The Defense Acquisition Guidebook is designed to complement formal acquisition policy as described in DoD Directive 5000.01 and DoDI Instruction 5000.02 by providing the acquisition workforce with discretionary best practice that should be tailored to the needs of each program. The Guidebook is not a rule book or a checklist and does not require specific compliance with the business practice it describes. It is intended to inform thoughtful program planning and facilitate effective program management.

Updated 2/26/2017
DEFENSE ACQUISITION GUIDEBOOK (DAG) - Foreword

The Defense Acquisition System exists to manage the Nation's investments in technologies, programs, and product support necessary to achieve the National Security Strategy and support the United States Armed Forces. In that context, our objective is to acquire quality products that satisfy user needs with measurable improvements to mission capability at a fair and reasonable price. The fundamental principles and procedures that the Department follows in achieving those objectives are described in DoD Directive 5000.01 and DoD Instruction 5000.02.

The Defense Acquisition Guidebook is designed to complement those policy documents by providing the acquisition workforce with discretionary best practice that should be tailored to the needs of each program. The Guidebook is not a rule book or a checklist and does not require specific compliance with the business practice it describes. It is intended to inform thoughtful program planning and facilitate effective program management.

The Guidebook is an electronic reference source rather than a "book." The "reader" "navigates" the information instead of "leafing" through hundreds of physical, collated pages. "Navigation" is electronic movement through the reference system. Discussions, explanations, and electronic links to related information are intended to enable the "reader" to be efficient, effective, innovative, and disciplined, and to responsively provide warfighting capability.

The DAG includes the following chapter content:

Chapter 1, Program Management, provides the principal concepts and business practice needed to thoughtfully organize, plan, and execute a DoD acquisition program regardless of acquisition category, program model, or program type.

Chapter 2, Analysis of Alternatives, Cost Estimating and Reporting, addresses resource estimation and program life-cycle costs, as well as the processes for conducting Analysis of Alternatives.

Chapter 3, Systems Engineering, describes standard systems engineering processes and how they apply to the DoD acquisition system.

Chapter 4, Life-Cycle Sustainment, provides guidance for program managers and program support managers to develop and execute successful sustainment strategies.

Chapter 5, Manpower Planning and Human Systems Integration explains the total-systems approach to HSI, including documenting manpower, personnel and training elements, and the use of program manager tools that appropriately incorporate HSI considerations into the acquisition process.

Chapter 6, Acquiring Information Technology and Business Systems, describes policy and procedure applicable to the development of DoD Information Technology (IT).

Chapter 7, Intelligence Support to Acquisition, provides information to enable the program manager to use intelligence information and data to ensure maximum war-fighting capability at minimum risk to cost and schedule.

Chapter 8, Test and Evaluation, supplements direction and instruction in DoD Directive 5000.01 and DoD Instruction 5000.02 with processes and procedures for planning and executing an effective and affordable T&E program.

Chapter 9, Program Protection, explains the actions needed to ensure effective program protection planning throughout the acquisition life cycle.
Chapter 10, Acquisition of Services, describes the principles of successful services acquisition based on the Seven Steps to the Service Acquisition Process included in DoD Instruction 5000.74, Defense Acquisition of Services.
CH 1-1. Purpose
The Defense Acquisition Guidebook (DAG), Chapter 1, is intended to provide the information needed to thoughtfully organize, plan, and execute a DoD acquisition program regardless of acquisition category, program model, or program type.

CH 1–2. Background
This Chapter describes the principal concepts and business practice that support the development and management of defense acquisition programs. The objective is to provide the program management team with a primer— in one readily accessible on line location. The Chapter describes the larger management framework in which DoD acquisition is conducted while providing the information and the management tools needed to thoughtfully design and effectively execute an acquisition strategy tailored to the capability to be acquired.

CH 1–3. Business Practice
This section describes the Departments operating context and the information needed to organize and plan a successful acquisition program. The unifying concept for this Section is the great value derived from attending to the fundamentals of program management.

CH 1–3.1 The External and Internal Acquisition Environment
Planning an acquisition requires an understanding of the external and internal environments: the three DoD decision support systems and the organization, staffing, and operation of a Program Management Office (PMO).

