Defense Acquisition University

Summer Acquisition Update
DoD Instruction 5000.02

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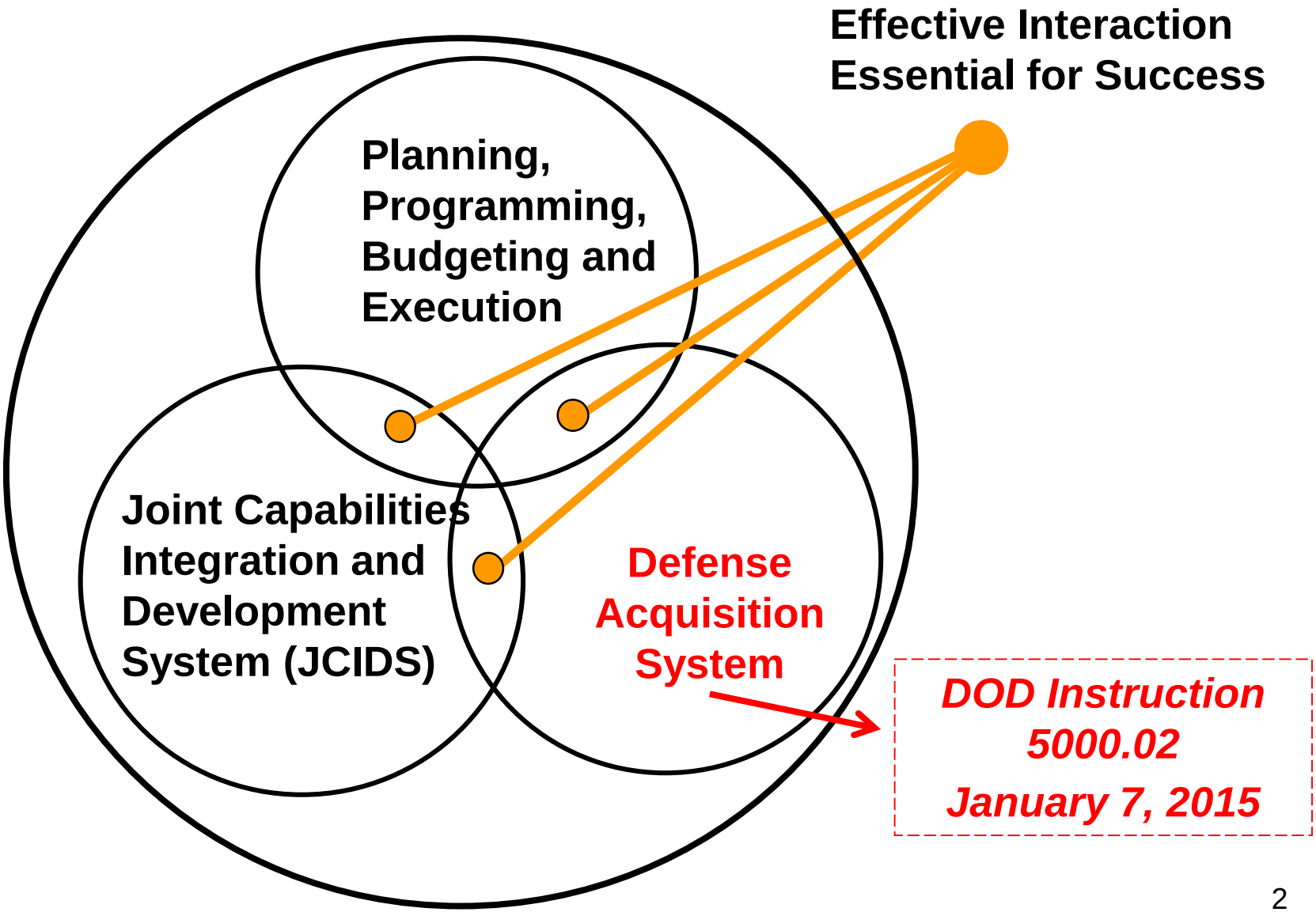
DoD Decision Support Systems



Structure

- Core Instruction
- 13 Enclosures
- **NOTE:** Acquisition of Services (2008 Enclosure 9) not yet canceled – but - will be a stand-alone DODI soon

Revised DoDI 5000.02 Structure

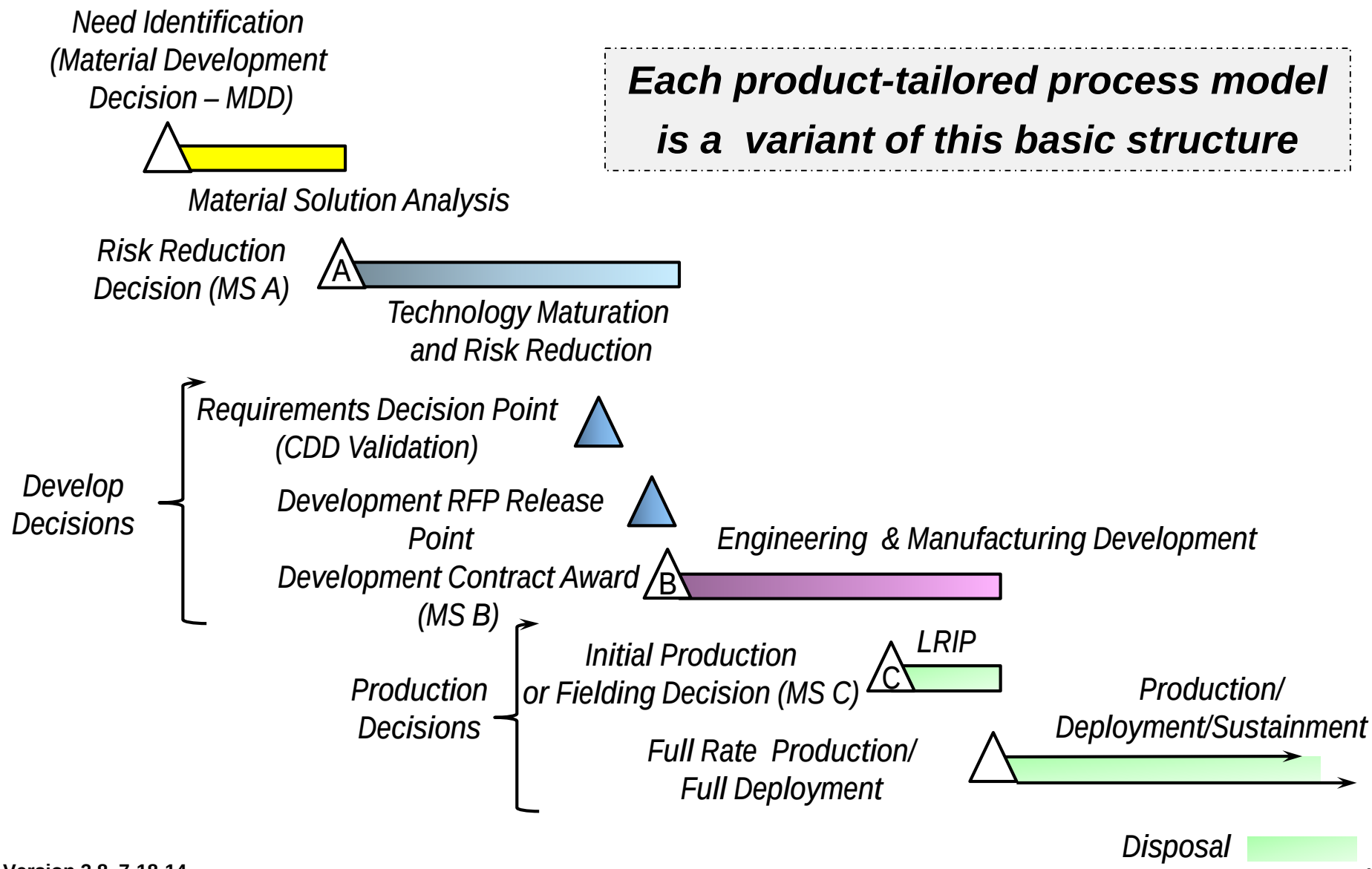
Core Instruction - Operation of the DAS

Enclosures

1. **ACATS & Compliance Requirements**
2. **Program Management**
3. **Systems Engineering**
4. **DT&E**
5. **OT and Live Fire Test and Evaluation**
6. **Life-Cycle Sustainment Planning**
7. **Human Systems Integration (HSI)**
8. **Affordability Analysis and Investment Constraints**
9. **Analysis of Alternatives**
10. **Cost Estimating and Reporting**
11. **Requirements Applicable to All Programs Containing IT**
12. **Defense Business Systems (DBS)**
13. **Rapid Fielding of Capabilities**

