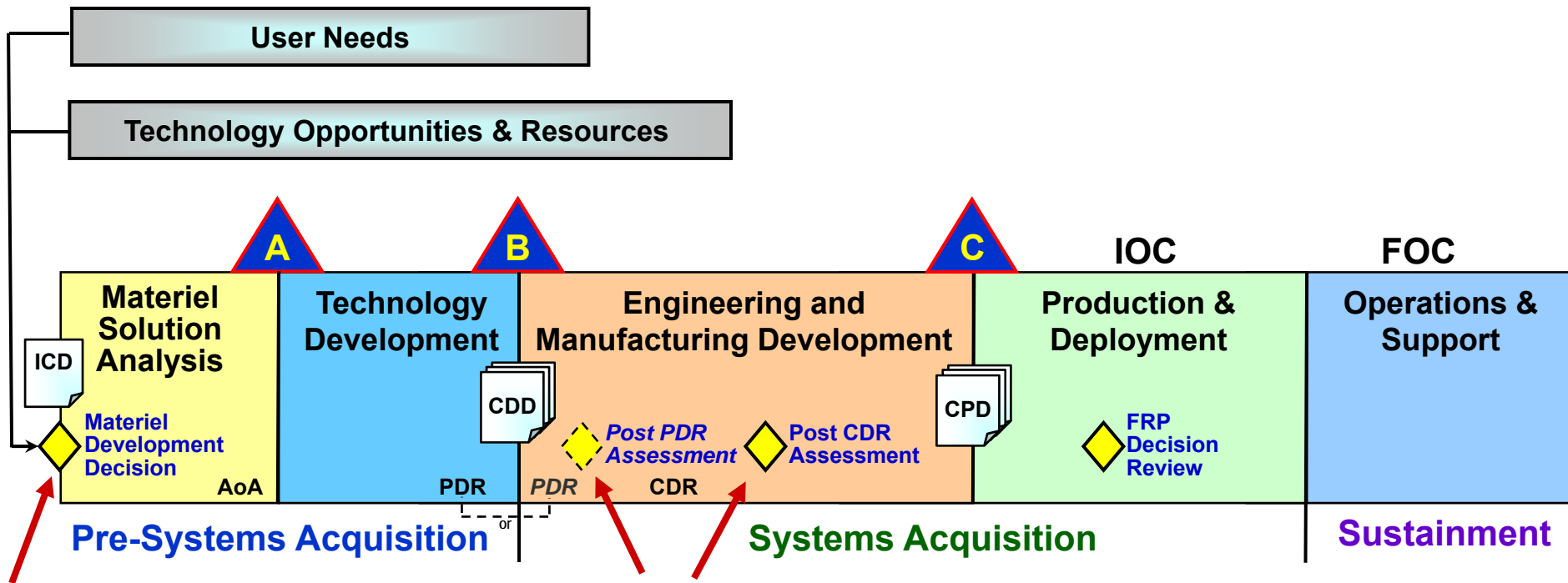
**Focus of major changes**

# The Defense Acquisition Management System 2008



***“Following the Materiel Development Decision (MDD), the MDA may authorize entry into the acquisition management system at any point consistent with phase-specific entrance criteria and statutory requirements.”***

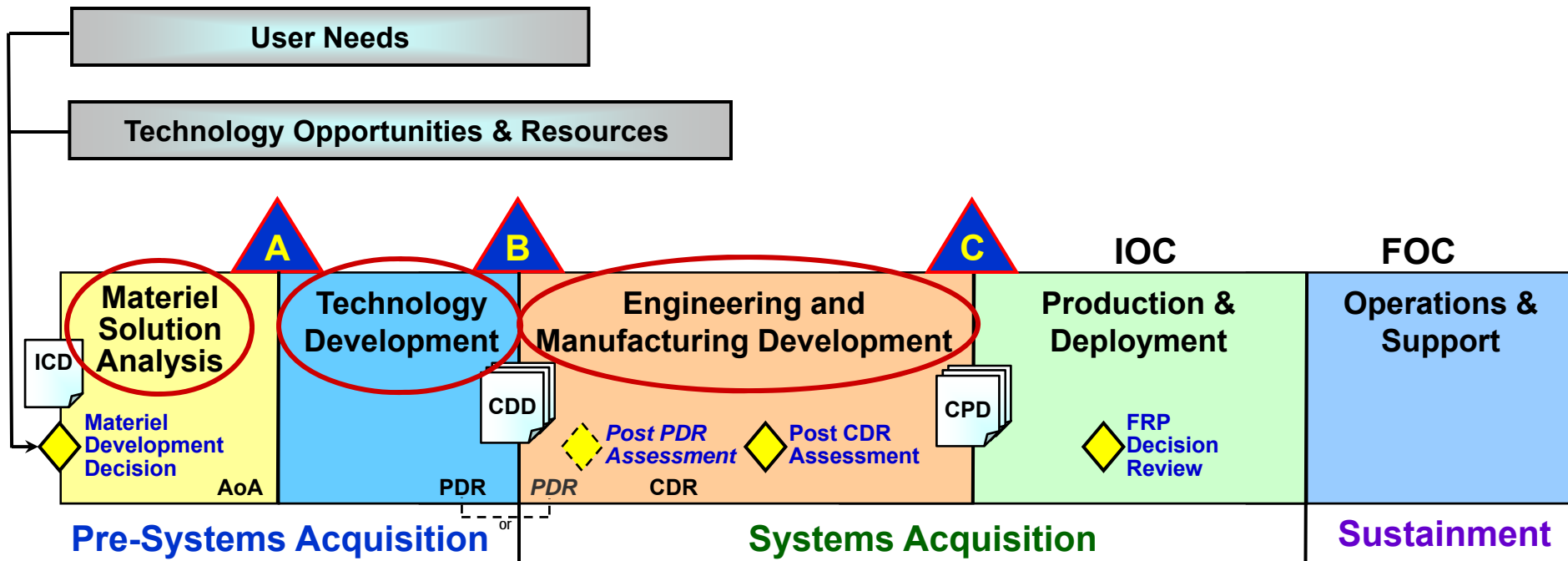
# The Defense Acquisition Management System 2008



## Changes to Decision Points

Old (2003)	New (2008)	Change from 2003
Concept Decision (CD)	Materiel Development Decision (MDD)	MDD required prior to entering the process at any point
N/A	Post-PDR Assessment	MDA's assessment of PM's PDR Report (if PDR after MS B)
Design Readiness Review DRR	Post-CDR Assessment	MDA's assessment of PM's CDR Report

# The Defense Acquisition Management System 2008

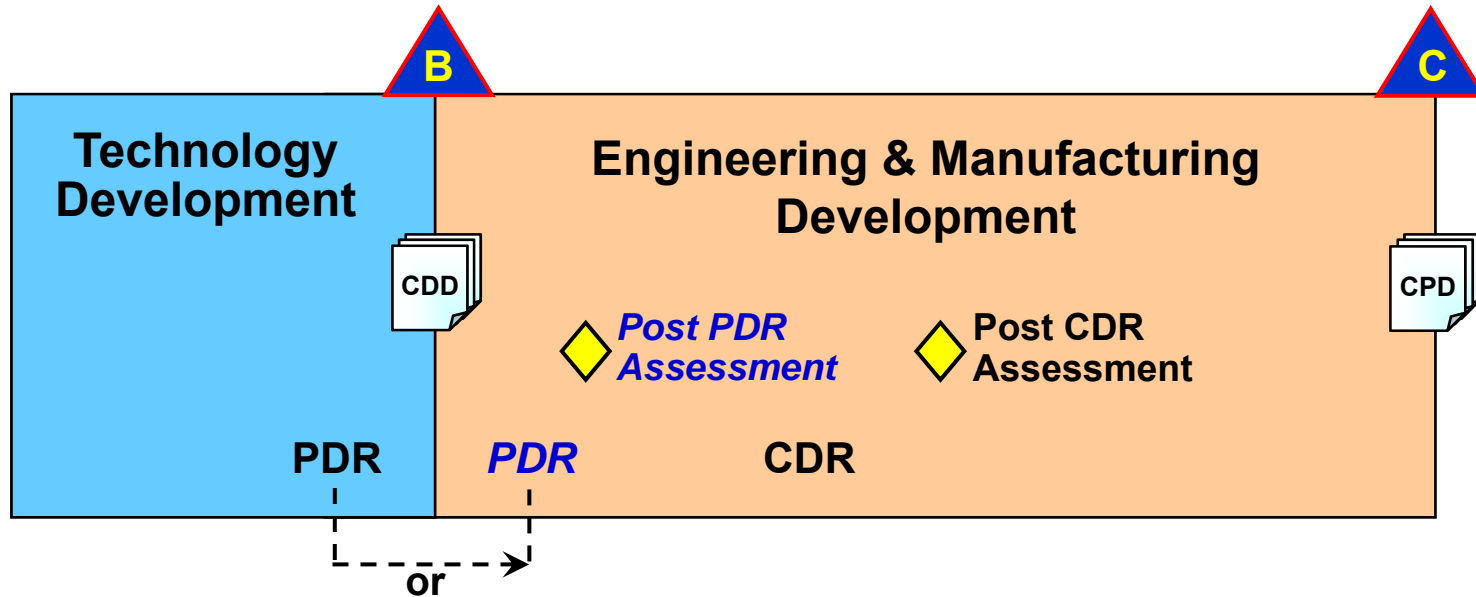


## Changes to Phases

Old (2003)	New (2008)	Change from 2003
Concept Refinement (CR)	Material Solution Analysis	More robust AoA (result of changes to JCIDS)
Technology Development (TD)		Competitive prototyping
Systems Development & Demonstration (SDD)	Engineering & Manufacturing Development (EMD)	More robust system engineering

# The Defense Acquisition Management System 2008

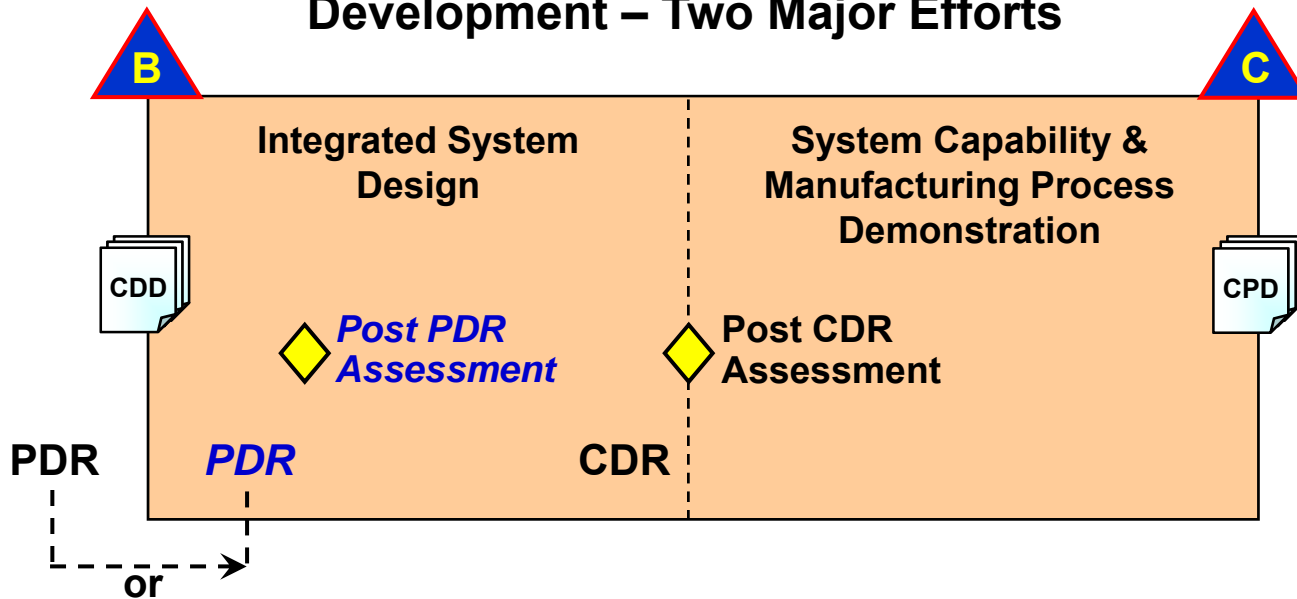
## Preliminary Design Review



PDR Before Milestone B	PDR After Milestone B
<ul style="list-style-type: none"> <li>• Planned for in Technology Development Strategy</li> <li>• PDR Report provided to MDA at MS B</li> <li>• Includes recommended requirements trades</li> </ul>	<ul style="list-style-type: none"> <li>• Planned for in Acquisition Strategy</li> <li>• PDR Report provided to MDA prior to Post PDR Assessment</li> <li>• Reflects requirements trades</li> <li>• At Post PDR Assessment, MDA considers PDR report; determines action(s) required to achieve APB objectives and issues ADM</li> </ul>