The external environment, DoD decision support systems (aka “BIG A”), consists of the Joint Capabilities Integration and Development System (JCIDS); Planning, Programming, Budgeting, and Execution (PPBE); and the Defense Acquisition System (DAS). In combination the three systems provide an integrated approach to strategic planning, identification of needs for military capabilities, program and budget development, and systems acquisition. Effective Program Managers (PMs) achieve synchronization among requirements, budgeting, and execution by maintaining a keen awareness of the status of their program relative to each of the decision support systems.

An overview of the interaction and relationships among the three DoD decision support systems is presented in CH 1–3.2 “Big A”. For detailed discussions on each of the three DoD decision support systems, refer to CH 1-3.2.1 (JCIDS), CH 1–3.2.2 (PPBE), and CH 1-3.2.3 (DAS).

The internal environment is the program office, with supporting organizations that function as an Integrated Product Team (IPT) for the duration of the program. As the program is executed, the Leads for various disciplines such as Systems Engineering (SE), Test and Evaluation (T&E), Sustainment, Financial Management, etc., develop and implement specific plans for their areas of responsibility. They also actively participate in the development of an event-based PMO IMP. The PMO IMP includes detailed criteria for events at a level of detail to effectively manage the program from prior to initiation to fielding and life-cycle support. That is not to say that at initiation all events can or should be planned to an execution level of detail with specified accomplishments and criteria. A PMO IMS is developed from the IMP so that both a top-down and bottoms-up approach are in place to manage program development and execution.

Further discussion on the PMO IMP and related IMS is provided in CH 1–3.4.2 PMO IMP/IMS.

CH 1–3.2 “BIG A”
Commonly called DoD’s decision support systems, “BIG A” acquisition consists of the JCIDS, PPBE, and the DAS (of phases and milestones), sometimes called “Little A.”
• **Joint Capabilities Integration and Development System (JCIDS).** The systematic method to support the Joint Requirements Oversight Council (JROC) and Chairman of the Joint Chiefs of Staff (CJCS) responsibilities in identifying, assessing, validating, and prioritizing Joint military capability requirements. JCIDS provides a transparent process that allows the JROC to balance Joint equities and make informed decisions on validation and prioritization of capability requirements. CJCS Instruction 5123.01 describes the roles and responsibilities of the JROC, while CJCS Instruction 3170.01, Joint Capabilities Integration and Development System, and Manual for the Operation of the Joint Capabilities Integration and Development System (commonly referred to as the JCIDS Manual) describe the policies and procedures for the requirements process.

• **Planning, Programming, Budgeting, and Execution (PPBE) Process.** The Department's strategic planning, program development, and resource determination process. The PPBE process is used to craft plans and programs that satisfy the demands of the National Security Strategy (NSS) within resource constraints. Per DoDD 7045.14, The Planning, Programming, Budgeting, and Execution (PPBE) process serves as the annual resource allocation process for DoD within a quadrennial planning cycle. The National Military Strategy (NMS), force development guidance, program guidance, and budget guidance are the principal guides used in this process. Programs and budgets are formulated annually. The budget covers 1 year, and the program encompasses an additional 4 years.

• **Defense Acquisition System (DAS).** The management process by which the Department acquires weapon systems, automated information systems, and services. See DoDI 5000.02. Although the system is based on centralized policies and principles, it allows for decentralized and streamlined execution of acquisition activities. This approach provides flexibility and encourages innovation, while maintaining strict emphasis on discipline and accountability.

While this Chapter focuses on the DAS, it is important to remember that the acquisition system interacts with other systems that control the finances and requirements for items being acquired. Moreover, all three of these systems are driven by broader policies and strategies created and evolved to meet the missions given to the Department by the nation. Figure 1 illustrates the three principal systems that affect acquisition of defense capability.

**Figure 1: DoD Decision Support Systems**
The three systems provide an integrated approach to strategic planning, identification of needs for military capabilities, systems acquisition, and program and budget development.

Effective interaction of the processes is essential in order to ensure the Department’s development and delivery of Doctrine, Organization, Training, materiel, Leadership and Education, Personnel, Facilities—Policy (DOTmLPF-P) solutions to meet current and future warfighter requirements. Together, the three processes provide a means to determine, validate, and prioritize capability requirements and associated capability gaps and risks, and then fund, develop, and field non-materiel and materiel capability solutions for the warfighter in a timely manner. The three systems impact a program differently. The requirements process is a capability gap process, the PPBE is a fiscal- and time-based process, and the acquisition system is an event-based process. Therefore, PMs need to ensure their programs are continuously synchronized with the realities and imperatives of the BIG A three decision support systems.