Generic Acquisition and Procurement Milestones and Decision Points

Each product-tailored process model is a variant of this basic structure



DoDI 5000.02 Process Flexibility

- The program structure and procedures used ***should* be tailored to the characteristics / specifics of the product being acquired,** and to the totality of circumstances associated with the program including urgency and risk factors.

- MDAs authorized to tailor the regulatory requirements and acquisition procedures to more efficiently achieve program objectives, consistent with statutory requirements and DoDD 5000.01

- When there is a strong threat-based or operationally driven need to field a capability solution in the shortest time, **MDAs are authorized to implement streamlined procedures** designed to accelerate acquisition system responsiveness

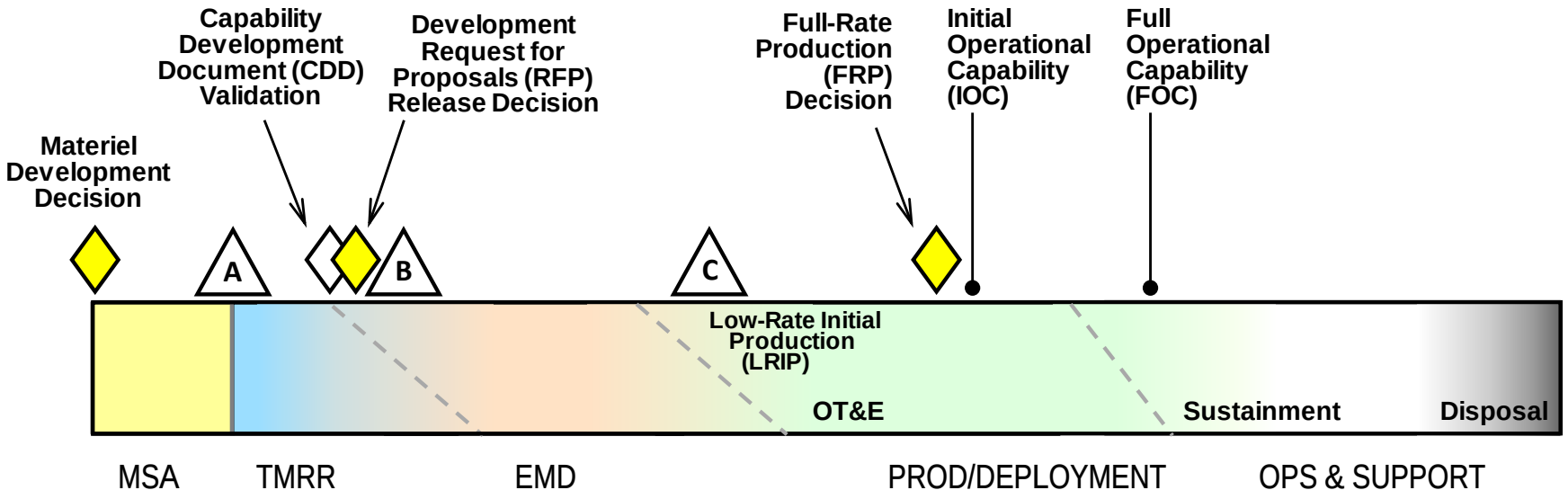
- Statutory requirements will be complied with, unless waived in accordance with relevant provisions

Product-Tailored Acquisition Models

- Model 1: Hardware Intensive Program
- Model 2: Defense Unique Software Intensive Program
- Model 3: Incrementally Fielded Software Intensive Program
- Model 4: Accelerated Acquisition Program
- Model 5: Hybrid Program A (Hardware Dominant)
- Model 6: Hybrid Program B (Software Dominant)

Model 1: Hardware (HW) Intensive Program

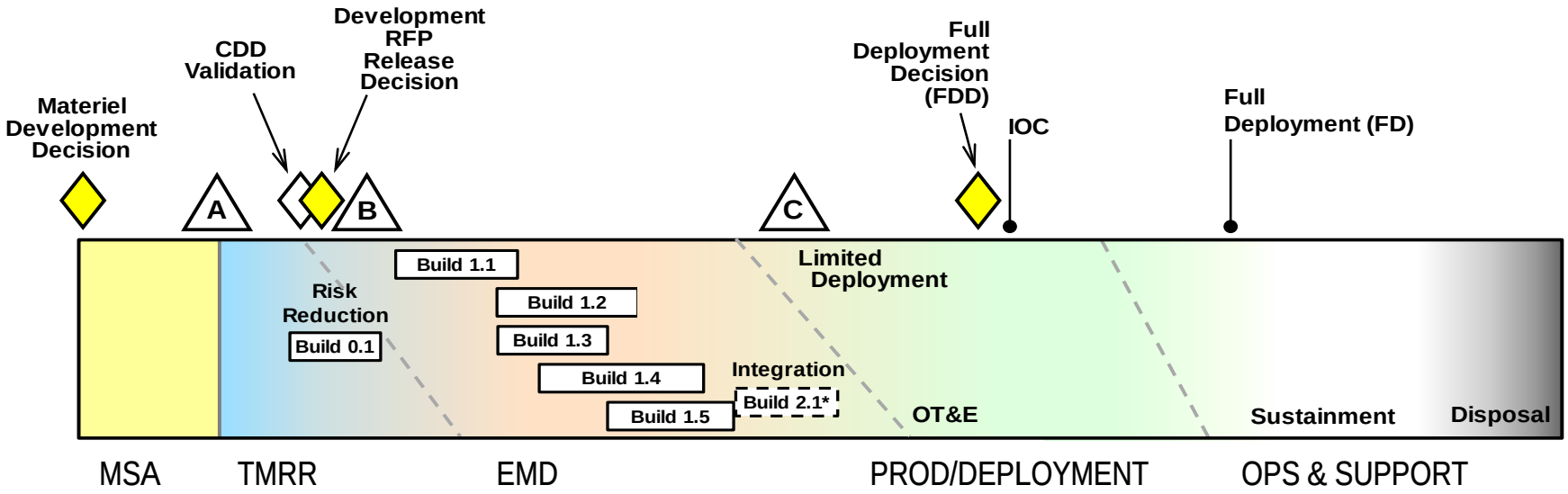
The "starting point" for most military weapon systems



- HW intensive development program such as **a major weapons platform**
  - **The "classic" model** that has existed in some form in all previous editions of DoDI 5000.02

- **NOTE:** These products almost always contain SW development resulting in some form of Hybrid Model A