# The Defense Acquisition Management System 2008

## Engineering & Manufacturing Development – Two Major Efforts



Old (2003)	New (2008)	Change from 2003
System Design	Integrated System Design	Establishment of Product Baseline for all Configuration Items
System Demonstration	System Capability & Manufacturing Process Demonstration	Manufacturing processes effectively demonstrated; production-representative article(s) demonstrated in intended environment; T&E assesses improvements to mission capability and operational support based on user needs.

# New Policy Directed by Congress

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- **Military Equipment Valuation (accounting for military equipment)**
- **MDA Certification at Milestones A & B**
- **Cost type contract for EMD Phase requires written determination by MDA**
- **Lead Systems Integrator Restrictions**
- **Replaced System Sustainment Plan**
- **Configuration Steering Boards (CSBs)**

- **New MAIS Reporting Requirements**
- **“Time-Certain” IT Business Systems Development**
- **Defense Business Systems Oversight**
- **MDA assessment of compliance with chemical, biological, radiological, and nuclear survivability (CBRN) requirements at Milestones B and C**

- **Detailed Acquisition of Services Policy**
- **Independent management reviews (Peer Reviews) for supplies and services contracts**
- **Interim Beyond LRIP Report**
- **DOT&E's Role in Testing Force Protection Equipment / Non-Lethal Weapons**
- **Nunn-McCurdy breach / APB Revision Procedure**

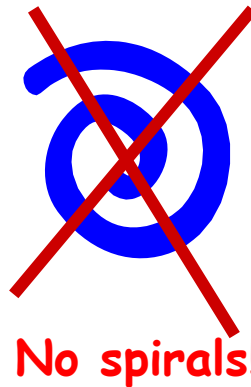
- **Detailed Systems Engineering Policy**
- **Program Support Reviews (PSRs)**
- **Integrated Test & Evaluation**
- **Restricted use of performance requirements that do not support KPPs**
- **Comparison with current mission capabilities during OT&E**
- **Assessment of Operational Test Readiness (AOTR)**
- **Life-Cycle Sustainment Plan (LCSP)**
- **Cost of energy in AoA and resource estimates**

- **Contract Incentives Strategy**
- **Contracting for Operational Support Services**
- **Approval of Technology Development Strategy prior to Release of final RFP for Technology Development Phase**
- **Approval of Acquisition Strategy prior to release of final RFP for EMD or any succeeding phase.**
- **Reliability, Availability, and Maintainability (RAM) strategy**
- **Data Management Strategy**
- ⇒ • **Evolutionary Acquisition Revised**

# Evolutionary Acquisition

From two processes...  To one process...

- Incremental Development: End-state is known; requirements met over time in several increments
- Spiral Development: End-state is not known; requirements for increments dependent upon technology maturation and user feedback.



- Capability delivered in increments, recognizing up front need for future capability improvements
- Each increment:
  - depends on mature technology
  - is a militarily useful and supportable operational capability
  - Successive Technology Development Phases may be needed to mature technology for multiple increments

1 References

**2 Procedures**

3 ACAT and MDA

4 Statutory and Regulatory Information and  
Milestone Requirements

} Tables  
Updated

*Table 5. EVM Implementation Policy*

*Table 6. APB Policy*

*Table 7. Unique Decision Forums*

5 IT Considerations

6 Integrated T&E

7 Resource Estimation

8 Human Systems Integration

9 Acquisition of Services

10 Program Management

**11 Management of Defense Business Systems**

**12 Systems Engineering**

■ New

# Enclosure 4, Table E4.T1-1

## Statutory Requirements Added For MDAPs & MAIS

<b>Requirement</b>	<b>Reference</b>	<b>When Required</b>	<b>Comment</b>
<b>Analysis of Alternatives (AoA)</b>	<b>10 USC 2366b Title 40, Sec III</b>	<b>MS A, B C</b>	<b>Updated as necessary at MS B and C</b>
<b>Data Management Strategy</b>	<b>10 USC 2320</b>	<b>MS B, C &amp; FRPDR</b>	<b>Part of TDS or Acq Strategy</b>
<b>Military Equipment Program Valuation</b>	<b>PL 101-576 &amp; Statement of Federal Financial Accounting Standards, No 6.</b>	<b>MS C &amp; FRPDR (or Equiv)</b>	<b>Part of Acq Strategy</b>
<b>Program Deviation Report</b>	<b>10 USC 2435 40 USC 11317</b>	<b>Immediately upon a program deviation</b>	<b>APB breaches</b>

# Encl. 4, Table E4.T1-1

## Statutory Requirements Added For MDAPs Only

Requirement	Reference	When Required	Comment
<b>MDA Program Certification</b>	<b>10 USC 2366 a &amp; b</b>	<b>MS A &amp; B MS C (if program initiation)</b>	<b>Requires cost est. at MS A</b>
<b>Nunn-McCurdy Assessment &amp; Certification</b>	<b>10 USC 2433</b>	<b>When Service Secretary reports an increase in cost that equals or exceeds the critical cost threshold</b>	<b>increase of 25% over “current” PAUC or APUC APB values. Increase of 50% over “original” PAUC or APUC APB values</b>
<b>Replaced System Sustainment Plan</b>	<b>10 USC 2437</b>	<b>MS B</b>	

# Enclosure 4, Table E4.T1-1

## Statutory Requirements Added For MAIS Only

Requirement	Reference	When Required	Comment
<b>Assessment &amp; certification for critical program changes</b>	<b>10 USC 2445c</b>	<b>When SAE, USD(AT&amp;L), or ASD(NII)/DoD CIO has formally reported a critical program change</b>	<b>Failed to achieve IOC w/in 5 yrs of MS A; schd chg of 1 yr or more; incr in dev cost or life cycle cost of 25% or more; or change in performance that undermines ability of sys to perform expected functions</b>
<b>Notification of Significant program change to Defense Committees</b>	<b>10 USC 2445c</b>	<b>NLT 45 days after receiving PM's report of significant changes</b>	<b>Schedule change of more than 6 mos, but less than 1 yr; incr in development cost or life cycle cost of at least 15%, but less than 25%; or adverse change in expected performance</b>

## Enclosure 4, Table E4.T1-1

### Statutory Requirements Added For MAIS Only, continued...

<b>Requirement</b>	<b>Reference</b>	<b>When Required</b>	<b>Comment</b>
<b>DBSMC Certification for Business Systems Modernization</b>	<b>10 USC 2222</b>	<b>Prior to obligation of funds</b>	<b>See Encl. 11, DoDI 5000.02</b>
<b>Notice of MAIS Cancellation or significant reduction in Scope</b>	<b>Sec 806, PL 109-163</b>	<b>60 Days prior to MDA decision to cancel or significantly reduce scope of fielded or post MS C MAIS</b>	
<b>Report to Congress of cost, schedule &amp; perf information</b>	<b>10 USC 2445b</b>	<b>Annually, 45 days after President's Budget is submitted to Congress</b>	
<b>PM's report of variances in cost, schedule or KPPs</b>	<b>10 USC 2445c</b>	<b>Quarterly following MS B</b>	<b>Any variance in data submitted in first Report to Congress</b>

# Enclosure 4, Table E4.T1-2

## Statutory Requirements Added For ACAT II and Below Programs (unless otherwise noted)

Requirement	Reference	When Required	Comment
Analysis of Alternatives (AoA) – all IT including NSS	40 USC Subtitle III	MS A, B & C	Updated as necessary at MS B and C
Data Management Strategy (ACAT II only)	10 USC 2320	MS B, C & FRPDR	Part of Acq Strategy
LRIP Quantities (ACAT II only)	10 USC 2400	MS B	
Military Equipment Program Valuation	PL 101-576 & Statement of Federal Financial Accounting Standards, No 6.	MS C & FRPDR (or Equiv)	Part of Acq Strategy

## Enclosure 4, Table E4.T2

### Regulatory Requirements Added/Revised For All Programs (unless otherwise noted)

Requirement	Reference	When Required	Comment
Acquisition Info Assurance Strategy	DoDI 8580.1	MS A, B, C & FRPDR or FDDR	All IT, Including NSS
Analysis of Alternatives (AoA)	DoDI 5000.02	MS A, B, & C	Updated as necessary at MS B and C
AoA Study Guidance	DoDI 5000.02	MDD	
Component Cost Estimate	DoDI 5000.02	MDAP: MS B & FRPDR MAIS: whenever EA is required	Mandatory for MAIS; optional for MDAP
Corrosion Prevention Control Plan	DoDI 5000.02	MS B & C	Part of Acq Strategy
Life Cycle Sustainment Plan	DoDI 5000.02	MS B, C & FRPDR	Part of Acq Strategy
Life Cycle Signature Support Plan	DoDD 5250.01	MS A, B, & C	

## Enclosure 4, Table E4.T2

### Regulatory Requirements Added/Revised For All Programs (unless otherwise noted)

Requirement	Reference	When Required	Comment
Preliminary Design Review (PDR) Report	DoDI 5000.02	MS B	May be after MS B – requires a Post-PDR Assessment
Critical Design Review (CDR) Report	DoDI 5000.02	Post-CDR Assessment	
Net-Centric Data Strategy	DoDD 8320.02	MS A, B, C	
Systems Engineering Plan (SEP)	DoDI 5000.02	MS A, B, & C	
UID Implementation Plan	DoDI 5000.02	MS B & C	

## Enclosure 4, Table E4.T2

### Regulatory Requirements Added/Revised For All Programs (unless otherwise noted)

Requirement	Reference	When Required	Comment
Program Deviation Report	DoDI 5000.02	Immediately upon a program deviation	APB breaches
System Threat Assessment Report (STAR)	DoDI 5000.02 DoDD 5105.21 DIA Dir. 5000.2000 DIA Inst. 5000.002	MS B & C	ACAT I & IA, & all DOT&E Oversight List Programs
Systems Threat Assessment (STA)	DoDI 5000.02 DoDD 5105.21 DIA Dir. 5000.2000 DIA Inst. 5000.002	MS B, & C	ACAT II
Test & Evaluation Strategy (TES)	DoDI 5000.02	MS A	

