



Synopsis and Impact of DoDI 5000.02

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The text and graphic material in this paper describing changes to the Department of Defense (DoD) Acquisition System were extracted in whole or in part from the reissued DoDI 5000.02, 2 December 2008; or the Defense Acquisition University (DAU) presentation "Operation of the Defense Acquisition System Statutory and Regulatory Changes," 8 December 2008.

TABLE OF CONTENTS

Synopsis and Impact of DoDI 5000.02

1	INTRODUCTION
2	SUMMARY OF 1971 FRAMEWORK
3	SUMMARY OF 2003 FRAMEWORK
4	2003 FRAMEWORK VS 2008 SYSTEM
5	SUMMARY OF 2008 SYSTEM CHANGES
6	DISCUSSION – DOD ACQUISITION MANAGEMENT SYSTEM CHANGES

Impact of DoDI 5000.02 and How SM&A Can Help

7	INTRODUCTION
8	KEY FEATURES AND IMPLICATIONS FOR PROGRAMS
9	SUMMARY OF POLICY CHANGES THAT AFFECT OUR CLIENTS
10	CONCLUSION

Synopsis of Changes in DoDI 5000.02

1 INTRODUCTION

This synopsis is intended to inform SM&A Associates and clients to the changes in the Department of Defense Acquisition System implementation contained in DoD Instruction 5000.02, reissued in December 2008.

This reissue can be characterized as:

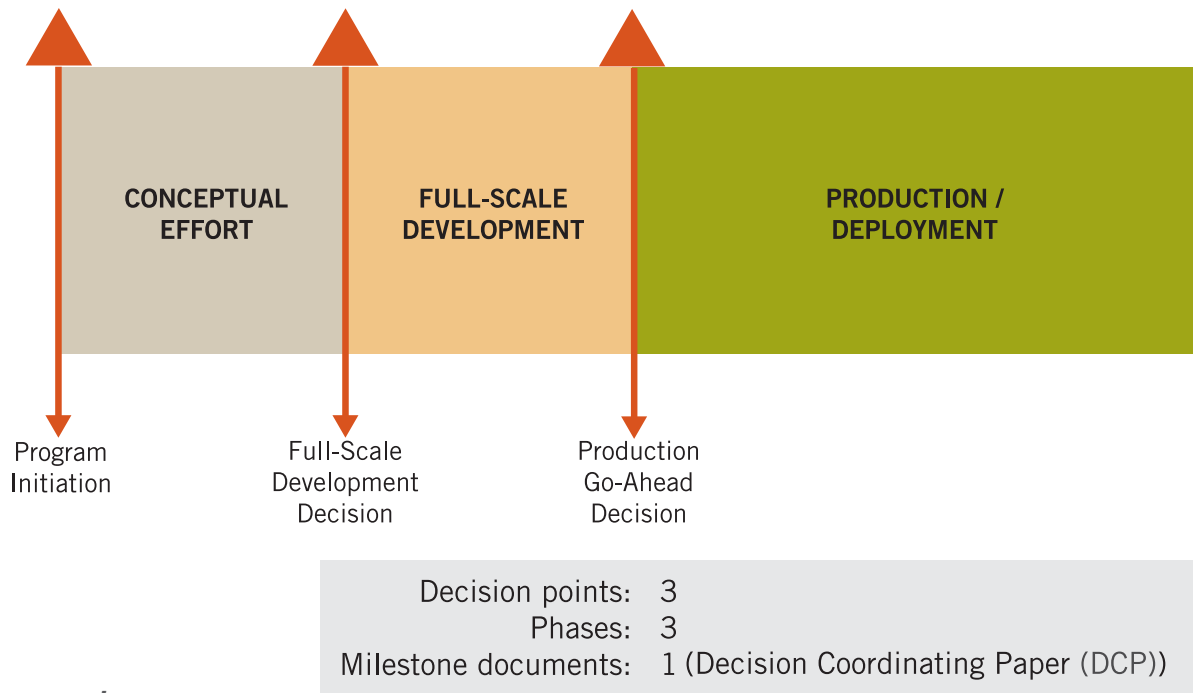
- Major overhaul – reissue rather than revision
- New policy directed by Congress – Incorporates numerous new/revised sections of public law since 2003
- New/revised regulatory policy

The DoDI 5000.02 references 10 updated or new DoD publications and considers over 700 Defense Acquisition Policy Working Group (DAPWG) comments. Additionally, this synopsis refers to the 2003 DoDI, the 2008 DoDI and uses terms and acronyms that can be found in the 12th Glossary of Defense Acquisition Acronyms and Terms provided by the Defense Acquisition University (<http://www.dau.mil/pubs/glossary/preface.asp>).

The Acquisition Management System continues to evolve. These latest changes published in DoDI 5000.02 are designed to ensure the US government purchases the most effective equipment at the best price, delivered on time to support our warfighters as they maintain our nation's defense. These important changes outline complex and stringent acquisition requirements.