Model 2: Defense Unique Software (SW) Intensive Program



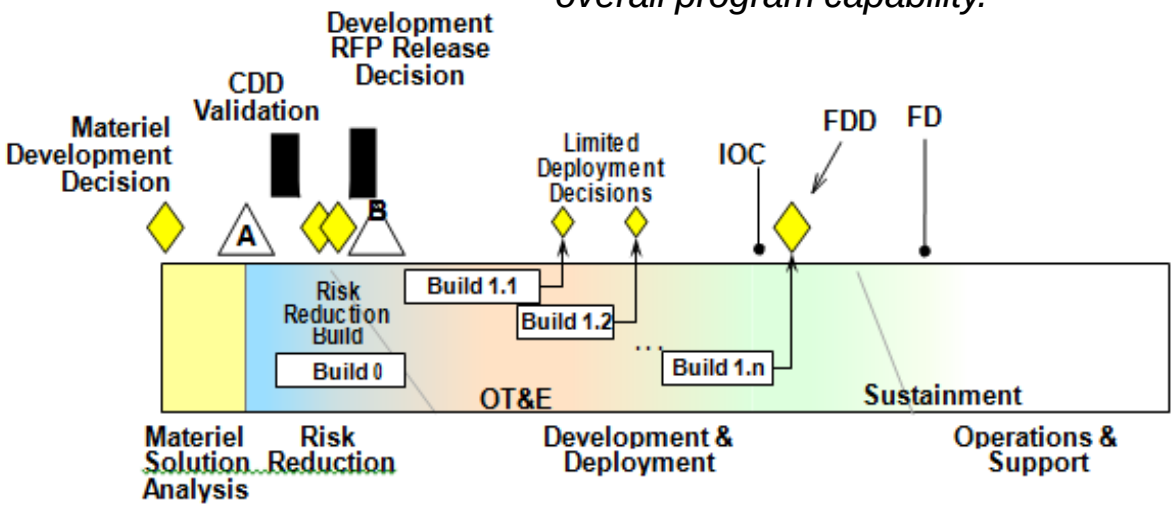
- A model **dominated by** the need to develop a complex, **defense unique, SW** program **that <u>will not be deployed until several SW builds have been completed</u>**

- **<u>The central feature of this model is the planned SW "builds"</u>** (Testable, integrated subsets of the overall capability)

- **<u>Example systems</u>** might include military Command & Control systems and significant upgrades to the combat systems found on major weapons systems such as surface combatants and tactical aircraft.

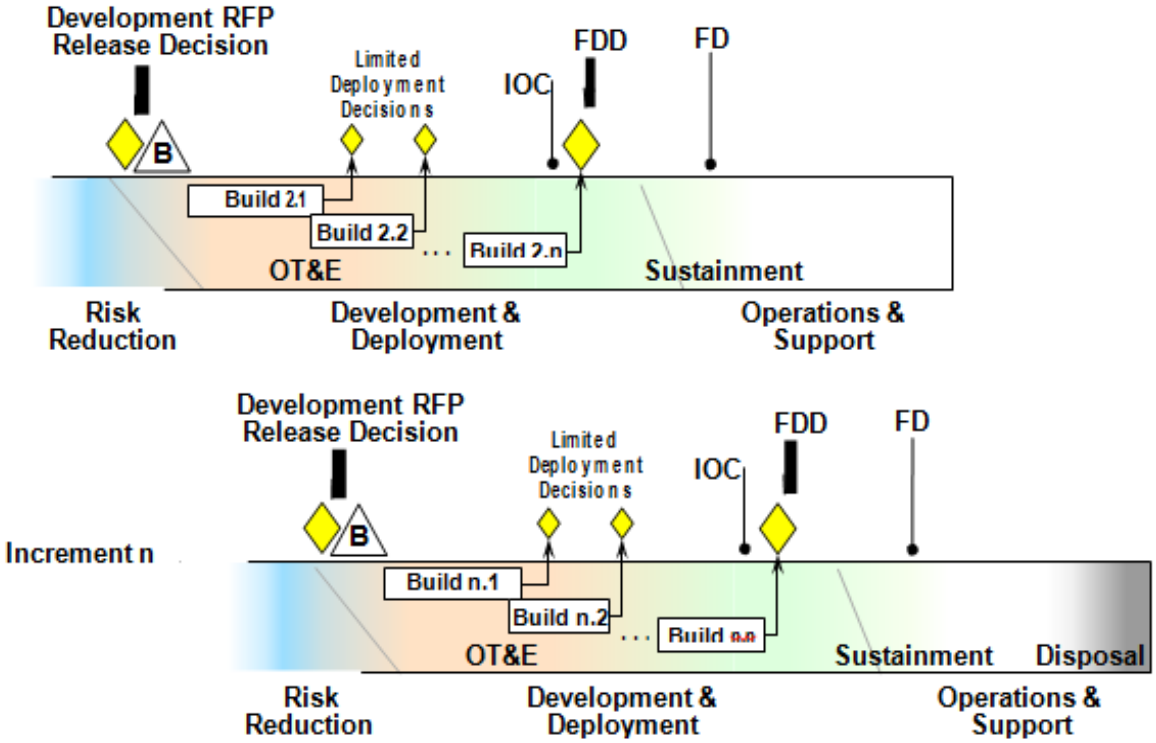
Model 3: Incrementally Deployed SW Intensive Program

Distinguished from Model 2 by rapid delivery of capability through multiple increments, each providing part of overall program capability.

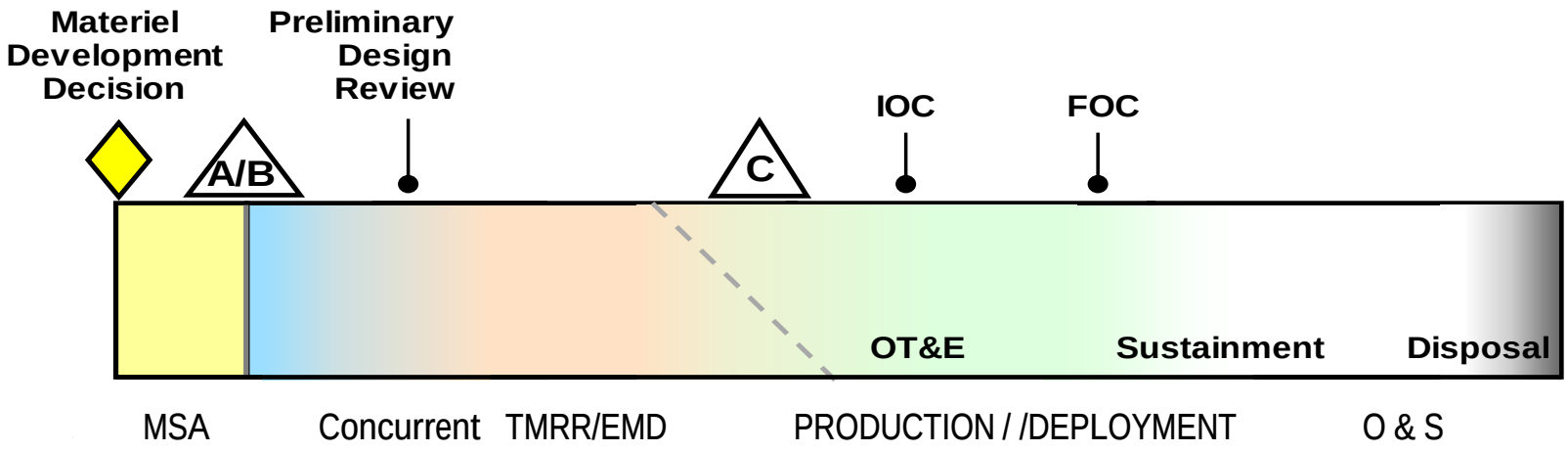


Adopted for many Defense Business Systems.