# Encl 5, IT Considerations, changes

- **“Title 40/CCA” replaces term CCA. Subtitle III of Title 40, US Code was formerly known as Division E of the Clinger-Cohen Act**
- **Table E.4.T1 slightly modified for readability**
- **Added:**
  - **Investment Review Board (IRB) role as “OIPT” for MAIS and MDAP business systems**
  - **Time-Certain Acquisition of IT Business Systems (No MS A approval unless can achieve IOC within 5 years)**
  - **Defense Business System Management Committee (DBSMC) Certification approval for business systems with modernization funding over \$1 million – prior to any milestone or FRP approval**
  - **DoD CIO notification to Congress 60 days before any MDA cancels or significantly reduces size of MAIS fielded or has received MS C approval**
- **Revised: USD(Comptroller) certification for Defense Financial System Improvements – compliance with Business Enterprise Architecture (BEA)**

## Encl 6, Test & Evaluation, changes

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- **PM, in concert with user and test community, must provide safety releases to developmental and operational testers prior to any test using personnel**
- **Systems that provide capabilities for joint missions must be tested in joint operational environment**
- **Embedded instrumentation must be developed to facilitate training, logistics support and combat data collection**
- **Joint Interoperability Test Command (JITC), “regardless of ACAT” will provide interoperability test certification memoranda to J-6**
- **At test readiness reviews, PM must ensure impact of all deviations and waivers is considered in decision to proceed to next phase of testing**

- **OUSD(AT&L), Dir Systems Software and Engineering will conduct an independent Assessment of Operational Test Readiness (AOTR) for ACAT ID and special interest programs designated by USD(AT&L). CAE will consider AOTR prior to making determination of materiel readiness for IOT&E**
- **OSD T&E Oversight List categories: developmental testing, operational testing or live fire testing. Programs on list designated for OT or live fire testing will be considered same as MDAPs or covered programs and subject to all provisions of Title 10, US Code and DoDI 5000.02**
- **Force protection equipment (including non-lethal weapons) will be identified as a separate category on OSD T&E Oversight List**

## Encl 7, Resource Estimation, changes

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- **PMs must use Cost and Software Data Reporting System to report data on contractor costs and resource usage**
- **CARD must be in sync with other program documents, and at MS B CARD must reflect results of the PDR.**
- **Fully burdened cost of delivered energy must be used in trade-off analysis for all tactical systems with end items that create a demand for energy**
- **Following areas of assessment added to AoA:**
  - **Alternative ways to improve the energy efficiency of DoD tactical systems consistent with mission and cost effectiveness**
  - **Appropriate system training to ensure that training is provided with the system**

# Encl 8, Human Systems Integration, changes

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- **Mix of military, DoD civilian, and contractor support to operate, maintain and support (including training) system must be determined based on Manpower Mix Criteria and reported in Manpower Estimate**
- **Economic analyses to support workforce mix decisions must use tools that account for all variable and fixed costs, compensation and non-compensation costs, current and deferred benefits, cash and in-kind benefits**
- **Details on Environment, Safety and Occupational Health (ESOH) moved to new encl 12, Systems Engineering**

- **Planning for acquisition of services must consider:**
  - Requirements development and management
  - Acquisition planning
  - Solicitation and contract award
  - Risk management
  - Contract tracking and oversight
  - Performance evaluation
- **Special procedures for IT services that cost over \$500M, all services that cost over \$1B, and special interest programs designated by ASD(NII), USD(AT&L) or their designees:**
  - Senior officials/decision authorities must be notified prior to issuing final solicitation (briefing or written)
  - ASD(NII)/DoD CIO notifies USD(AT&L) of any proposed acquisition of IT services over \$1B
  - Review by ASD(NII)/USD(AT&L) initiates review of acquisition strategy – final RFPs cannot be released until approval.

- **Policy extended to services acquired after program achieves Full Operational Capability (FOC), if those services were not subject to previous milestones**
- **Policy does not apply to R&D activities, or services that are approved part of an acquisition program managed IAW DoDI 5000.02**
- **Senior Officials and decision authorities may apply policy to R&D services at their discretion**
- **SAEs are Senior Officials for acquisition of services**
- **USD(AT&L) is Senior Official for acquisition of services for Components outside of military departments – he may delegate decision authority to commanders/ directors of these components**
- **Independent management reviews (Peer Reviews) required for contracts of \$1B or more**

## Acquisition of Services Categories (Table E9.T1)

Category	Threshold	Decision Authority
<b>Acquisitions &gt; \$1B</b>	<b>Any services acquisition with total estimated cost of \$1B or more</b>	<b>USD(AT&amp;L) or designee</b>
<b>IT Acquisitions &gt; \$500M</b>	<b>IT services with total estimated cost of \$500M or more</b>	<b>ASD(NII)/DoD CIO or as designated</b>
<b>Special Interest</b>	<b>Designated by USD(AT&amp;L), ASD(NII)/DoD CIO, or any Mil Dept Senior Official</b>	<b>USD(AT&amp;L) or Senior Officials</b>
<b>Services Category I</b>	<b>Services estimated to cost \$250M or more</b>	<b>Senior Officials or as designated</b>
<b>Services Category II</b>	<b>Services estimated to cost \$10M or more, but less than \$250M</b>	<b>Senior Officials or as designated</b>
<b>Services Category III</b>	<b>Services estimated to cost more than simplified acq threshold, but less than \$10M</b>	<b>Senior Officials or as designated</b>

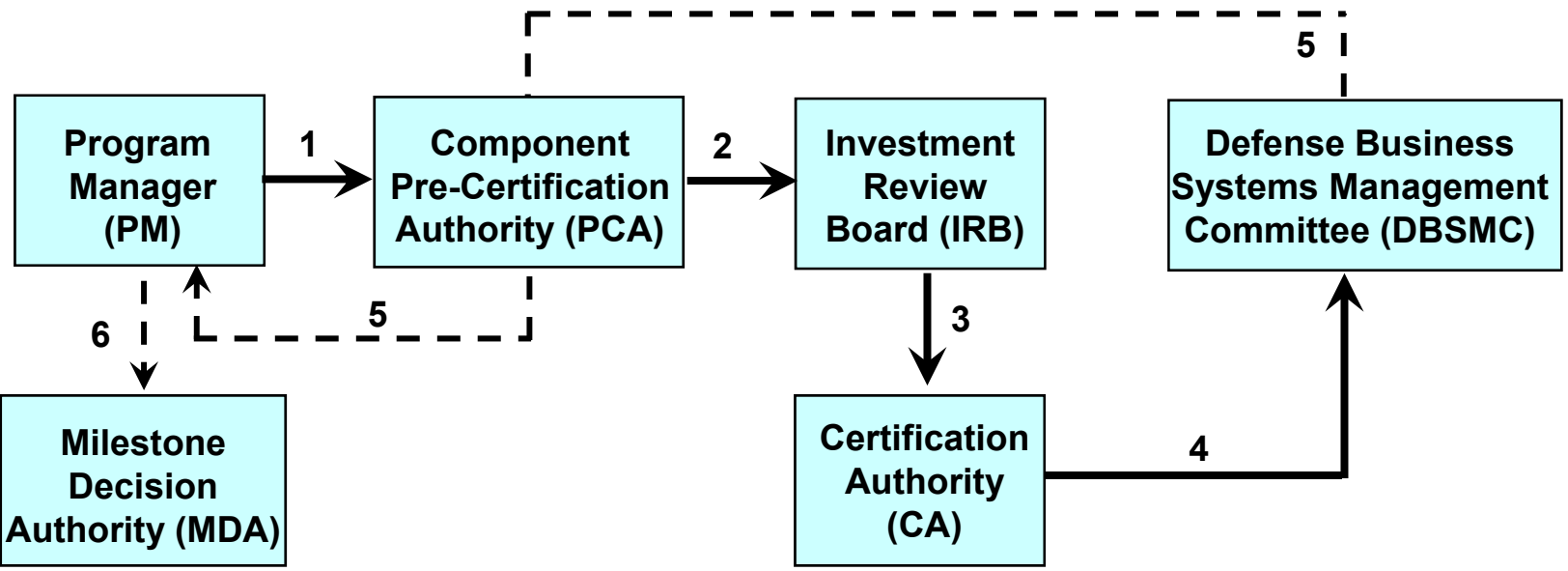
All dollars in FY 2006 constant year dollars

- **Requires PMs for ACAT II and other significant non-major programs to be assigned for not less than 3 years.**
- **Program Management Agreements (PMAs) implemented to establish “contract” between PM and acquisition and resource officials**
- **Provides that waivers for PM/PEO experience and certifications “should be strictly avoided.”**
- **Provides for USD(AT&L) waiver for PEO’s to assume other command responsibilities**
- **Adds US-ratified materiel international standardization agreements to consideration for international cooperative programs**

- **Applies to “defense business systems” modernizations with total modernization or development funding exceeding \$1 million.**
  - **Defines Defense Business System as an information system, other than a national security system, operated by, for, or on behalf of DoD, including financial management systems, mixed systems, financial data feeder systems, and IT and information assurance infrastructure.**
  - **Defense Business Systems support activities such as acquisition, financial management, logistics, strategic planning and budgeting, installations and environment, and human resource management.**

- **Funds cannot be expended until the Defense Business System Management Committee (DBSMC) approves Investment Review Board Certification (IRB) that the system:**
  - **Is in compliance with the enterprise architecture; or Is necessary to achieve a critical national security capability or address a critical requirement in an area such as safety or security; or Is necessary to prevent a significant adverse impact on a project that is needed to achieve an essential capability**

## Business Systems Certification and Approval Process



1. PM completes economic viability review & other plans/analysis as requested by the PCA
2. PCA Validates info from PM, forwards certification request to appropriate IRB
3. IRB reviews request, IRB chair recommends appropriate approval authority sign certification memo and request DBSMC approval
4. CA sends signed certification memo to DBSMC for approval
5. DBSMC Chair approves certification and sends decision to the PM through the PCA.
6. PM requests MDA conduct milestone review