2 SUMMARY OF 1971 FRAMEWORK

First Acquisition Framework in 1971



1971 Framework

The first DoD Acquisition Framework issued in 1971 was characterized by three decision points, three phases, and a single milestone document. Programs were initiated by Key Decision Point 1 (KDP1) Program Initiation, with a concept definition activity that defined the requirements for the system, developed an operational concept for the system, and usually produced some modeling and/or simulation of the system for evaluation prior to full scale development.

The second phase was initiated with approval of KDP2, Full Scale Development Decision, and authorized full scale development that usually culminated with engineering models, prototypes, or limited production articles for evaluation prior to authorization of the production and deployment of the system.

The third and final phase, Production/Deployment was authorized by the KDP3 Production Go-Ahead Decision. This phase included formal Customer acceptance of the system for operational deployment and use, and closed the acquisition process.

3 SUMMARY OF 2003 FRAMEWORK

The 2003 framework expanded the phases and decision points, and added significant (30+) additional milestone documents to the process.

CONCEPTUAL EFFORT & REFINEMENT PHASE

The Conceptual Effort phase started with the Concept Decision, was expanded into two phases, Concept Refinement (CR), and Technology Development (TD). Concept Refinement typically ended with a System Requirements Review (SRR), baselining the System (A) Specification.

MILESTONE A

Milestone A authorized entry into Technology Development, which focused on applying maturing technologies and allocating the requirements into subsystems, hardware, software, and procedures. It typically culminated in a Preliminary Design Review (PDR), which evaluated subsystem (B) specifications, and Interface Requirements Documents (IRDs).

MILESTONE B

Milestone B authorized entry into System Development and Demonstration (SDD). The designs were completed, and documented in “build-to” (C) specifications and drawings, which were reviewed at the Critical Design Review (CDR), and Design Readiness Review (DRR) which determined that the system was ready for demonstration.

MILESTONE C

Milestone C authorized entry into Production and Deployment, where limited rate initial (LRIP) and eventually full rate production (FRP) occurred, and the system was deployed into its operational environment. Typically an independent

Operational Test and Evaluation organization

would evaluate the system in its

operational environment,

and if found satisfactory,

the system would be

turned over to

the operating

organization(s)