Also applies to upgrades to some C2 systems or weapons systems SW where deployment of the full capability will occur in multiple increments as new capability is developed and delivered, nominally in 1- to 2-year cycles.



Model 4: Accelerated Acquisition Program

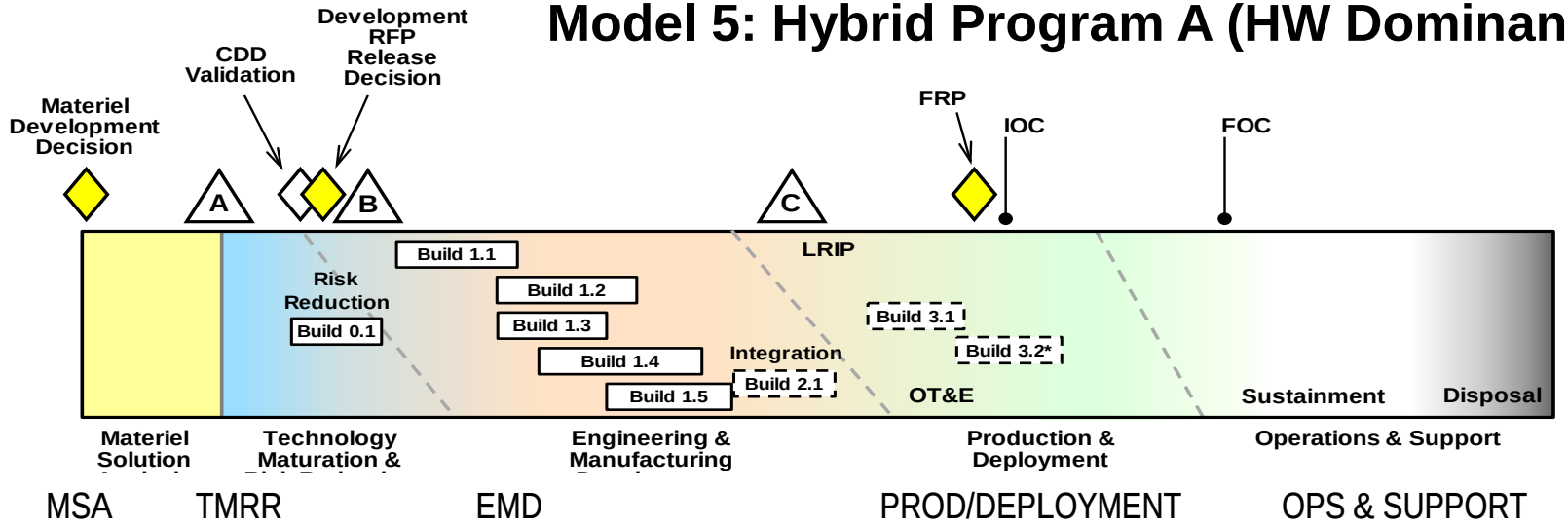


- **When schedule considerations dominate** cost and technical risk considerations

- **Compresses or eliminates phases of the process** in order to achieve a deployed capability on a compressed schedule. The model shows one example of tailoring for accelerated acquisition and many others are possible

- For products that must be developed and acquired as quickly as possible, *usually motivated by a potential adversary achieving technological surprise, and featuring a greater acceptance of program risk*

Model 5: Hybrid Program A (HW Dominant)



- **<u>Combines HW development as the basic structure with a SW intensive development</u>** that occurs simultaneously

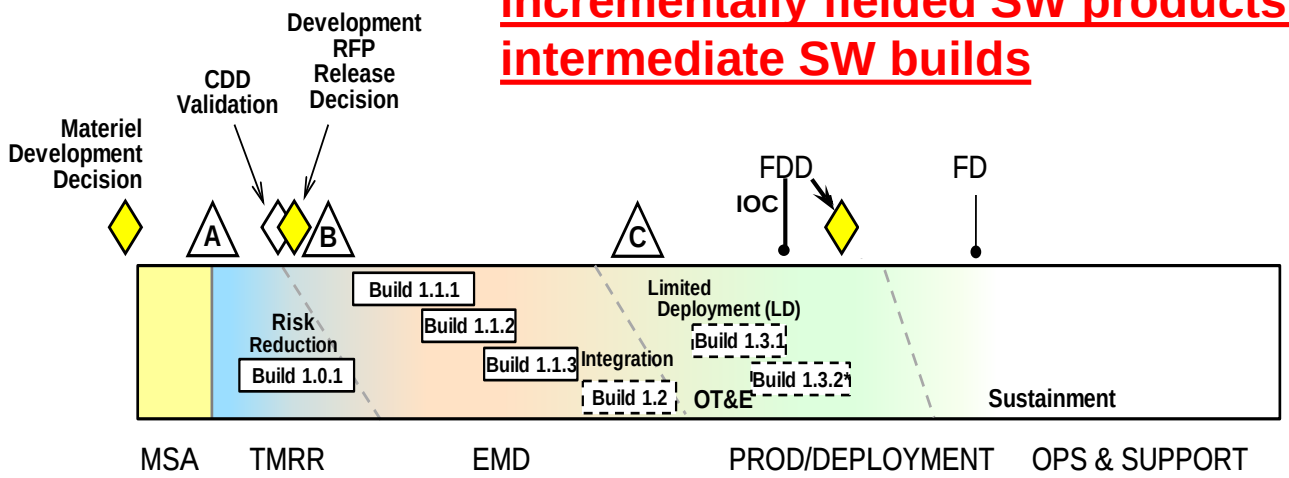
- The design, fabrication, and testing of physical prototypes may determine overall schedule, but **<u>SW development will often dictate the pace of program execution</u>** and must be tightly integrated and coordinated with HW development decision points

- **<u>SW development is a series of testable software builds</u> leading to the full capability needed to satisfy program requirements and IOC**.

- MS B and MS C decisions should include SW functional capability development maturity criteria as well as demonstrated technical performance exit criteria

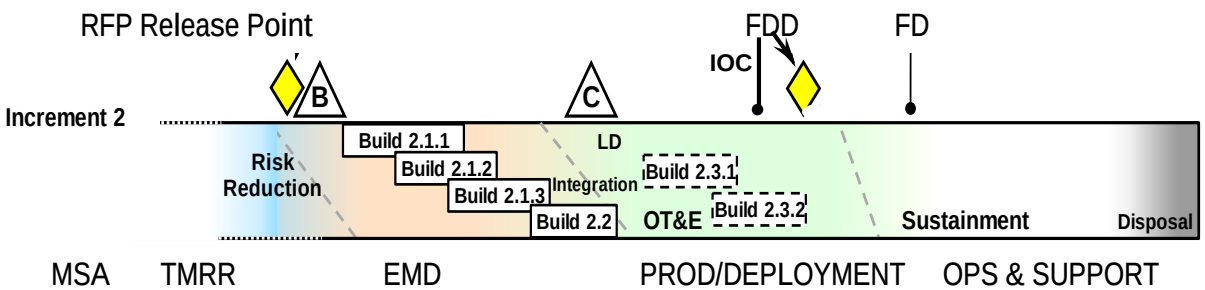
Model 6: Hybrid Program B (SW Dominant)

A SW intensive product development that includes **a mix of incrementally fielded SW products or releases that include intermediate SW builds**



Risk Management in Hybrid Models:

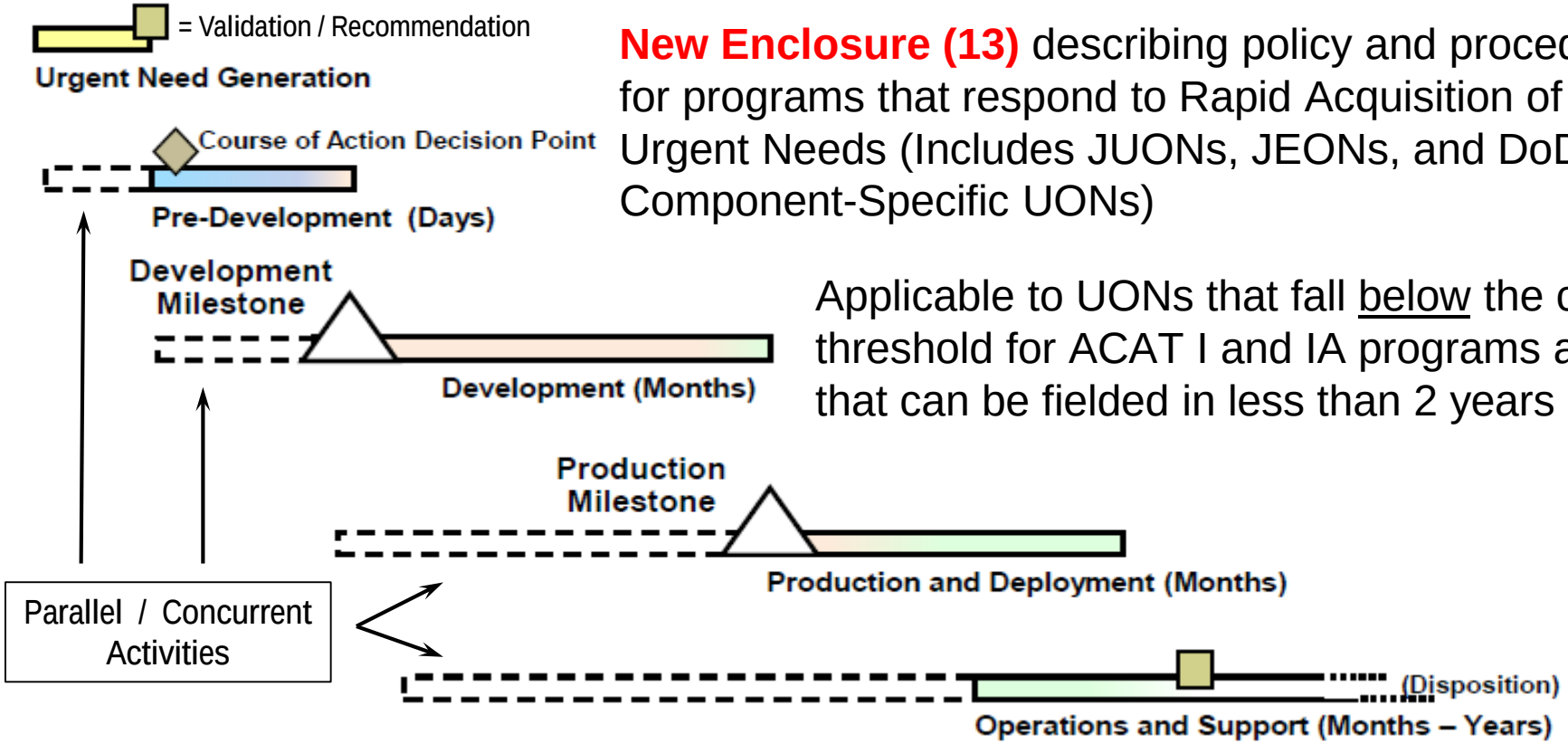
Highly integrated complex SW and HW development poses special risks to cost, schedule & performance.



Technical, cost, and schedule risks associated with HW and SW development must be managed throughout the program's life cycle and will be a topic of special interest at all decision points and milestones

Rapid Fielding of Capabilities

General, Highly Tailorable Acquisition Model



New Enclosure (13) describing policy and procedure for programs that respond to Rapid Acquisition of Urgent Needs (Includes JUONs, JEONs, and DoD Component-Specific UONs)

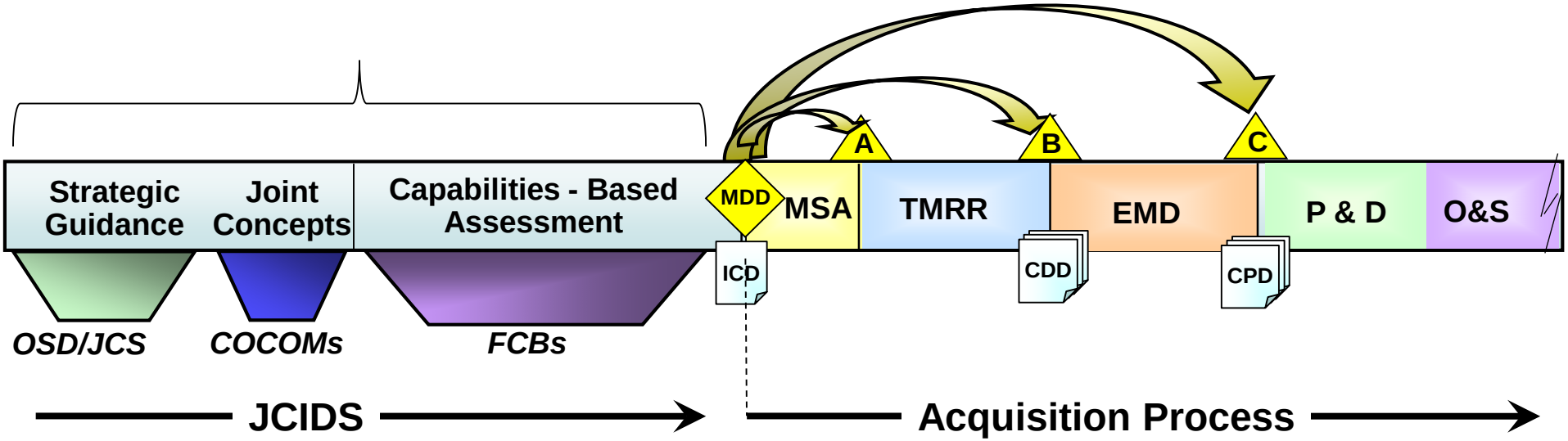
Applicable to UONs that fall below the cost threshold for ACAT I and IA programs and that can be fielded in less than 2 years

Intended to expedite urgent needs by tailoring the documentation and reviews normally required as part of the deliberate acquisition process

Getting to a Materiel Development Decision (MDD)

User Needs: JCIDS Capabilities-Based Assessment (CBA) leading to an Initial Capabilities Document (ICD)

Technology Opportunities: All sources foreign & domestic - SBIR Programs - S&T Activities - ATDs, JCTDs - Qualified Prototype Projects - Joint Warfighting Experiments.



"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."