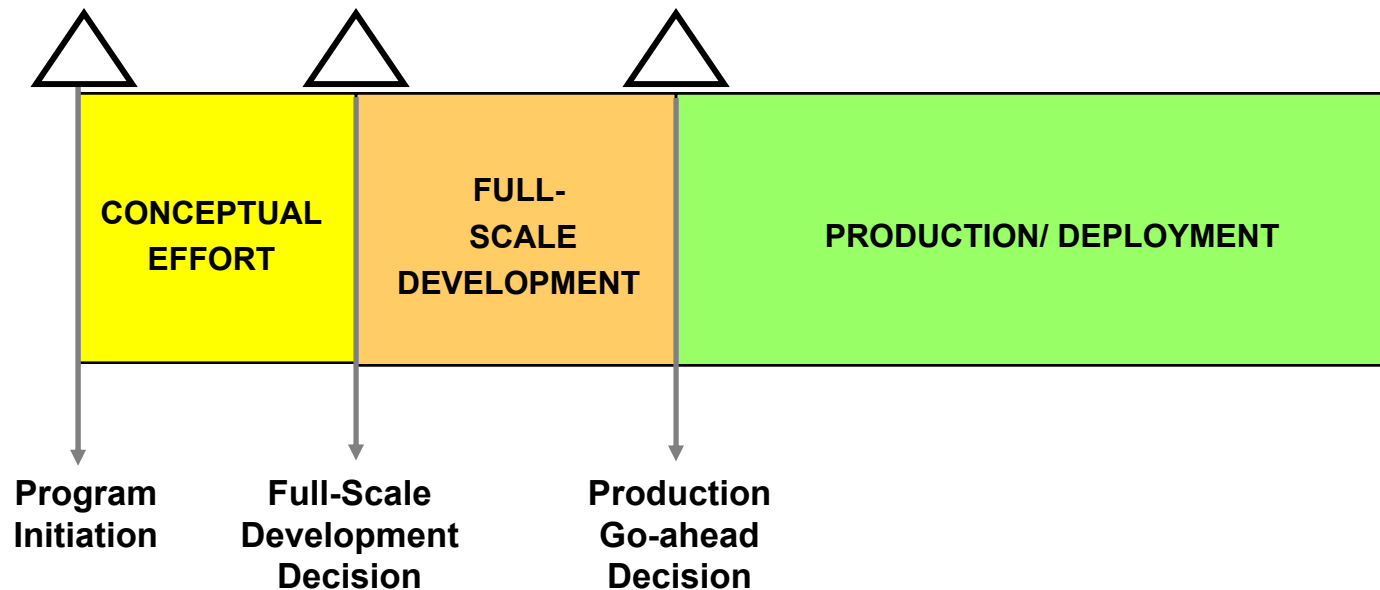
- **Systems Engineering Plan (SEP) required at each milestone**
- **MDA is approval authority for the SEP**
- **For programs where USD(AT&L) is MDA, and programs on the DT-only portion of OSD T&E Oversight List, SEPs must be submitted to Director, Systems and Software Engineering 30 days prior to DAB/ITAB review**
- **PEOs must have lead systems engineer – oversees SE across PEOs portfolio; reviews SEPs; assesses performance of subordinate systems engineers with PEO and PM**
- **Event-driven technical reviews required – with SMEs independent of program, unless waived by MDA**
- **Requires configuration management to establish and control product attributes and the technical baseline**

- **ESOH risk management required to be integrated with overall SE process; Programmatic ESOH Evaluation (PESHE) required of all programs regardless of ACAT**
- **NEPA and EO 12114 (Environmental Effects Abroad of Major Federal Actions) analysis required of PM, approved by CAE**
- **Addresses PM support of Mishap Accident Investigations**
- **Requires Corrosion Prevention Control Plan for ACAT I programs at MS B and C**
- **Requires PMs to employ modular open systems approach to design**
- **Data Management Strategy (DMS) required to assess long-term technical data needs of the system – included in Acquisition Strategy**

# Now for the Acquisition Management System

We will “walk through” the process and  
highlight major changes

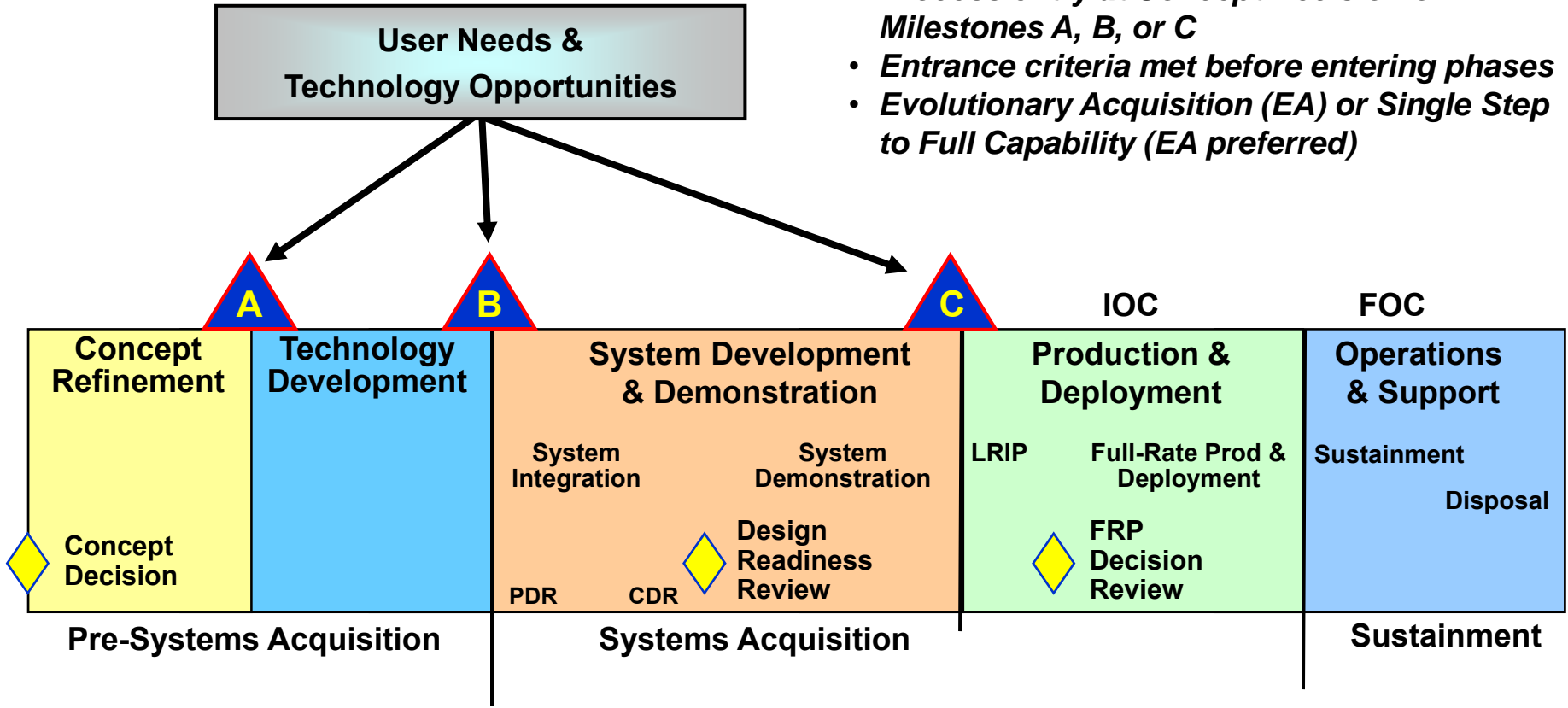
# First Acquisition Framework in 1971



- **Decision points: 3**
- **Phases: 3**
- **Milestone documents: 1 (Decision Coordinating Paper (DCP))**

# The Defense Acquisition Framework 2003

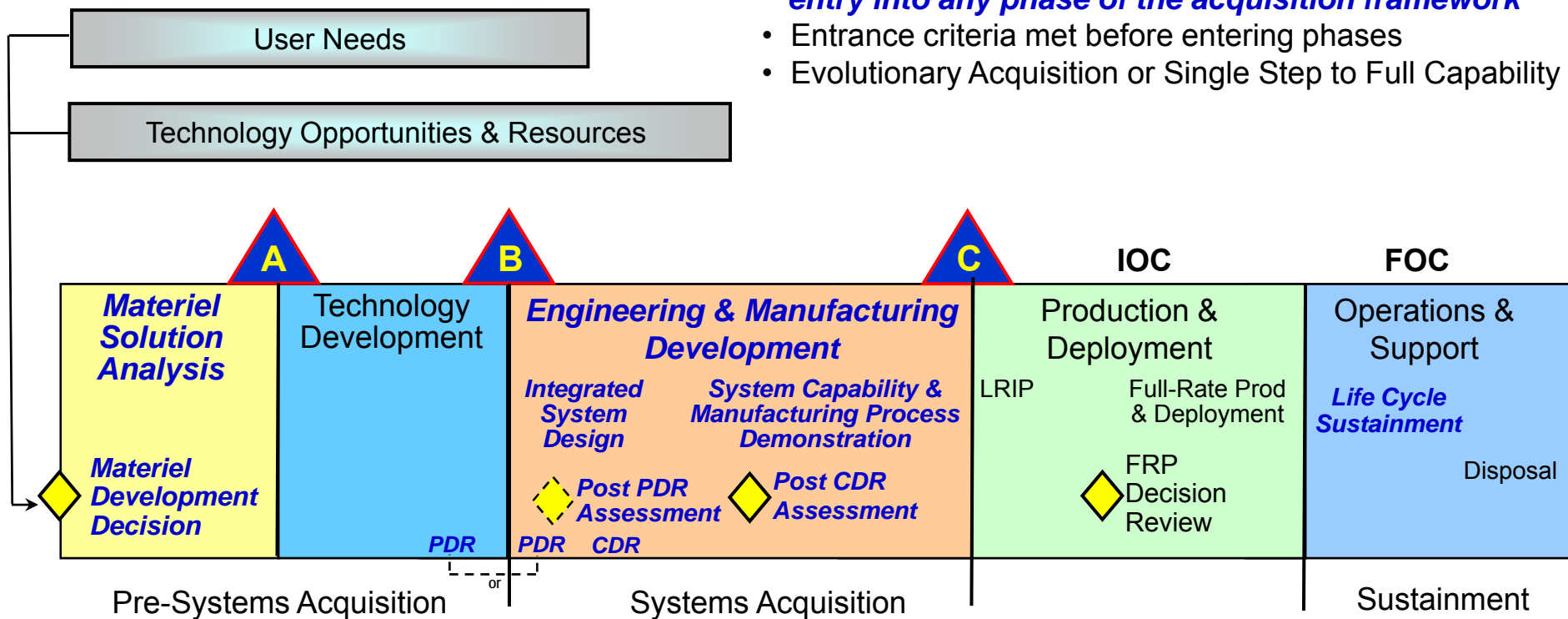
- *Process entry at Concept Decision or Milestones A, B, or C*
- *Entrance criteria met before entering phases*
- *Evolutionary Acquisition (EA) or Single Step to Full Capability (EA preferred)*