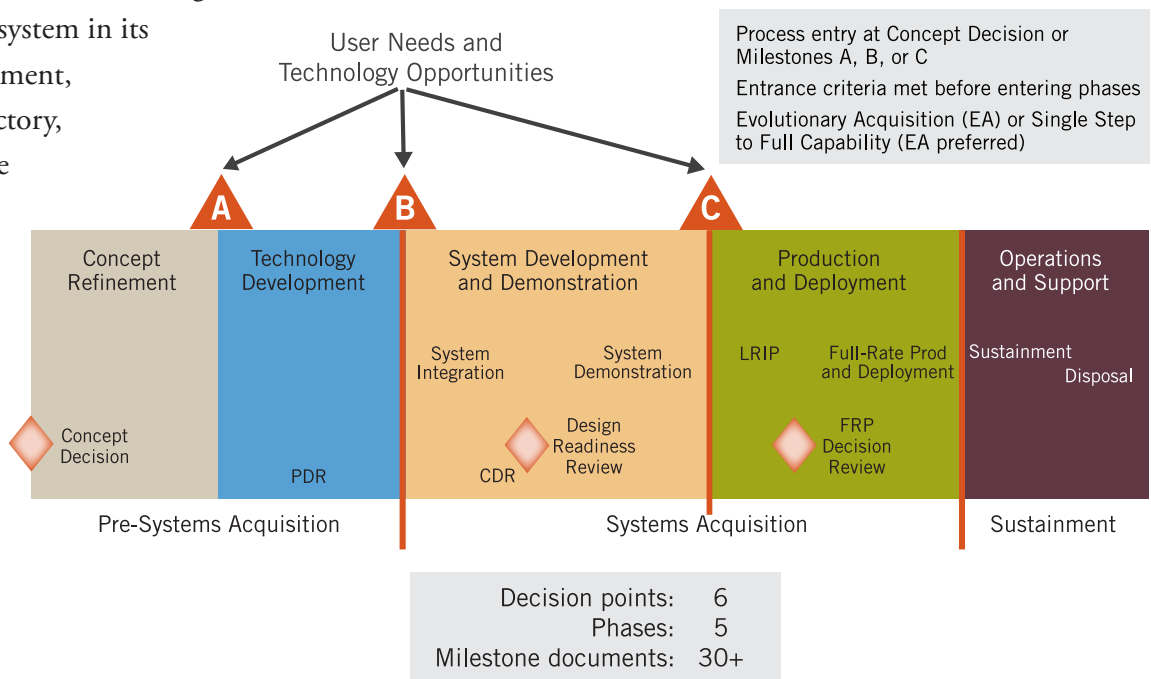
for Operations

and Support

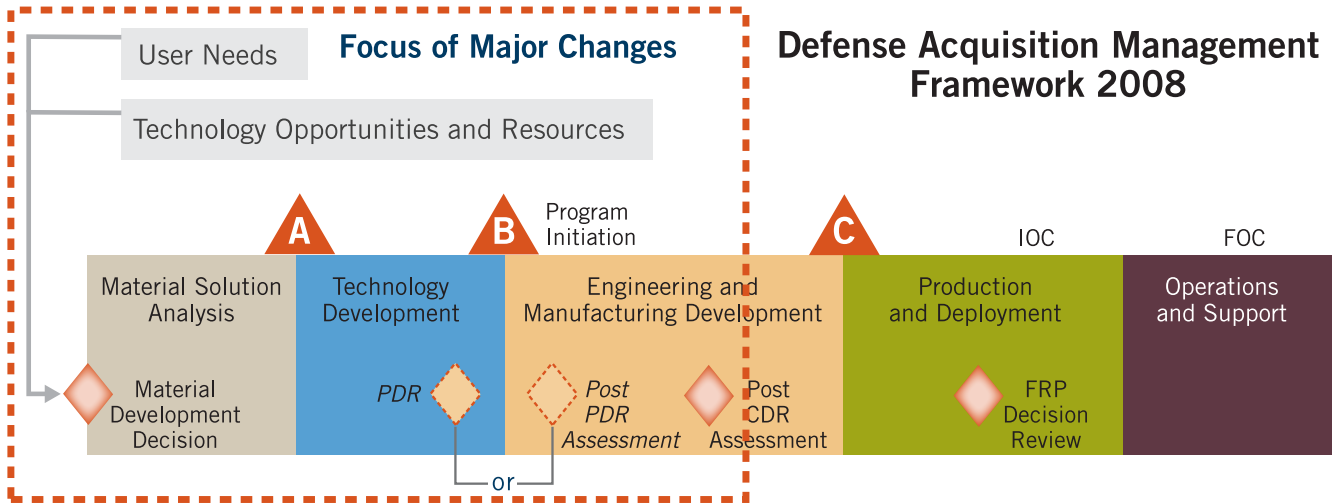
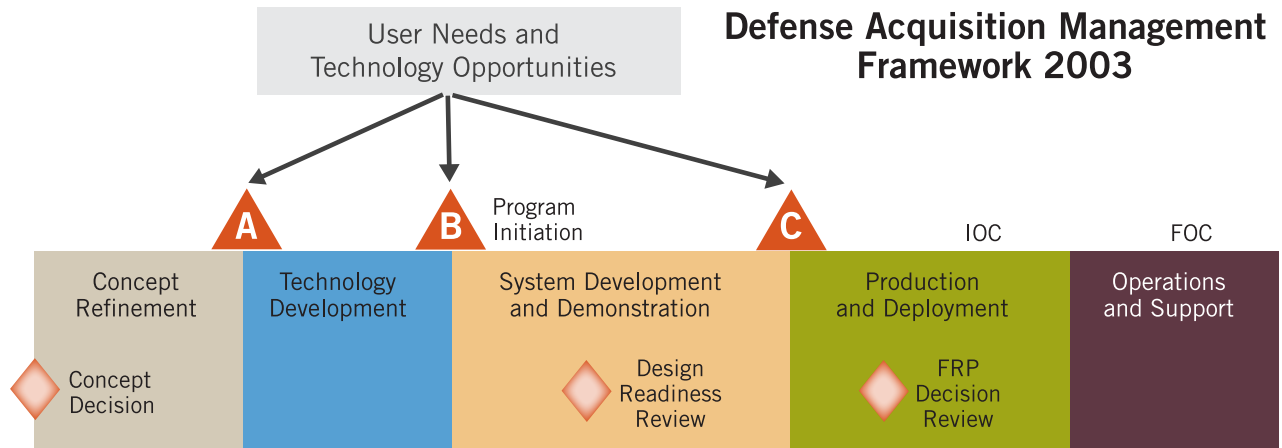
through the

system’s

life.



4 2003 FRAMEWORK VS 2008 SYSTEM



2003 Framework vs. 2008 Framework

DoD Acquisition System 2008 Reissue – Major Changes

- Mandatory Entry Points
- Revised Decision Points
- Revised Phases
- PDR Alternatives
- Post PDR & CDR Assessments
- Configuration Steering Board
- System Engineering Emphasis
- Dual Focus on Engineering and Manufacturing
- Integrated Test & Evaluation throughout program

The reissue of DODI 5000.02 is the first major change in the DoD Acquisition Management System in over five years, and it introduces substantial changes, primarily in the early phases of the process. It replaces the Concept Refinement phase with the Material Solution Analysis phase, and replaces System Development and Demonstration with Engineering and Manufacturing Development. Other changes are summarized in the following section.