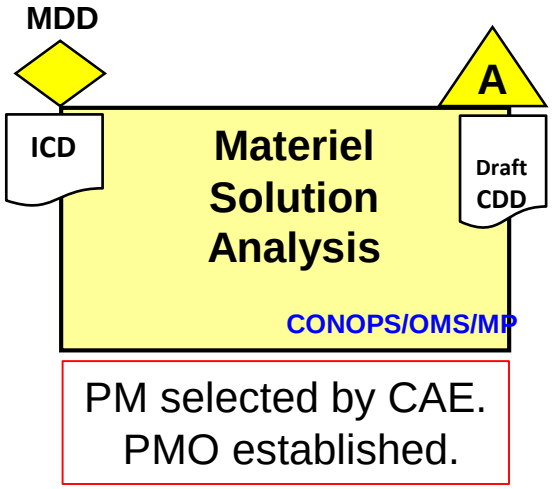
Materiel Development Decision (MDD)

- A new product is needed and analyzing alternative will now occur -

Approval to Enter the Acquisition Process

- **MDA:**
  - Determines acquisition phase of entry
  - Identifies initial review milestone
  - Designates Lead DoD Component
  - Issues Acquisition Decision Memorandum (ADM)
- **Information Requirements:**
  - Initial Capabilities Document (ICD)
  - Evidence of strong technical foundation
  - AoA Study Guidance and AoA Study Plan

Materiel Solution Analysis Phase



Purpose: Assess potential materiel solutions

Guided by: Validated ICD, AoA Study Plan

Major Activities:

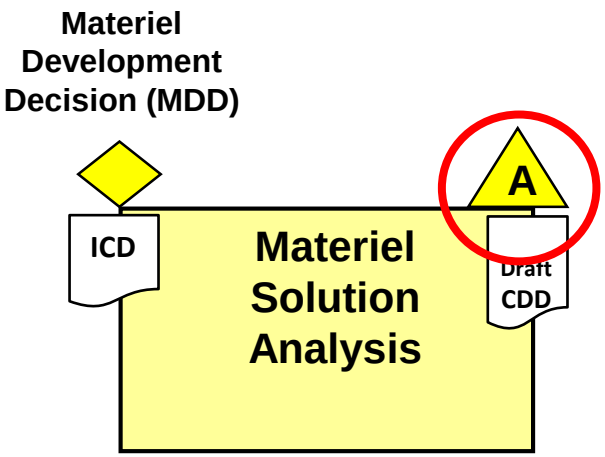
- Conduct AoA
- Develop Acquisition Strategy (AS)
- Draft Capabilities Development Document (CDD)
- Translate capability gaps into system specific requirements

Minimum funding: For all Phase activities and to support MS A decision

Phase is Complete When: MDA approves materiel solution and AS

NOTE: Concept Operations/Operational Mode Summary/Mission Profile (CONOPS/OMS/MP): A Component approved acquisition document that is derived from and consistent with the validated/approved capability requirements document. The CONOPS/OMS/MP describes the operational tasks, events, durations, frequency and environment in which the materiel solution is expected to perform each mission and each phase of the mission. The CONOPS/OMS/MP will be provided to the MDA at the specified decision events and normally provided to industry as part of the RFP.

Milestone A



PM presents

- Acquisition Strategy
  - Must be approved by MDA prior to RFP release for TMRR activities
- Business approach
- Framing assumptions
- Risk assessment (and mitigation activities) and
- Appropriate "should cost" targets

Component

- Presents affordability analysis and affordability goals (Included in ADM)
- Submits their cost estimate for the preferred solution
- Demonstrates that the program will be fully funded in the FYDP

MDA

- Makes a determination on the materiel solution, release of TMRR RFP, and exit criteria for the TMRR Phase

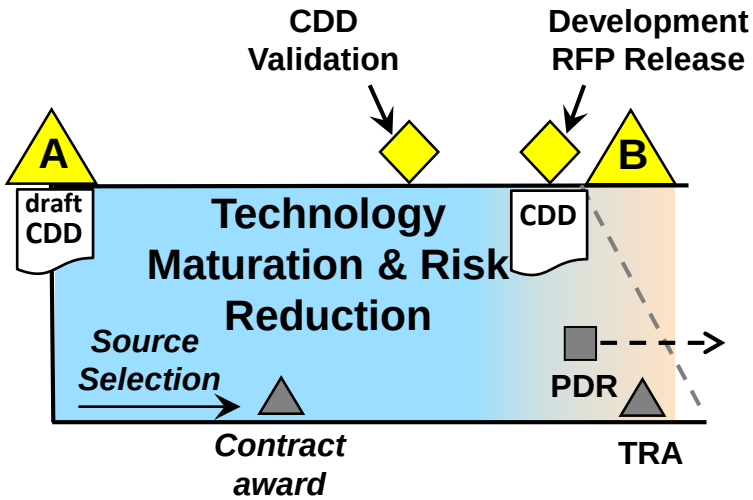
NOTE: The Component, *not the acquisition community*, conducts affordability analysis (30-40 year period nominally – See Enclosure 8)

Technology Maturation and Risk Reduction Phase

- **Guided by**: ICD, AS, Draft CDD and SEP

Purpose:

- Reduce Technology, Engineering, Integration, and Life Cycle Cost Risks,
- Demonstrate Critical Technologies on Prototypes
- Complete Preliminary Design

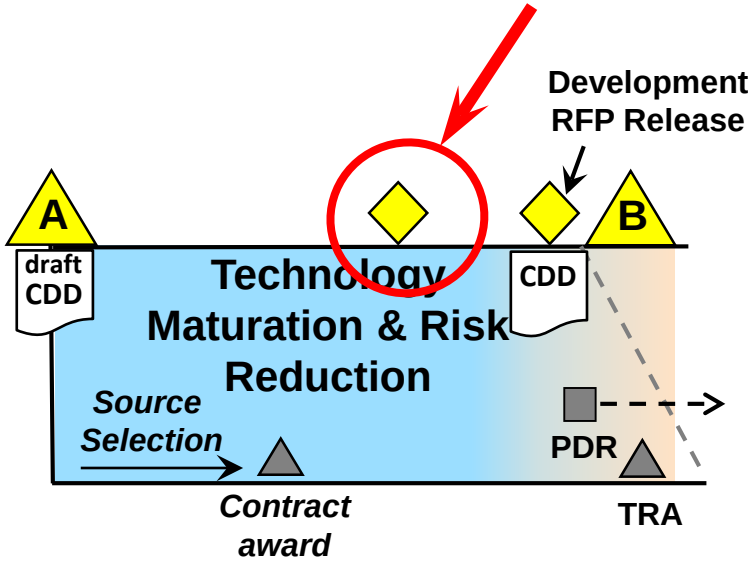


- **Basis for Entry:** MDA approved materiel solution and AS
- **Major Activities:** Competitive prototyping*; Preliminary Design Review (PDR); CDD Validation; Plan for sustainment; Dev RFP Release; Technology Readiness Assessment (TRA)
- **Phase is Complete When:** Affordable increment of military-useful capability identified; technology demonstrated in relevant environment; manufacturing risks identified; PDR conducted prior to MS B (unless waived by the MDA)

*Competitive prototyping of the system, or critical sub-systems is a statutory requirement for MDAPs and a regulatory requirement for all other programs

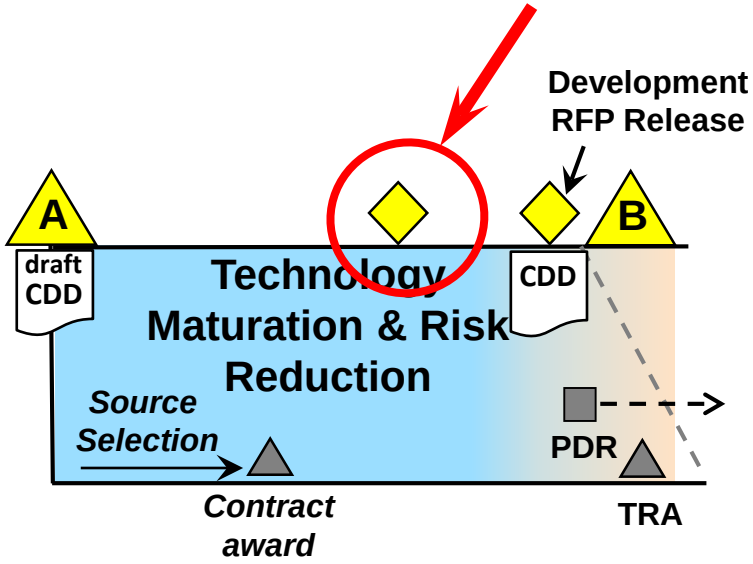
TMRR - Capability Development Document (CDD) Validation

- The requirements validation authority validates the CDD
- Major cost-performance trades complete.
- Risk reduction sufficient to support preliminary design activities



- MDA and/or CAE and the requirements leadership ensure that:
  - The validated requirements continue to address the priorities of the users in a cost effective & affordable way.
  - Requirements are achievable, affordable, and testable
  - Requirements trades are fully informed by the systems engineering trade-off analyses completed by the PM or the DoD Component.