- **Decision points: 6**
- **Phases: 5**
- **Milestone documents: 30+**

# The Defense Acquisition Management System 2008

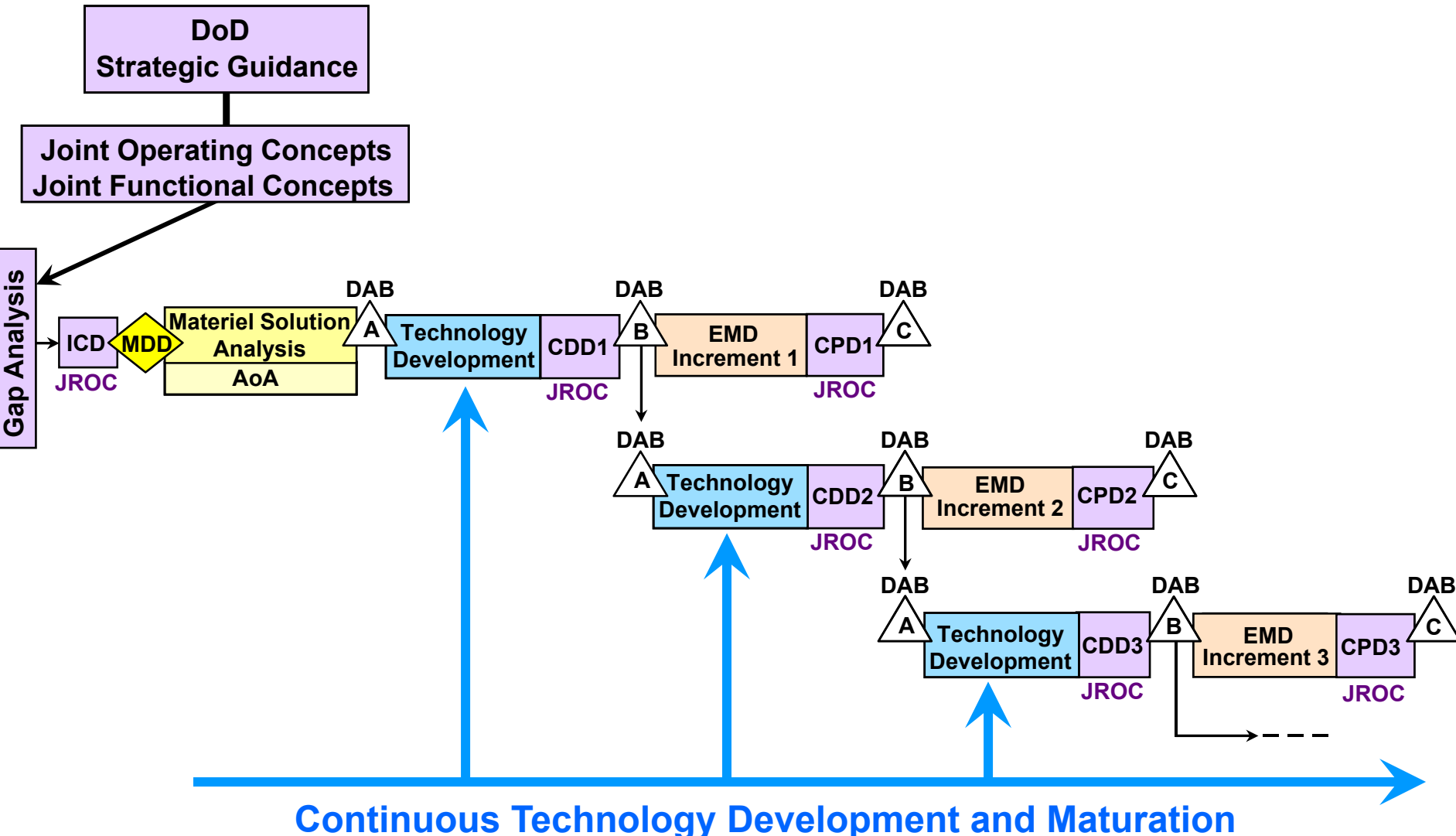
- *The Materiel Development Decision precedes entry into any phase of the acquisition framework*
- Entrance criteria met before entering phases
- Evolutionary Acquisition or Single Step to Full Capability



- Decision points: 6
- Phases: 5
- Milestone documents: **40+**

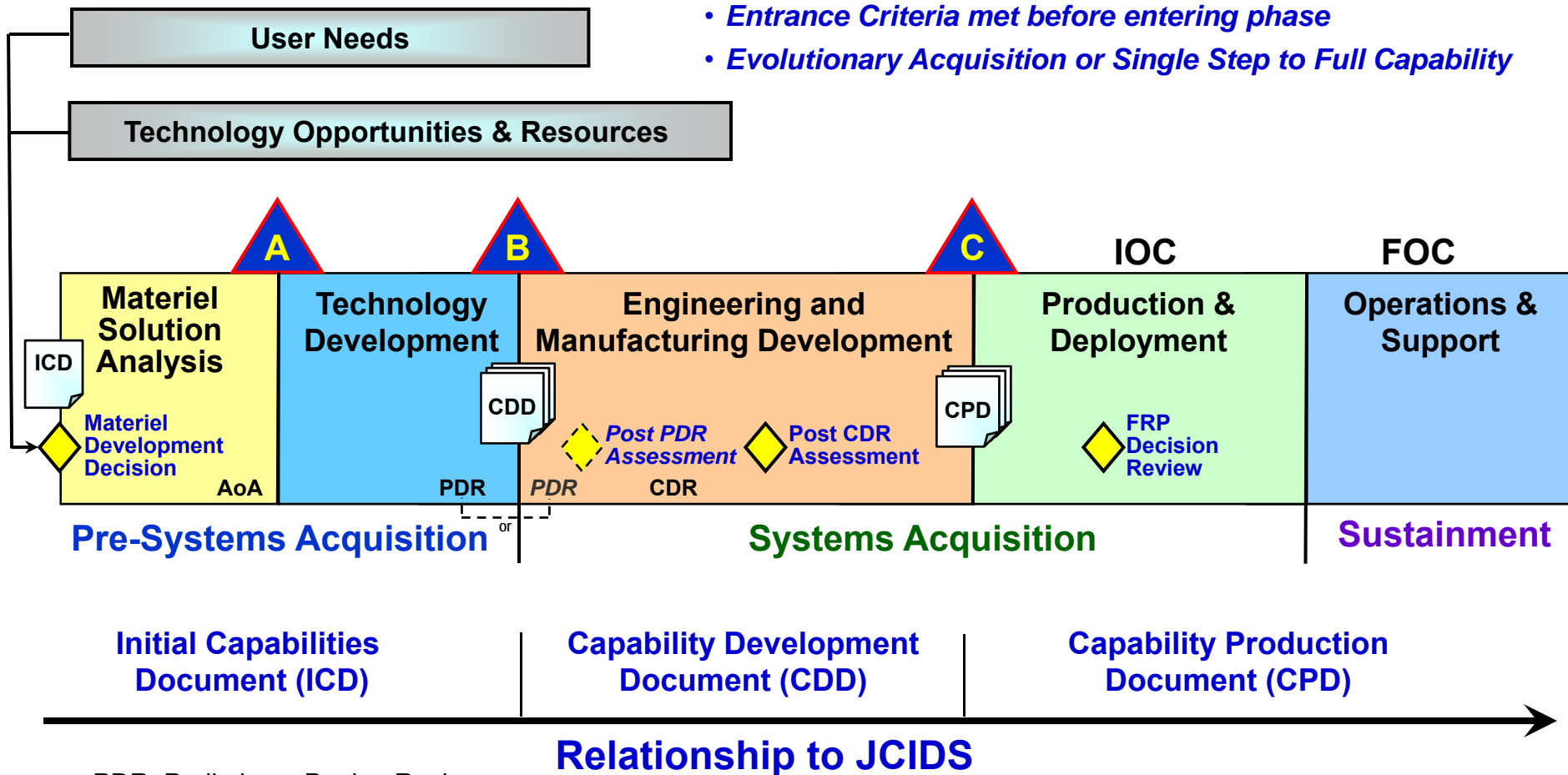
New in *bold blue italics*

# Evolutionary Approach



# The Defense Acquisition Management System

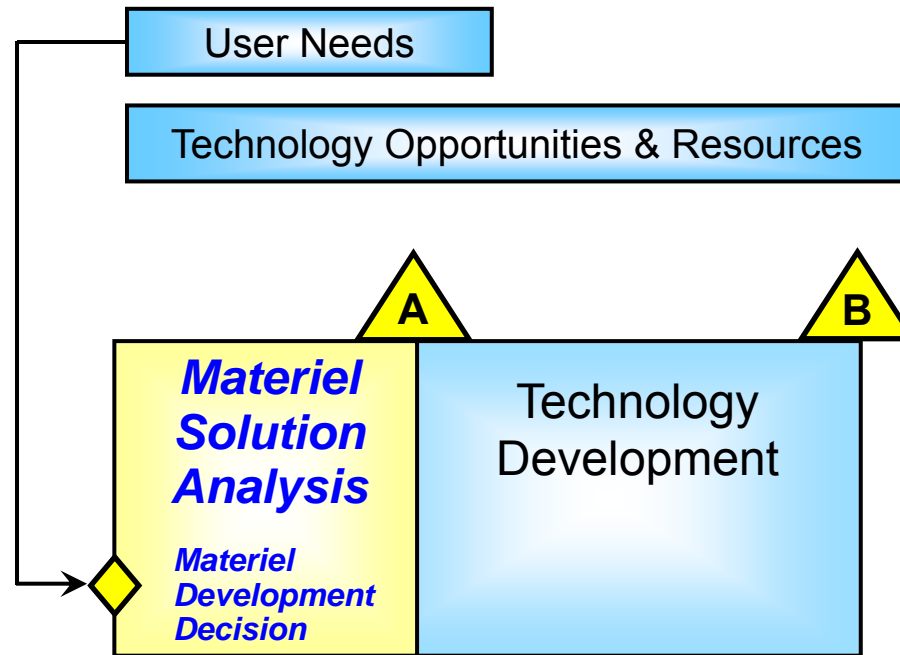
- *The Materiel Development Decision precedes entry into any phase of the acquisition management system*
- *Entrance Criteria met before entering phase*
- *Evolutionary Acquisition or Single Step to Full Capability*



PDR: Preliminary Design Review  
 CDR: Critical Design Review  
 FRP: Full Rate Production

IOC: Initial Operational Capability  
 FOC: Full Operational Capability

# Pre-Systems Acquisition



## User Need

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

## Technology Opportunities

- *All sources foreign & domestic*
- *Small Business Innovative Research (SBIR) Program*
- *Technology Projects: JCTDs, Coalition Warfare Program, Defense Acquisition Challenge Program, etc...*

## **MDA:**

- *Approves AoA Study Guidance*
- *Determines acquisition phase of entry*
- *Identifies initial review milestone*
- Designates Lead DoD Component
- Approves Acquisition Decision Memorandum(ADM)

## **Regulatory Requirements**

- Initial Capabilities Document (ICD)
- *AoA Study Guidance (AoA Plan due immediately following the MDD)*

# Material Solution Analysis

**Purpose:** *Assess potential materiel solutions*



- **Enter:** Approved ICD and study guidance for conducting AoA.
- **Activities:** Conduct AoA, develop Technology Development Strategy (TDS) & *draft CDD*
- **Guided by:** ICD and AoA Plan
- **Exit:** *Materiel solution to capability need in ICD recommended by lead Component conducting AoA*, and phase-specific exit criteria have been satisfied

New terms/requirements in *bold blue italics*

# Milestone A

## MDA approves:

- ***Materiel solution***
- Technology Development Strategy (TDS)
- Exit criteria for next phase
- ***Milestone A Certification (10 USC 2366a)***
- Acquisition Decision Memorandum (ADM)

## Statutory & Regulatory Requirements

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>• Acquisition Decision Memorandum (ADM)</li> <li>• Analysis of Alternatives (AoA)</li> <li>• Acquisition Information Assurance Strategy</li> <li>• Clinger-Cohen Act (CCA) Compliance</li> <li>• Clinger-Cohen Act Certification (MAIS)</li> <li>• CIO Confirmation of CCA Compliance for all non-MAIS IT</li> <li>• Consideration of Technology Issues</li> <li>• <b><i>Component Cost Estimate (CCE)</i></b></li> <li>• Economic Analysis (MAIS)</li> <li>• Exit Criteria</li> </ul> | <ul style="list-style-type: none"> <li>• Exit Criteria</li> <li>• Initial Capabilities Document (ICD)</li> <li>• <b><i>Item Unique Identification (IIUD) Implementation Plan</i></b></li> <li>• <b><i>Life Cycle Signature Support Plan</i></b></li> <li>• Market Research</li> <li>• <b><i>MDA Program Certification</i></b></li> <li>• Program Protection Plan (PPP)</li> <li>• <b><i>Systems Engineering Plan (SEP)</i></b></li> <li>• Technology Development Strategy (TDS)</li> <li>• Test &amp; Evaluation Strategy (TES)</li> </ul> |
|---|--|