5 SUMMARY OF 2008 SYSTEM CHANGES

Key Features of the Reissued Instruction include:

A MANDATORY ACQUISITION PROCESS ENTRY POINT

Programs will be required to proceed through a Material Development Decision to ensure they are based on approved requirements and a rigorous Assessment of Alternatives (AoA).

COMPETITIVE PROTOTYPING

Programs will be required to implement acquisition strategies during the technology development phase where two or more competing teams will produce prototypes of the system or key components. Consequently, technologies will have to be demonstrated and proven before engineering development is initiated.

MORE FREQUENT AND EFFECTIVE PROGRAM REVIEWS

Frequent and effective program reviews will be conducted to assess progress. Two key engineering reviews, the Preliminary Design Review and the Critical Design Review become significant program decision points to allow acquisition authorities to assess progress.

CONFIGURATION STEERING BOARDS

These new boards provide a forum that can preclude destabilizing requirement changes that traditionally contributed to increased costs and extended schedules. Program Managers (PMs) can use this forum to control requirements creep and seek moderation of requirements which become costly drivers in the system design.

INDEPENDENT TECHNOLOGY READINESS ASSESSMENTS

An independent technology readiness assessment must certify the maturity of program technologies for a program to progress to the costly final phase of development.

ENGINEERING AND MANUFACTURING DEVELOPMENT (EMD)

The final phase of system development is once again named Engineering and Manufacturing Development (EMD) to emphasize the dual focus on engineering and manufacturing development. Technology development and basic system design work should be accomplished in the earlier Technology Development phase.

MORE EFFECTIVE INTEGRATED TEST AND EVALUATION

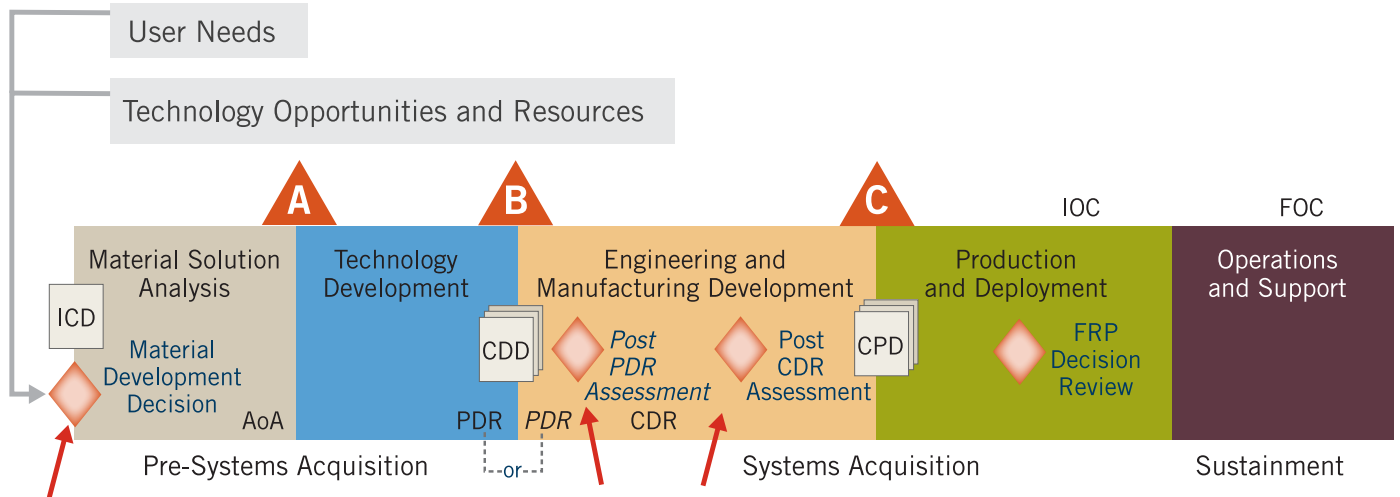
Test activity will be integrated into every acquisition development phase to facilitate early identification and correction of technical and operational deficiencies.

6 DISCUSSION – DOD ACQUISITION MANAGEMENT SYSTEM CHANGES

SUMMARY OF 2008 DECISION POINT CHANGES

Material Development Decision (MDD) replaces Concept Decision (CD). This decision is required prior to process entry. Following the MDD, the Milestone Decision Authority (MDA) may authorize entry into the acquisition management system at any point consistent with phase-specific entrance criteria and statutory requirements. Progress through the acquisition management system depends on obtaining sufficient knowledge to continue to the next phase of development.

The Instruction identifies two new MDA independent assessments of program progress, following Preliminary Design Review (PDR), and Critical Design Review (CDR). Each assessment includes review of the Program Manager’s Review Report; and leads to MDA certification that the program is ready to proceed to the next phase.