TMRR - Capability Development Document (CDD) Validation



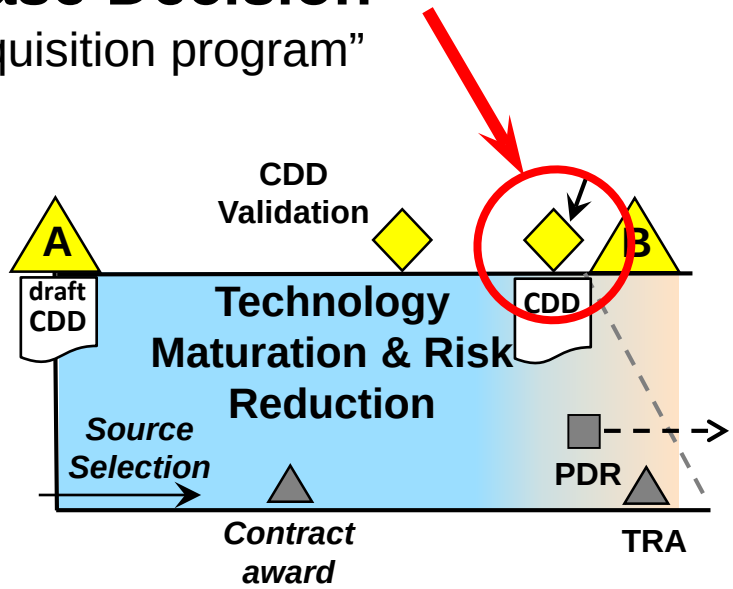
- KPPs and KSAs in the CDD guide efforts leading to PDR and inform the RFP Release Decision Point

- **Configuration Steering Board (CSB)**
  - Formed and Chaired by the CAE after CDD validation for ACAT I & IA programs
  - Meets annually to review potential requirement changes and to propose to the validation authority those changes that may be necessary to achieve affordability constraints on production & sustainment costs, or that will result in a more effective product
  - Changes that increase cost will not be approved unless funds are identified and schedule impacts are addressed

Development (RFP) Release Decision

"The critical decision point in an acquisition program"

Authorizes release of the RFP(s) for EMD (and often for LRIP or limited deployment options)



Purpose: Ensure that "an executable and affordable program has been planned" and "to avoid any major program delays at Milestone B, when source selection is already complete and award is imminent"

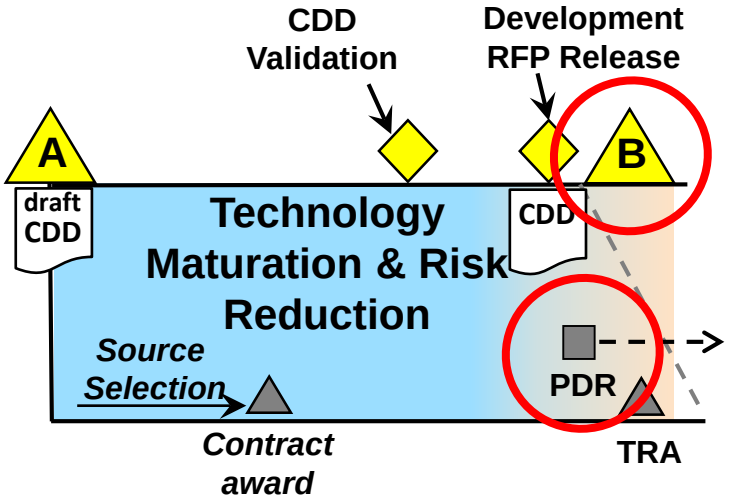
The program will either succeed or fail, based on the:

- Soundness of the capability requirements,
- Affordability of the program, and the
- Executability of the acquisition strategy.

- MDA determines preliminary LRIP quantities

The last point at which significant changes can be made without a major disruption.

TMRR - PDR and MS B



PDR

- Prior to MS B and before contract award for EMD, unless waived by the MDA
- Results assessed by the MDA prior to required 10 U.S.C. 2366b Certification

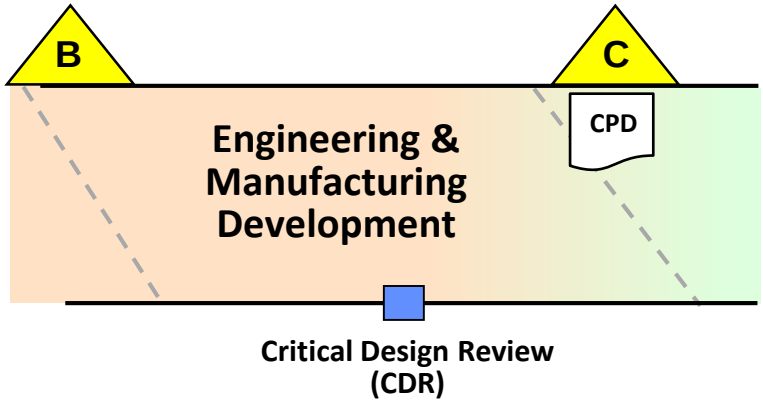
MS B

- Authorizes entry into and contract award for EMD
- Formal initiation of the program
- Requires:
  - Demonstration that all sources of risk have been adequately mitigated
  - Full funding in the FYDP
  - Compliance with Affordability goals
  - Framing assumptions
- MDA approves APB as the agreement between the MDA, PM, and Component chain of command
  - Affordability caps set in APB as equivalent to KPPs
- LRIP quantities finalized

Engineering & Manufacturing Development

Guided by: AS, CDD, TEMP and SEP

Purpose:
Develop, build, and test a product to verify that all operational and derived requirements have been met and to support production or deployment decisions



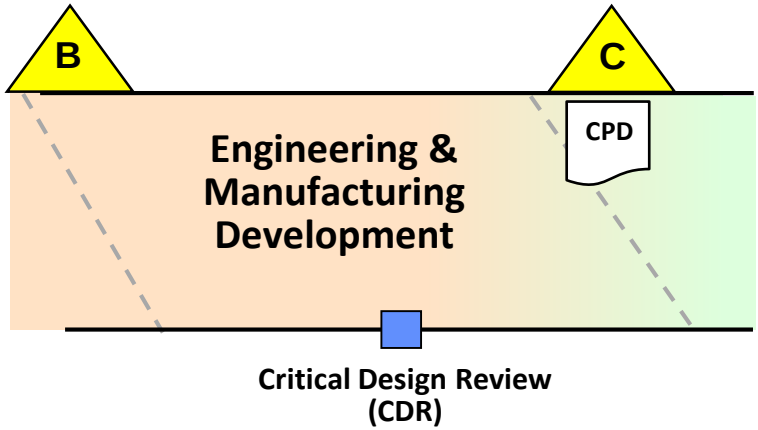
Activities:

- Complete HW and SW design
- Systematically retire any open risks
- Build/test prototypes or first articles to ve*rify* compliance with requirements
- Prepare for production and deployment
- Establish initial product baseline

If a PDR prior to MS B was waived, the PM will plan for / conduct a PDR as soon as feasible after program initiation

For ACAT ID and IAM programs, the DASD(SE) will participate in the Program's PDR and CDR and conduct the CDR Assessment

Engineering & Manufacturing Development

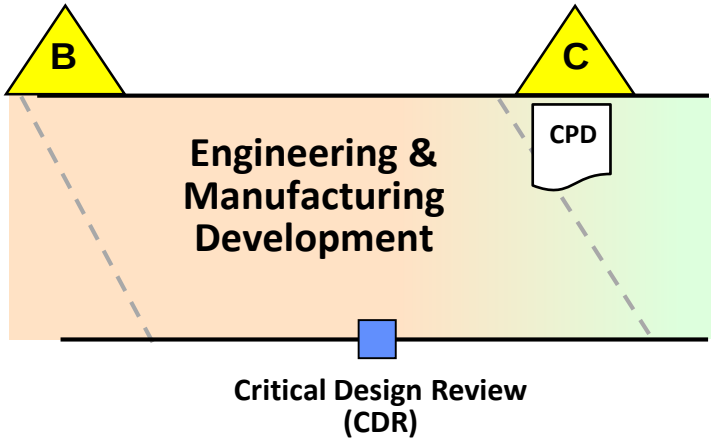


Activities (*Continued*):

- Complete TEMP DT&E activities
- Evaluate achievement of KPPs/KSAs
- Ensure that production, deployment, and OT&E can be supported
- Operational Assessments (OAs) conducted by OTA
- Preparation for Production, Deployment, and Sustainment
- Ensure system design and product support package meet sustainment requirements within affordability caps

NOTE: DT and OT activities should, to the extent possible, be planned in conjunction with one another to provide as efficient an overall test process as possible

Engineering & Manufacturing Development



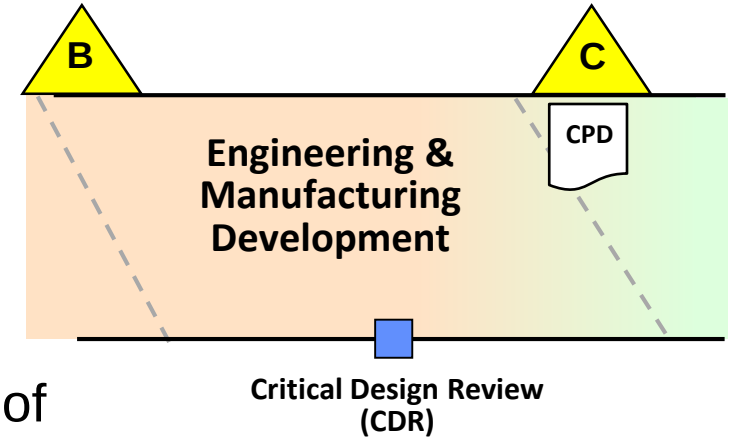
Phase Completion:

The EMD Phase ends when:

- **The design is stable**
- **Systems meets requirements (demonstrated through DT and early OT)**
- **Manufacturing processes demonstrated and under control**
- **SW sustainment processes are in place and functioning**
- **Industrial production capabilities are reasonably available**
- **System meets or exceeds all EMD Phase exit criteria and MS C entrance criteria**

NOTE: EMD will *often* continue past the initial production or fielding decision until all EMD activities have been completed and all requirements tested and verified

Engineering & Manufacturing Development



Inherently Government Functions and Lead System Integrators (LSI):

- PMs will ensure that the government is singularly responsible for the performance of inherently governmental functions.
- If the AS for a major system calls for the use of a LSI, a contract will not be awarded to an offeror that either has or is expected to acquire a direct financial interest in the development or construction of an individual system or an element of a system of systems within the major system under the LSI.
- The MDA may authorize long lead at any point during EMD or at the Development RFP Release Decision or Milestone B, subject to the availability of appropriations.

Milestone C

Authorizes entry into P & D or Limited Deployment

General MS C criteria include:

- **Updated Acquisition Strategy**
- **Demonstration that design is stable & meets requirements based on performance in DT**
- **An Operational Assessment (OA)**
- **Mature SW capability**
- **No significant manufacturing risks**
- **Validated CPD**
- **Demonstrated interoperability**
- **Demonstrated operational supportability**
- **Costs within affordability caps**
- **Full funding in the FYDP**
- **Properly phased production ramp-up and deployment support**

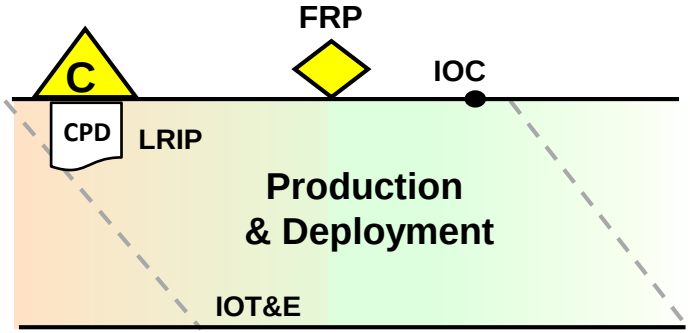
The MDA also considers any new validated threat environments not in the CPD that might affect operation effectiveness and may consult with the requirements validation authority to ensure requirements are current

High-Cost First Article Combined MS B and C Decisions (e.g., Ships & Spacecraft): Prototypes not produced as test articles. 1st articles produced, tested, and fielded as operational assets. Combined MS B and C conducted and development and initial production combined

Production & Deployment

Guided by: AS, TEMP, CPD, SEP and LCSP

Purpose: Produce and deliver requirements compliant products



Low Rate Initial Production (LRIP): Establishes initial production base, provides OT&E test articles and for efficient ramp-up to full-rate production, maintains production continuity pending OT&E completion

Sustainment and Support Initiated (If not already started)

OT&E: OT in a realistic threat environment to determine operational effectiveness, suitability, and survivability

Full Rate Production (FRP) Decision Review: MDA approval requires control of manufacturing processes, acceptable performance and reliability, and establishment of adequate sustainment and support systems

FRP & Deployment: Production & deployment completion leading to Full Operational Capability (FOC)

Initial Operational Capability (IOC): Operational authority declares IOC when the defined organizations have been equipped and trained and are capable of conducting mission operations

Operations & Support

Guided by LCSP

Purpose: Execute the support strategy, satisfy materiel readiness and support performance requirements, and sustain the system over its life cycle (including disposal).

Begins after the production and deployment decision and is based on the PM prepared and MDA approved Life-Cycle Support Plan (LCSP). Two <u>Major Efforts</u>

- **Sustainment:** PM deploys the support package IAW the LSCP. PM assures that resources are programmed and necessary IP deliverable , data, tools, equipment, and facilities are acquired to support each maintenance level. Organic depot capability established IAW the LCSP

- **Disposal**: At the end of service life. Systems demilitarized and disposed of IAW all legal and regulatory requirements and policies relating to safety, security, and the environment

Wall Chart Final Exam

1. What types of activities would a “test” person in a program office focus on in the TMRR Phase?

2. What is the key technical review held in the EMD phase?

3. What phase would you conduct an IOTE?

4. Name at least 3 documents that are revised over the life of the program?

5. What does Mr. Kendall consider the key decision in a program’s life cycle?