New terms/requirements in ***bold blue italics***

# Technology Development



**Purpose:** Reduce Technology Risk, *Demonstrate Critical Technology on Prototypes, Complete Preliminary Design*

**Enter:** MDA *approved materiel solution* and TDS; *funding for TD phase activities*

**Activities:** *Competitive prototyping; Develop RAM strategy; conduct Preliminary Design Review (PDR)*

**Guided by:** ICD & TDS *and supported by SE planning*

**Exit:** Affordable increment of military-useful capability identified; technology demonstrated in relevant environment; manufacturing risks identified; *PDR conducted for candidate solutions*; system or increment ready for production within short time frame (normally less than 5 years *for weapon systems*)

New terms/requirements in *bold blue italics*

# Milestone B

## MDA approves:

- Program Initiation (for most programs)
- Entry into ***EMD***
- Acquisition Strategy
- Acquisition Program Baseline
- LRIP quantities
- Exit criteria for next phase
- ***Type of Contract***
- ***Milestone B Certification (10 USC 2366b)***
- ADM

New terms/requirements in ***bold blue italics***

# Engineering & Manufacturing Development

**Purpose:** Develop a system or increment of capability, develop an affordable manufacturing process, *minimize logistics footprint*

**B**

**C**

## Engineering and Manufacturing Development

*Integrated System Design*

*System Capability & Manufacturing Process Demonstration*

◆ *Post PDR Assessment*

◆ *Post CDR Assessment*

- **Enter:** Mature Technology; Approved Requirements; Full Funding in FYDP
- **Activities:** *Define System of System Functionality & Interfaces*, Complete Detailed Design, *System-Level PDR (as needed)/CDR, Establish Product Baseline*,
- **Guided by:** *CDD, Acq Strategy, SEP & TEMP*
- **Exit:** *Complete System-Level CDR and Post-CDR Assessments by MDA*

- **Enter:** *Post-CDR Assessment and Establishment of initial Product Baseline*
- **Activities:** Developmental Testing (DT) Assesses Progress Against Technical Parameters, and Operational Assessments (OA) Against CDD
- **Guided by:** *CDD, Acq Strategy, SEP & TEMP*
- **Exit:** System Demonstrated in Intended Environment using *production-representative articles; Manufacturing Processes Demonstrated*; Meets Exit Criteria and MS C Entrance Requirements

# Milestone B: Statutory and Regulatory Requirements

All programs except where noted (see encl. 4, DoDI 500.02)

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|--|---|
| <ul style="list-style-type: none"> <li>• Acquisition Decision Memorandum (ADM)</li> <li>• Analysis of Alternatives (AoA) (update)</li> <li>• Acquisition Strategy</li> <li>• Affordability Assessment</li> <li>• Acquisition Program Baseline</li> <li>• Acquisition Information Assurance Strategy</li> <li>• <b>Alternate Live Fire T&amp;E Plan</b></li> <li>• Benefit Analysis &amp; Determination</li> <li>• Capability Development Document (CDD)</li> <li>• Clinger-Cohen Act (CCA) Compliance</li> <li>• Clinger-Cohen Act Certification (MAIS)</li> <li>• CIO Confirmation of CCA Compliance (non-MAIS IT)</li> <li>• Consideration of Technology Issues (ACAT I &amp; II)</li> <li>• Competition Analysis</li> <li>• <b>Component Cost Estimate (CCE) (MAIS)</b></li> <li>• Cooperative Opportunities</li> <li>• Core Logistics Analysis/Source of Repair Analysis</li> <li>• Cost Analysis Requirements Description (CARD) (MDAP &amp; MAIS)</li> <li>• <b>Corrosion Prevention Control Plan</b></li> <li>• <b>Data Management Strategy (in acquisition strategy)</b></li> <li>• Economic Analysis (MAIS)</li> <li>• Exit Criteria</li> <li>• Initial Capabilities Document (ICD)</li> <li>• Independent Cost Estimate (ACAT I)</li> <li>• Independent Technology Readiness Assessment (TRA) (ACAT ID)</li> </ul> | <ul style="list-style-type: none"> <li>• Information Support Plan (ISP)</li> <li>• Industrial Base Capabilities (MDAP)</li> <li>• <b>Item Unique Identification Impl Plan (SEP annex)</b></li> <li>• Live Fire T&amp;E Waiver</li> <li>• Life Cycle Sustainment Plan (LCSP)</li> <li>• <b>Life Cycle Signature Support Plan</b></li> <li>• LRIP Quantities (ACAT I &amp; II)</li> <li>• Manpower Estimate (MDAP)</li> <li>• Market Research</li> <li>• <b>MDA Program Certification</b></li> <li>• <b>MDA Assessment of compliance with Chemical, Biological, Radiological, and Nuclear Survivability Requirements</b></li> <li>• Net-Centric Data Strategy (in ISP)</li> <li>• Operational Test Agency OT&amp;E Report</li> <li>• <b>Preliminary Design Review Report</b></li> <li>• <b>PM's Developmental Test Report</b></li> <li>• Program Protection Plan (PPP)</li> <li>• Programmatic Environmental Safety &amp; Occupational Health Evaluation (PESHE)</li> <li>• <b>Replaced System Sustainment Plan (MDAP)</b></li> <li>• Selected Acquisition Report (SAR) (MDAP)</li> <li>• Spectrum Supportability Determination</li> <li>• <b>Systems Engineering Plan (SEP)</b></li> <li>• <b>System Threat Assessment Report (STAR)(ACAT I)</b></li> <li>• System Threat Assessment (ACAT II)</li> <li>• Technology Readiness Assessment (TRA)</li> <li>• Test &amp; Evaluation Master Plan (TEMP)</li> </ul> |
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New terms/requirements in **bold blue italics**

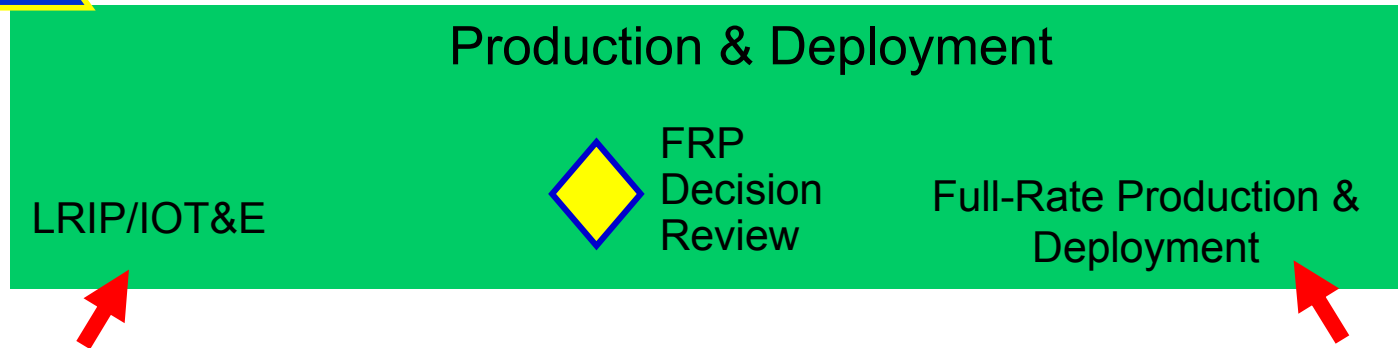
## **MDA Approves:**

- **Updated Acquisition Strategy and Acquisition Program Baseline**
- **Entry into LRIP for systems that require a LRIP, into production or procurement for systems that do not require LRIP, or into limited deployment for MAIS programs or software intensive systems with no production components**
- **Exit criteria for LRIP if appropriate**
- **Acquisition Decision Memorandum**

# Production & Deployment



**Purpose:** Achieve an operational Capability that satisfies mission needs



- **Enter:** Acceptable performance in DT & OA; mature software; no significant manufacturing risks; approved CPD; *refined integrated architecture*; acceptable interoperability and operational supportability; demonstration of affordability; fully funded; phased for rapid deployment.
- **Activities:** IOT&E, LFT&E and Interoperability Testing of Production-Representative Articles; *IOC possible*
- **Guided by:** CPD, TEMP
- **Exit:** System Operationally Effective, Suitable and Ready for Full-Rate Production
- **Enter:** Beyond LRIP & LFT&E Reports (OSD T&E/LFT&E programs) Submitted to Congress
- **Activities:** Full-Rate Production; Fielding and Support of Fielded Systems; IOC/FOC
- **Guided by:** Acq Strategy & Life Cycle Sustainment Plan
- **Exit:** Full Operational Capability; Deployment Complete

# Milestone C: Statutory and Regulatory Requirements

All programs except where noted (see encl. 4, DoDI 500.02)

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|---|---|
| <ul style="list-style-type: none"> <li>• Acquisition Decision Memorandum (ADM)</li> <li>• Analysis of Alternatives (AoA) (update)</li> <li>• Acquisition Strategy</li> <li>• Affordability Assessment</li> <li>• Acquisition Program Baseline</li> <li>• Acquisition Information Assurance Strategy</li> <li>• Benefit Analysis &amp; Determination</li> <li>• Capability Production Document (CPD)</li> <li>• Clinger-Cohen Act (CCA) Compliance</li> <li>• Clinger-Cohen Act Certification (MAIS)</li> <li>• CIO Confirmation of CCA Compliance (non-MAIS IT)</li> <li>• Consideration of Technology Issues (ACAT I &amp; II)</li> <li>• Competition Analysis</li> <li>• <b><i>Component Cost Estimate (CCE)</i></b></li> <li>• Cooperative Opportunities</li> <li>• Core Logistics Analysis/Source of Repair Analysis</li> <li>• Cost Analysis Requirements Description (CARD) (MDAP &amp; MAIS)</li> <li>• <b><i>Corrosion Prevention Control Plan</i></b></li> <li>• <b><i>Data Management Strategy (in acquisition strategy)</i></b></li> <li>• Exit Criteria</li> <li>• Initial Capabilities Document (ICD) (if program initiation)</li> <li>• Independent Cost Estimate (ACAT I)</li> </ul> | <ul style="list-style-type: none"> <li>• Independent Technology Readiness Assessment (TRA) (ACAT ID)</li> <li>• Information Support Plan (ISP)</li> <li>• Industrial Base Capabilities (MDAP)</li> <li>• <b><i>Item Unique Identification Plan (SEP annex)</i></b></li> <li>• Life Cycle Sustainment Plan (LCSP)</li> <li>• <b><i>Life Cycle Signature Support Plan</i></b></li> <li>• Manpower Estimate (MDAP)</li> <li>• MDA Program Certification (if program initiation)</li> <li>• <b><i>Military Equipment Validation (in acquisition strategy)</i></b></li> <li>• Net-Centric Data Strategy (in ISP)</li> <li>• Operational Test Agency OT&amp;E Report</li> <li>• <b><i>PM's Developmental Test Report</i></b></li> <li>• Program Protection Plan (PPP)</li> <li>• Programmatic Environmental Safety &amp; Occupational Health Evaluation (PESHE)</li> <li>• Selected Acquisition Report (SAR) MDAP (if rebaselined)</li> <li>• Spectrum Supportability Determination</li> <li>• <b><i>Systems Engineering Plan (SEP)</i></b></li> <li>• <b><i>System Threat Assessment Report (STAR)(ACAT I)</i></b></li> <li>• System Threat Assessment (ACAT II)</li> <li>• Technology Readiness Assessment (TRA)</li> <li>• Test &amp; Evaluation Master Plan (TEMP)</li> </ul> |
|---|---|