2008 Changes to the Decision Points include MDD and MDA Independent Assessments after PDR and CDR

Changes to Decision Points: 2003 vs. 2008		
Old (2003)	New (2008)	Change from 2003
Concept Decision (CD)	Material Solution Analysis	More robust AoA (result of changes to JCIDS)
N/A	Post – PDR Assessment	MDA’s assessment of PM’s PDR Report (if PDR after Milestone B)
Design Readiness Review (DRR)	Post – CDR Assessment	MDA’s assessment of PM’s CDR Report

SUMMARY OF 2008 PHASE CHANGES

The “Changes to Phases for 2008” graphic on the following page includes a more robust Analysis of Alternatives (AoA) in the MSA phase, Competitive Prototyping in Technology Development phase, Systems Engineering and manufacturing planning in Engineering & Manufacturing Development phase, and Integrated Test and Evaluation throughout.

Material Solution Analysis Phase

The former Concept Refinement Phase is replaced by Material Solution Analysis, which proceeds from an Initial Capabilities Document (ICD) and a Material Development Decision (MDD) that determines if the Initial Capabilities Document needs can best be filled by a Material solution. It includes a more robust Analysis of Alternatives (AoA) as directed by changes to the Joint Capabilities Integration and Development System (JCIDS).

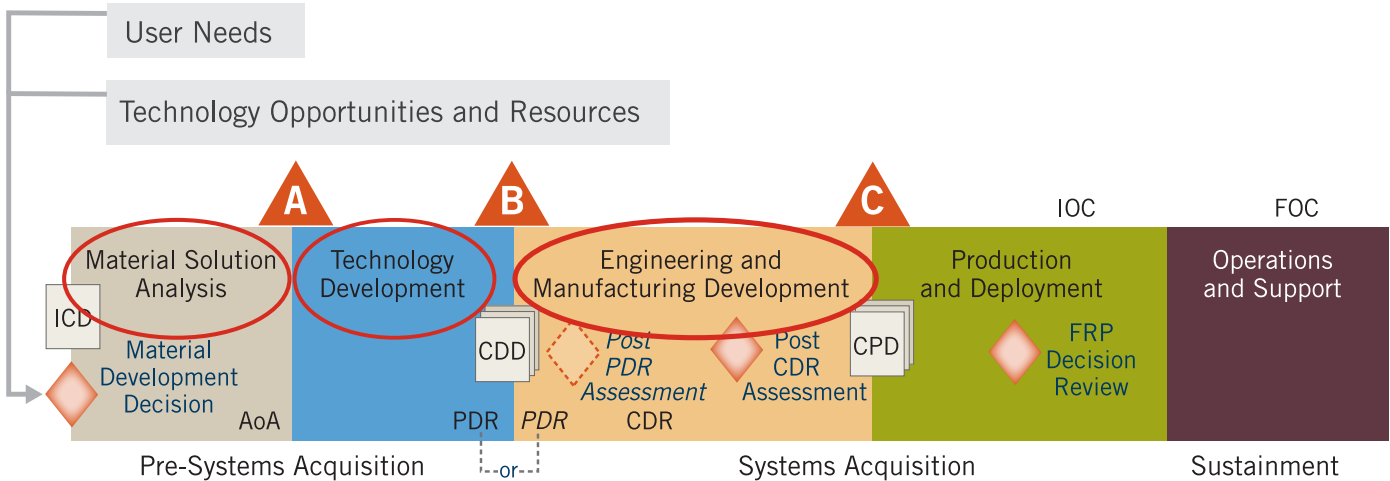
Technology Development Phase

The Technology Development Phase focuses on technology risk reduction and has been changed to include two or more competing teams producing prototypes of the system and/or key system elements prior to, or through, Milestone B. Prototype systems or appropriate component-level prototyping are used to reduce technical risk, validate designs and cost estimates, evaluate manufacturing processes, and refine requirements.

Information technology initiatives prototype subsets of overall functionality using one or more teams, with the intention of reducing enterprise architecture risks, prioritizing functionality, and facilitating process redesign.

Engineering & Manufacturing Development Phase

The Engineering and Manufacturing Development Phase, described below, starts with a Capabilities Definition Document (CDD), and replaces the Systems Development and Demonstration Phase.



Changes in Phases in 2008

<i>Changes to Phases</i>		
Old (2003)	New (2008)	Change from 2003
Concept Refinement (CR)	Material Solution Analysis (result of changes to JCIDS)	More Robust AOA
Technology Development (TD)		Competitive Prototyping
Systems Development & Demonstration (SDD)	Engineering & Manufacturing Development (EMD)	More Robust Systems Engineering

SUMMARY OF 2008 PRELIMINARY DESIGN REVIEW ALTERNATIVES

Prior to Milestone B

Baseline acquisition planning is for PDR to occur during the Technology Development Phase, prior to Milestone B.