New terms/requirements in ***bold blue italics***

## **MDA Approves:**

- **Full-rate production**
- **Updated Acquisition Strategy**
- **Updated Acquisition Program Baseline**
- **Exit criteria, if appropriate**
- **Provisions for evaluation for post-deployment performance**
- **Acquisition Decision Memorandum (ADM)**

# FRPDR Statutory and Regulatory Requirements

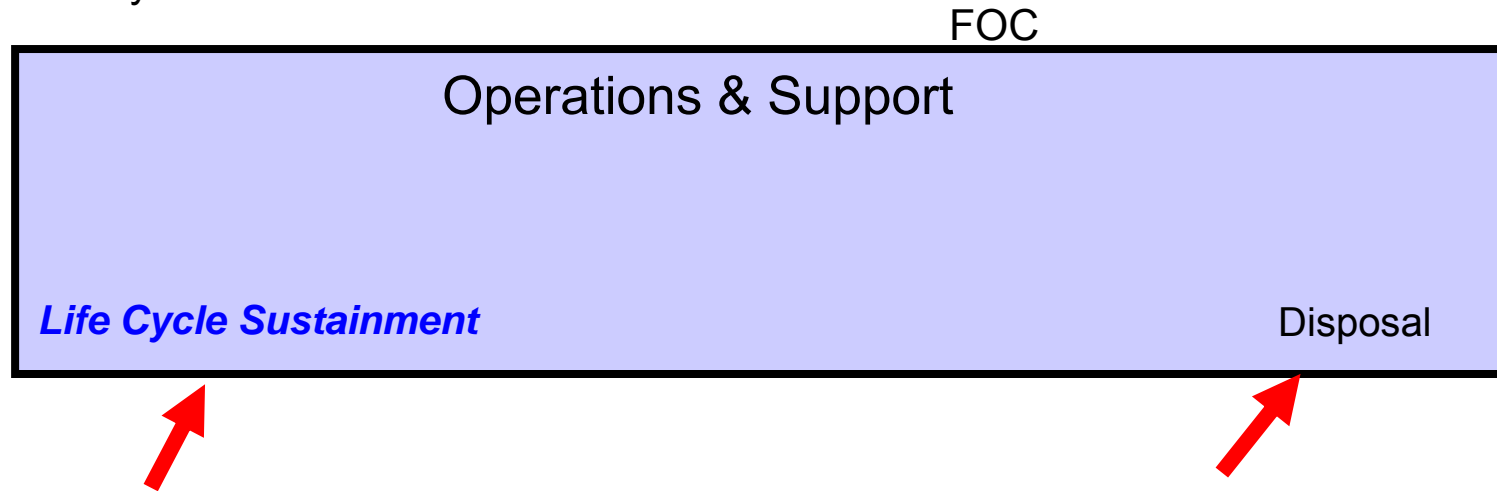
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|---|---|
| <ul style="list-style-type: none"> <li>• Acquisition Decision Memorandum (ADM)</li> <li>• Analysis of Alternatives (AoA) (AIS only)</li> <li>• Acquisition Strategy</li> <li>• Acquisition Program Baseline</li> <li>• Acquisition Information Assurance Strategy</li> <li>• Beyond LRIP Report (DOT&amp;E T&amp;E Oversight Programs)</li> <li>• Clinger-Cohen Act (CCA) Compliance</li> <li>• Clinger-Cohen Act Certification (MAIS) CIO</li> <li>• Confirmation of CCA Compliance (all non-MAIS IT)</li> <li>• <b><i>Component Cost Estimate (CCE)</i></b></li> <li>• Cost Analysis Requirements Description (CARD) (MDAP &amp; MAIS)</li> <li>• <b><i>Data Management Strategy (part of Acq Strategy)</i></b></li> <li>• Economic Analysis</li> </ul> | <ul style="list-style-type: none"> <li>• Exit Criteria</li> <li>• IT and NSS Joint Interoperability Test Certification (all IT incl NSS)</li> <li>• IOT&amp;E Completed ACAT I and II (conventional weapons systems for use in combat)</li> <li>• Independent Cost Estimate (ACAT I) (if MDA requests)</li> <li>• <b><i>Life Cycle Sustainment Plan (LCSP)</i></b></li> <li>• Live Fire T&amp;E Report (OSD LFT&amp;E Programs)</li> <li>• Manpower Estimate (MDAP)</li> <li>• <b><i>Military Equipment Validation (part of Acq Strategy)</i></b></li> <li>• Operational Test Agency OT&amp;E Report</li> <li>• Post Implementation Review</li> <li>• Programmatic Environmental Safety &amp; Occupational Health Evaluation (PESHE)</li> <li>• Test &amp; Evaluation Master Plan (TEMP)</li> </ul> |
|---|---|

For AIS systems, FRPDR is the Full Deployment Decision Review

New terms/requirements in ***bold blue italics***

# Operations & Support

**Purpose:** Execute a support program that meets materiel readiness and operational support performance requirements, and sustains the system in the most cost-effective manner over its total life cycle.



- **Entrance:** Approved CPD; *approved LCSP; successful FRP Decision*
- **Activities:** *Performance-Based Life-Cycle Product Support (PBL)* planning, development, implementation, and management; initiate system modifications as necessary; continuing reviews of sustainment strategies
- **Guided by:** Acquisition Strategy/LCSP

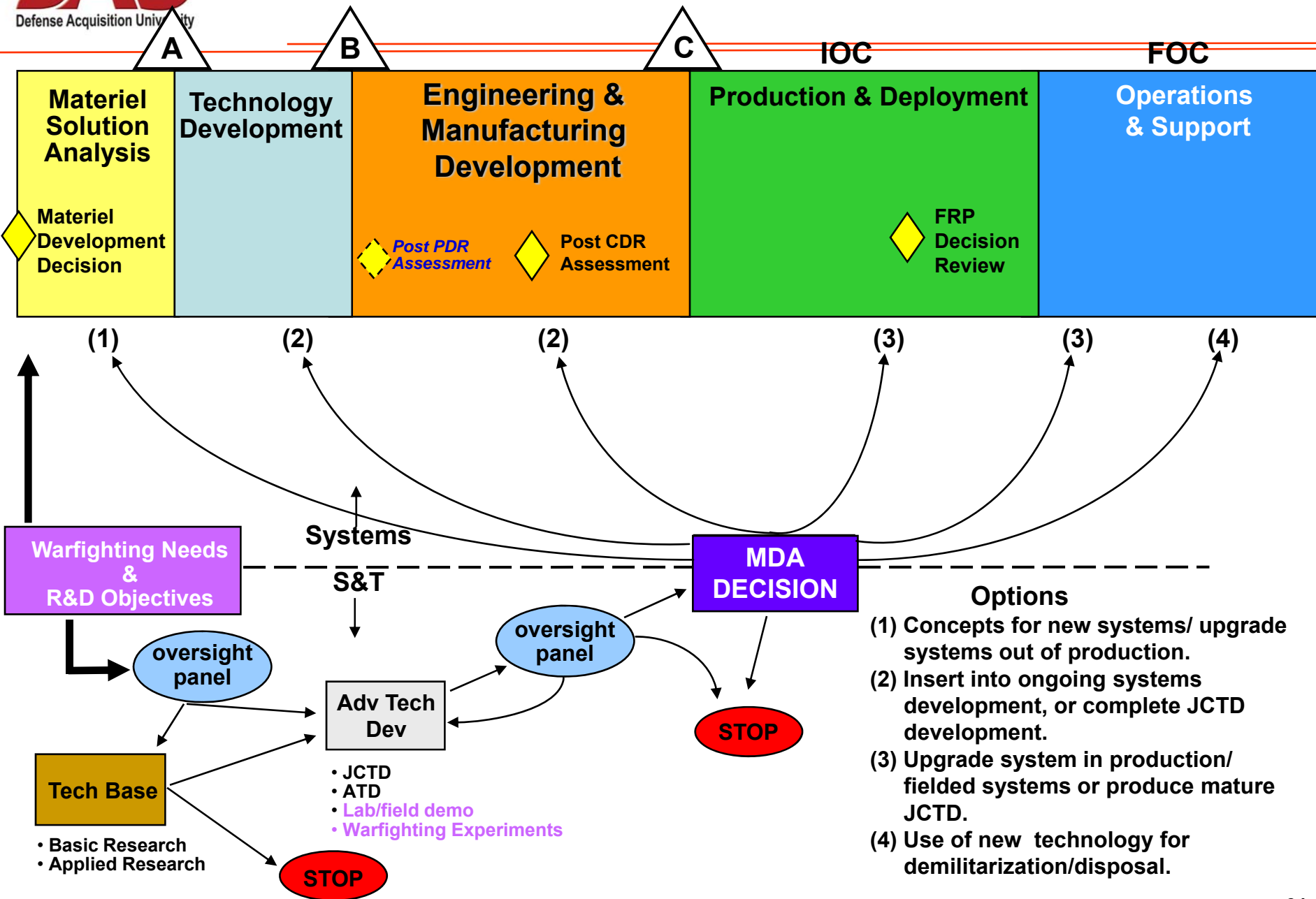
- **Activities:** Demilitarize and Dispose of Systems IAW Legal and Regulatory Requirements, Particularly Environmental Considerations and Explosives Safety
- **Guided by:** Programmatic Environment, Safety, and Occupational Health Evaluation (PESHE)