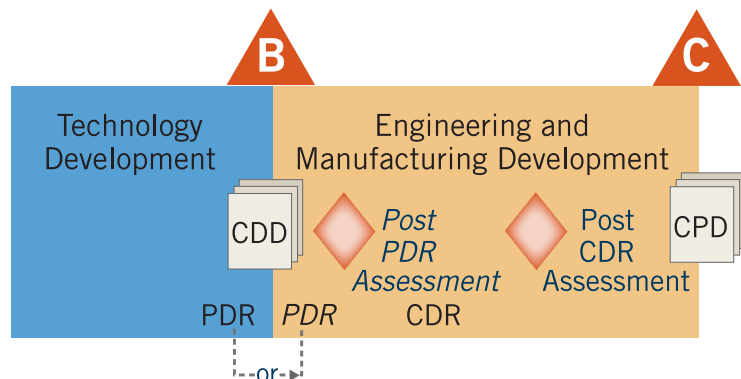
For acquisitions that enter the System at Milestone B for which no PDR has occurred, the new Instruction directs that the Program Manager plan a PDR “...as soon as feasible after program initiation.” This plan is incorporated into the Acquisition Strategy.

In either case, the Milestone Decision Authority (MDA) conducts a Post-PDR independent assessment of program progress, evaluating the PDR Report, and identifying actions required to achieve Acquisition Program Baseline (APB) objectives, issues the Acquisition Decision Memorandum (ADM), certifying that the program either meets the Milestone B requirements or that waivers have been granted in accordance with Title 10 of the U. S. Code. This certification authorizes the program to proceed into Engineering and Manufacturing Development.

After Milestone B

The MDA conducts another independent assessment after the Critical Design Review (CDR). Successful completion of the Post-CDR Assessment ends Integrated System Design and continues the EMD Phase into System Capability and Manufacturing Process Demonstration. This effort is intended to demonstrate the ability of the system to operate in a useful way consistent with the approved Key Performance Parameters (KPPs) and that system production can be supported by demonstrated manufacturing processes.

Preliminary Design Review



Preliminary Design Review can Occur Prior to or Following Milestone B

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

ENGINEERING AND MANUFACTURING DEVELOPMENT (EMD) REPLACES SYSTEM DEVELOPMENT AND DEMONSTRATION (SDD)

The purpose of the EMD Phase is to:

- Develop a system or an increment of capability
- Complete full system integration (technology risk reduction occurs during Technology Development, new in 2008)
- Develop an affordable and executable manufacturing process (new in 2008)
- Ensure operational supportability with particular attention to minimizing the logistics footprint (revised from “reducing” in 2003)
- Implement Human Systems Integration (HSI)
- Design for producibility
- Ensure affordability
- Protect Critical Program Information (CPI) by implementing appropriate techniques such as anti-tamper
- Demonstrate system integration, interoperability, safety, and utility

EMD has two major efforts: Integrated System Design, and System Capability and Manufacturing Process Demonstration.

The MDA conducts a second formal program assessment following system-level CDR. The system-level CDR provides an assessment of design maturity as evidenced by measures such as:

- Successful completion of subsystem CDRs
- Percentage of hardware and software product build-to specifications and drawings completed and under configuration management
- Planned corrective actions to hardware/software deficiencies; adequate developmental testing
- Assessment of environment, safety and occupational health risks
- A completed failure modes and effects analysis (FMEA)
- Identification of key system characteristics
- Maturity of critical manufacturing processes
- Estimate of system reliability based on demonstrated reliability rates

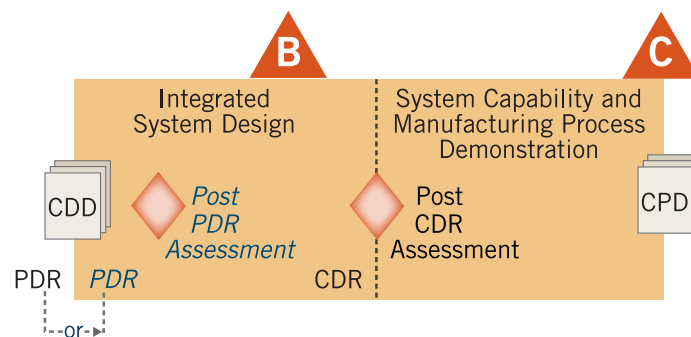
The EMD phase culminates in a Capabilities Production Document (CPD).

The Program enters System Capability and Manufacturing Process Demonstration upon completion of the Post-CDR Assessment and establishment of an Initial Product Baseline (IPB).

This effort ends when:

- The system meets approved requirements;
- The system is demonstrated in its intended environment using the selected production-representative article;
- Manufacturing processes have been effectively demonstrated in a pilot line environment;
- Industrial capabilities are reasonably available; and
- The system meets or exceeds exit criteria and Milestone C entrance requirements

Engineering and Manufacturing Development – Two Major Efforts



EMD replaces SDD, and focuses on both System Design and Manufacturing capability

Summary of EMD replacing SDD		
Old (2003)	New (2008)	Change from 2003
System Design	Integrated System Design	Establishment of product baseline for all configuration items
System Demonstration	System Capability and 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

SM&A offers this document as a resource to help support our Clients during this changing acquisition climate. Our experienced associates are knowledgeable in these changes, and stand ready to help our Clients succeed at every stage of Defense program lifecycles, from opportunity identification through execution. For further information, call us at (949) 975-1550, or visit our website, www.smawins.com.

Impact of DoDI 5000.02 and How SM&A Can Help

7 INTRODUCTION

This section represents the SM&A point of view of the impact of DoDI 5000.02 on our clients.

The 2008 reissue of the instruction marks the first major change to DoD acquisition management since 2003. The reissue indicates increased oversight from the Office of the Secretary of Defense (OSD) and emphasizes the need to ensure that sufficient knowledge is obtained prior to authorizing further acquisition steps or remedial actions. This increased oversight will flow directly from the contracting agencies to our Clients in the form of widely distributed surge skill and experience needs for relatively short periods.

Summary of 2008 Change Implications

- Reissue is a Major Change that affects all significant DoD Technology and Acquisition Contracts
- Focus is on Front End: Milestones A, B, C
- New Statutory and Regulatory Requirements
- Mandatory Entry Point – Material Development Decision Review

8 KEY FEATURES AND IMPLICATIONS FOR PROGRAMS

1.1 A MANDATORY ACQUISITION PROCESS ENTRY POINT

Programs will be required to proceed through a Material Development Decision to ensure they are based on approved requirements and a rigorous Assessment of Alternatives (AoA). *This should reduce disconnects between mission needs and system requirements. AoA activities may require contractors to complete earlier capture activities to ensure attainable solutions in the AoA. Also, more diligent and rigorous requirements management processes and tools are needed.*

1.2 COMPETITIVE PROTOTYPING:

Programs will be required to implement acquisition strategies requiring a technology development phase where two or more competing teams produce prototypes of the system or key components. Consequently, technologies must be demonstrated and proven before engineering development is initiated. *Competitive prototyping is intended to reduce risk of immature technologies and surprises in the EMD Phase. Our Clients may have to operate capture and proposal activities differently to reduce delivery risk and perform on their proposed solutions.*

1.3 MORE FREQUENT AND EFFECTIVE PROGRAM REVIEWS

More rigorous technical reviews will be conducted to assess progress. Two key engineering reviews, the Preliminary Design Review and the Critical Design Review become significant program decision points that allow acquisition authorities to assess progress and redirect as appropriate. *These reviews should provide identification and action plans for design and integration problems earlier in system development. Our clients will need to keep their solutions sold through each review and convince the government to select their team for EMD. Design maturity along with demonstrated manufacturing capability becomes instrumental to completing a successful CDR. Additionally, new Acquisition Decision Memorandum requirements for PDR and CDR could increase the required Client activity to support successful milestones.*

1.4 CONFIGURATION STEERING BOARDS

These new boards provide a forum that can preclude destabilizing requirement changes that have traditionally contributed to increased costs and extended schedules. Program Managers (PMs) can use this forum to control requirement creep and seek moderation of requirements that are costly drivers in the system design. *The configuration steering boards should reduce requirement creep, and ECP traffic. The reduction in ECP traffic will make it difficult for our clients to “get well” through ECPs and increases the need to perform well at the beginning of an acquisition.*

1.5 TECHNOLOGY READINESS ASSESSMENTS

These assessments must certify the maturity of program technologies for a program to progress to the costly final phase of development. *These assessments may be required to be independently conducted, and should reduce the risk of immature technologies and surprises late in the EMD Phase. Immature technologies will be difficult to get through the acquisition process and these independent assessments will reduce the Government's appetite for difficult technologies and drive down government risk. Clients may shift strategic approach to more mature technologies.*

1.6 ENGINEERING AND MANUFACTURING DEVELOPMENT

The SDD phase has been renamed EMD to emphasize the dual focus on engineering and manufacturing development during the final phase leading to initial production. Technology development and basic system design work are to have been accomplished in the earlier Technology Development phase. *EMD should reduce manufacturing problems and cause Clients to place greater emphasis on mature manufacturing processes.*

1.7 MORE EFFECTIVE INTEGRATED TEST AND EVALUATION

Test and Evaluation (T&E) will be integrated into every acquisition development phase to facilitate early identification and correction of technical and operational deficiencies. *Early T&E should reduce failures in later, more costly integration stages. It increases the importance of T&E in every phase of acquisition, and change strategies to secure Government confidence without increasing the budget traditionally available for testing.*

9 SUMMARY OF POLICY CHANGES THAT AFFECT OUR CLIENTS

The following table outlines several Congressional policy changes that will affect Government Program Offices and our clients.