New terms/requirements in *bold blue italics*

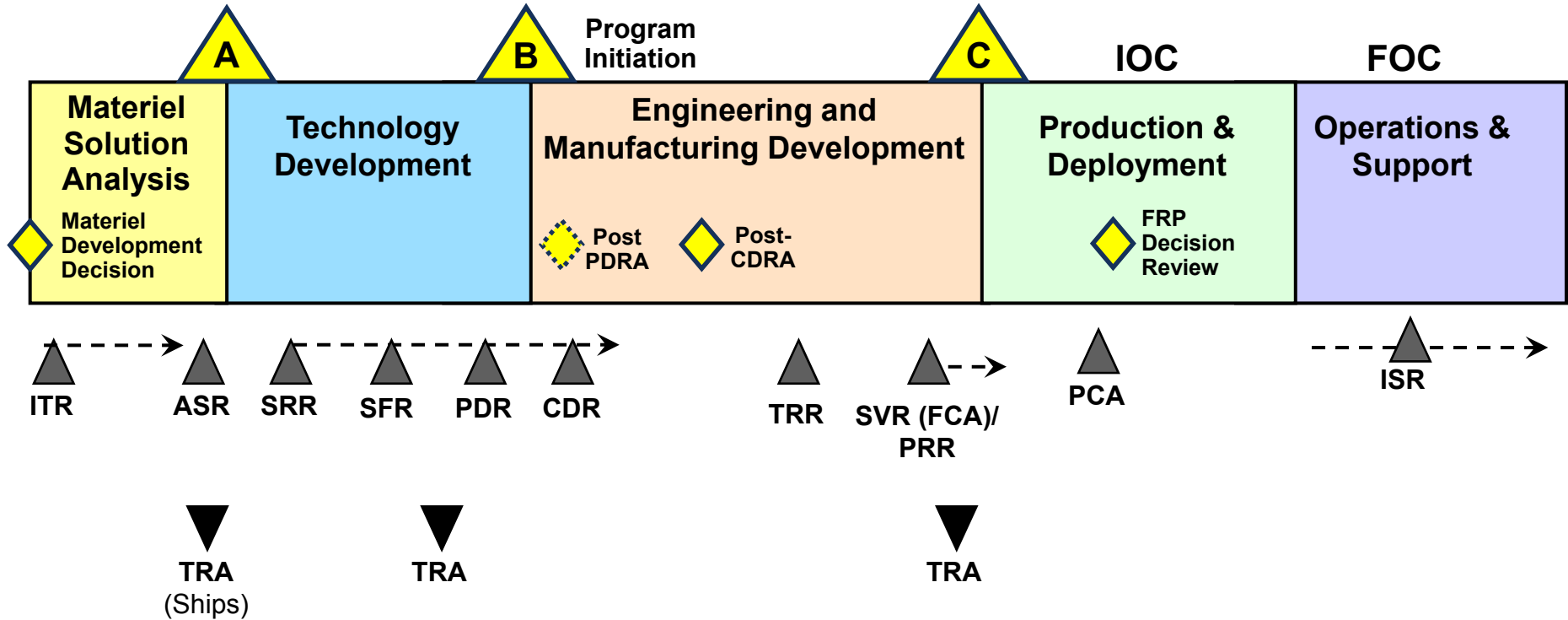


# Backups

# S&T Linkage to the Acquisition Management System



# Systems Engineering Technical Reviews

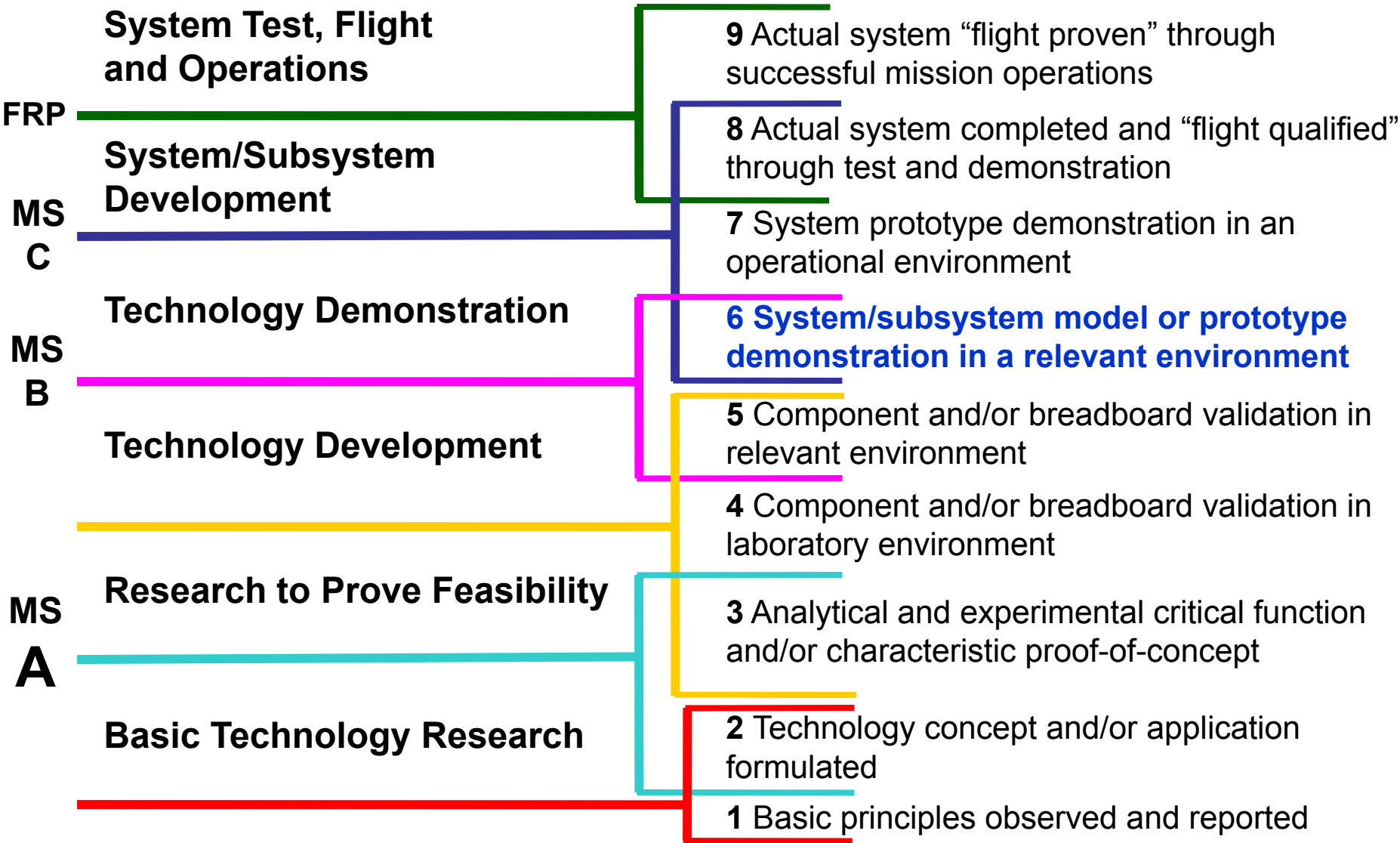


- Initial Technical Review (ITR)
- Alternative Systems Review (ASR)
- Systems Requirements Review (SRR)
- System Functional Review (SFR)
- Preliminary Design Review (PDR)
- Critical Design Review (CDR)
- Post-PDR Assessment (Post-PDRA)

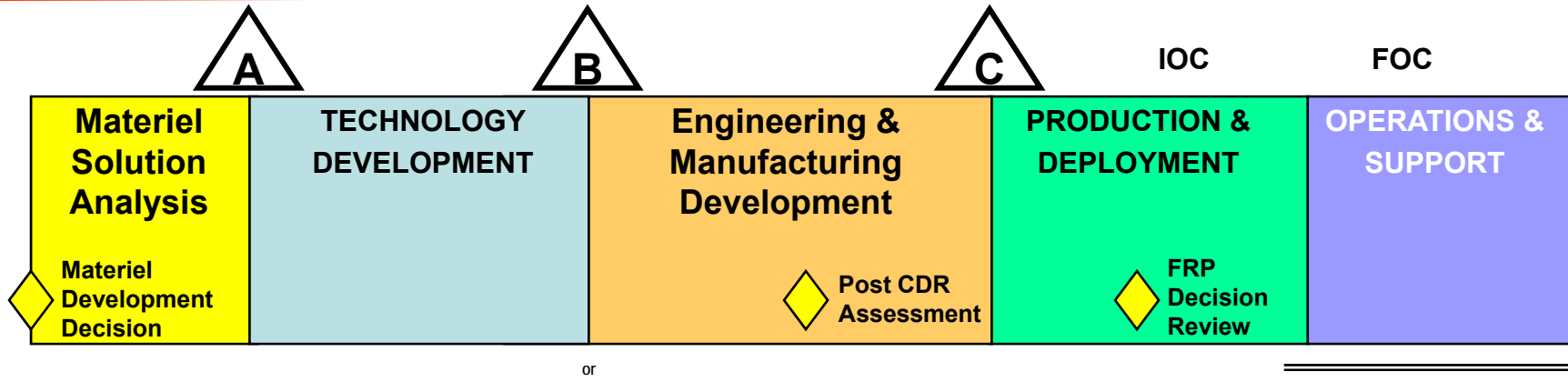
- Post-CDR Assessment (PCDRA)
- Test Readiness Review (TRR)
- System Verification Review (SVR)
- Functional Configuration Audit (FCA)
- Production Readiness Review (PDR)
- Operational Test Readiness Review (OTRR)
- Physical Configuration Audit (PCA)

- Technology Readiness Assessment (TRA)
- In-Service Review (ISR)

# Technology Readiness Levels



# Technology and Manufacturing Readiness



or

<b>TRLs 1-3</b> Analytical/ Experimental Critical Function/ Characteristic Proof of Concept	<b>TRL 4</b> Component And/or Breadboard Validation In a Laboratory Environment	<b>TRL 5</b> Component And/or Breadboard Validation In a Relevant Environment	<b>TRL 6</b> System/ Subsystem Model or Prototype Demonstrated In a Relevant Environment	<b>TRL 7</b> System Prototype Demonstrated In an Operational Environment	<b>TRL 8</b> Actual System Completed Qualified Through Test and Demonstration	<b>TRL 9</b> Actual System "Mission Proven" Through Successful Operations	
<b>MRLs 1-3</b> Manufacturing Feasibility Assessed. Concepts defined/ developed	<b>MRL 4</b> Capability to produce Technology In Lab Environment. Manufacturing Risks Identified <b>Manufacturing Cost Drivers Identified</b>	<b>MRL 5</b> Capability to Produce Prototype Components <b>Cost Model Constructed</b>	<b>MRL 6</b> Capability to Produce System/ Subsystem Prototypes <b>Detailed Cost Analysis Complete</b>	<b>MRL 7</b> Capability to Produce Systems, Subsystems Or Components in a Production Representative Environment <b>Cost Model Updated To System Level Unit Cost Reduction Efforts Underway</b>	<b>MRL 8</b> Pilot Line Capability Demonstrated. Ready for LRIP <b>Engineering Cost Model Validated</b>	<b>MRL 9</b> Low Rate Production Demonstrated. Capability In Place for FRP <b>LRIP Cost Goals Met Learning Curve Validated</b>	<b>MRL 10</b> Full Rate Production Demonstrated. Lean Production Practices In Place <b>FRP Unit Cost Goals Met</b>

Technology Readiness Levels  
Defense Acquisition Guidebook para. 10.5.2

Manufacturing Readiness Levels  
*Not yet endorsed but can be very useful*  
Draft MRL Deskbook May 2008

Section 2366a of Title 10, United States Code, requires certification that: the technology in the program has been demonstrated in a relevant environment to enter Milestone B. [TRL 6]

# Milestone A Certification

(10 USC 2366a)

*A major defense acquisition program may not receive Milestone A approval, or Key Decision Point A approval in the case of a space program, until the MDA certifies, after consultation with the JROC on matters related to program requirements and military needs—*

- (1) that the system fulfills an approved initial capabilities document;*
- (2) that the system is being executed by an entity with a relevant core competency as identified by the Secretary of Defense under section 118b of Title 10, U.S. Code;*
- (3) if the system duplicates a capability already provided by an existing system, the duplication provided by such system is necessary and appropriate; and*
- (4) that a cost estimate for the system has been submitted and that the level of resources required to develop and procure the system is consistent with the priority level assigned by the JROC*

# **Milestone B Certification**

**(10 USC 2366b)**

## **MDA Certifies at Milestone B**

- 1) Program is Affordable When Considering Unit Cost and Total Acquisition Cost During FYDP**
- 2) Program is Affordable When Considering Ability of DOD to Accomplish Program's Mission Using Alternative Systems**
- 3) Reasonable Cost and Schedule Estimates have been Developed**
- 4) Funding is Available to Execute Development and Production Through the Period Covered by the FYDP**
- 5) Appropriate Market Research has been Conducted**
- 6) DoD Completed an Analysis of Alternatives**
- 7) JROC has Accomplished Its Duties**
- 8) Technology Demonstrated in a Relevant Environment**
- 9) Program Demonstrates High Likelihood of Accomplishing Its Intended Mission**
- 10) Program Complies with all Relevant DoD Policies, Regulations, and Directives**