<i>Policy Directed by Congress</i>	<i>Major Implications for Government Program Offices and our Clients</i>
Cost type Contract for EMD Phase Requires Written Determination by MDA - Emphasis on Fixed Price (FP) Contracting	Requires MDA Determination that Program is too complex and technically challenging for Fixed Price (FP) Contract Development – <i>Implies additional effort and requirements specification discipline, and focus on constructive change proposals</i>
Lead Systems Integrator Restrictions	Reduces Potential Organizational Conflicts of Interest (OCI) – <i>Requires additional “Due Diligence” and stronger “firewalls”</i>
New Major Automated Information System (MAIS) Reporting Requirements	Drives Acquisition Program Baseline (APB), Operational Test Plan (OTP), Technology Development Strategy (TDS) – <i>Requires additional effort</i>
Detailed Acquisition of Services Policy	Focuses on clear, performance-based requirements; identifiable and measurable cost, schedule, and performance outcomes consistent with customer needs; adequate planning and management – <i>Requires additional effort</i>
Independent Management Reviews (Peer Reviews) for Supplies and Services Contract	Pre-Award (3) for source selection process, and Post-Award for cost, schedule, requirements, program management, OCI – <i>Requires additional oversight</i>
Interim Beyond Limited Rate Initial Production (LRIP) Report	Supports a decision to proceed to full production based on adequate Operational/Live Fire Test & Evaluation/(OT&E/LFT&E) – <i>Requires additional effort</i>
Nunn-McCurdy breach / APB Revision Procedure	Limits APB Revisions – Requires more cost and schedule management discipline
Detailed Systems Engineering Policy	Requires robust Systems Engineering (SE) embedded in program planning, including Environmental Safety & Occupational Health (ESOH), Reliability, Availability & Maintainability (RAM); lead or chief SE for each Program Executive Office (PEO) – <i>Requires additional effort and resources</i>
Contract Incentives Strategy	Included in Acquisition Strategy – <i>Requires additional effort, additional Client resources and expertise</i>
Approval of Technology Development Strategy (TDS)	Requires MDA approval prior to release of Final Request For Proposal (RFP) for Technology Development Phase – <i>Requires additional Client effort and expertise</i>
Approval of Acquisition Strategy Prior to Release of Final RFP for EMD or any Succeeding Phase	Requires MDA approval at MSB – <i>Requires early strategy development, additional Client expertise</i>
Evolutionary Acquisition Revised	Eliminates Spiral Development Programs – <i>Requires additional Client program architecture resources and expertise</i>

10 CONCLUSION

- Our Clients need strong leadership to comply with the new and revised requirements.
- Our Clients need systems engineering resources in all disciplines due to increased emphasis on systems engineering and engineering specialties (e.g., ESOH, Survivability, etc.).
- Our Clients need sufficient Program Management resources to prepare for Program Support Reviews (PSR), and the increased rigor of monthly Program Management Reviews. This will include IMS/EVMS resources to develop and integrate IMP, IMS, and EVMS.
- Our Clients need Integration Test resources to strategize, plan and execute across all phases of a program.
- Our Clients may need Lifecycle Support resources to strategize, plan and execute Integrated Logistics Support (ILS) and other Lifecycle Sustainment activities.
- Our clients may have to prepare more Full and Open Competition proposals to satisfy the mandated competitive prototyping requirements, and thus may require more Competition Management resources.
- The Configuration Steering Board, DoD Engineering Change Proposals and unsolicited proposal development for ongoing programs; our Clients will have fewer opportunities to recover from the impacts of vague, uninterpretable requirements, externally caused program delays or information inadequacies.
- More opportunities for Lead Systems Integrator contracts, more Systems Engineering and Technical Assistance (SETA) or Systems Engineering & Integration (SE&I) opportunities.

For over 26 years, SM&A has offered program lifecycle support from capture to execution. Our associates provide principled and objective assessments and solutions with an increased focus on these many changes and latest acquisition program requirements.

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“We need more competition for contracts and more oversight as they’re carried out. If a system isn’t ready to be developed, we shouldn’t pour resources into it. And if a system is plagued by cost overruns, it should be reformed.”

*Barack Obama
President of the United States*

“A key to defense acquisition programs’ performing successfully is getting things right from the start – with sound systems engineering, cost-estimating, and developmental testing early in the program cycle.”

*John McCain
Senator Arizona*

“We’ve got to write better contracts that better incentivize industry and get the best deal ... The world of cost-plus award-fee contracts is over ... We are going to align profitability [for contractors] with performance.”

*Shay Assad
Director Defense Procurement and Acquisition Policy*

“This revision (DoDI 5000.02), the first major change to acquisition policy in over 5 years, reflects the department’s determination to improve the effectiveness and efficiency of its enterprise-wide acquisition business processes so it can continue to provide warfighters with the best weapon systems and support in the world.”

*John Young
Under Secretary of Defense for Acquisition, Technology, and Logistics*

A Winning Partnership



4695 MacArthur Court, 8th Floor, Newport Beach, CA 92660
O 949 975 1550 F 949 975 1624
WWW.SMAWINS.COM