Requirements (JCIDS), resources (PPBE), and acquisition (DAS) are closely aligned and operate simultaneously with full cooperation and in close coordination. Throughout the product’s life cycle, adjustments are made to keep the three processes aligned. Requirements (either Key Performance Parameters [KPPs] or Key System Attributes [KSAs]) may have to be adjusted to conform to technical and fiscal realities. Acquisition programs may have to adjust to changing requirements and funding availability. Budgeted funds may have to be adjusted to make programs executable or to adapt to evolving validated requirements and priorities. Those responsible for the three processes at the DoD level, and within the DoD Components, work closely together to adapt to changing circumstances, and to identify and resolve issues as early as possible.

The intent of Figure 1 is to emphasize that acquisition requires the synchronization of requirements (JCIDS), resources (PPBE), and the acquisition system (DAS) across the program’s acquisition life cycle. A more expansive view of the DAS, which includes the Contracting process, is shown in Figure 2. This takes into account other major sources of regulatory direction (for contracts), through which most acquisition is accomplished, and includes the Federal Acquisition Regulation (FAR), Defense FAR Supplement (DFARS), and Service-specific contracting regulations.

**Figure 2: Five Dimensions of DoD Decision Support Systems**
Figure 2 compares the DoD decision support systems in five dimensions: Rules, Players, Reviews, Decisions, and Focus.

The next three subsections provide brief descriptions of the PPBE, JCIDS, and DAS processes.

**CH 1–3.2.1 Capability Requirements**

**JCIDS** plays a key role in identifying the capabilities needed by warfighters to support the National Security Strategy (NSS), the National Defense Strategy (NDS), and the National Military Strategy (NMS). Successful delivery of those capabilities relies on the JCIDS working in concert with the resourcing and acquisition decision support systems. JCIDS supports the Chairman and JROC in advising the Secretary of Defense (SECDEF) on identifying, assessing, and prioritizing joint military capability needs. JCIDS is a Joint Concepts-centric capabilities identification and requirements development process that enables joint forces to meet short-, mid-, and long-term future military challenges. The JCIDS process assesses existing and proposed capabilities in light of their contribution to future joint concepts and warfighting needs. The DoD created the JCIDS to support the statutory JROC responsibility of validating joint warfighting requirements.

The primary objective of the JCIDS process is to ensure the capabilities needed by joint warfighters to successfully execute their missions are consistent with their associated operational performance attributes. This is accomplished through an open process that provides the JROC with the information needed to make decisions on needed capabilities. The requirements development process then provides validated capability needs and associated performance attributes used by the materiel provider as the basis for acquiring the appropriate weapon systems. Additionally, the PPBE process informs the JCIDS with affordability information and goals through the Capabilities-Based Assessment (CBA), which identifies needed capabilities, capability gaps, and potential non-materiel (DOTmLPF-P) and materiel solution options.
JCIDS is reciprocal to the DoDD 5000.01 direction for early and continuous collaboration throughout the DoD. The system uses a capabilities-based approach that leverages the expertise of government agencies, industry, and academia by encouraging collaboration between operators and materiel providers early in the process. It is imperative that the Combat Developer and the Materiel Developer collaborate throughout the JCIDS process to ensure development of a requirement document that is stable, technologically feasible, and affordable. JCIDS defines interoperable, joint capabilities that should best meet future needs. The DoD acquisition community then delivers a technologically sound, sustainable, affordable “materiel solution” of militarily useful capability to the Joint warfighters.

JCIDS policy is described in CJCS Instruction 3170.01 while the role of the JROC is described in CJCSI 5123.01. The JCIDS Manual provides the details necessary for identifying, describing, and justifying joint warfighting capabilities. The manual also includes the formats that describe the content required for each JCIDS document.

For Major Defense Acquisition Programs (MDAPs) or Major Automated Information Systems (MAIS) subject to OSD oversight, the products of the JCIDS process directly support the Defense Acquisition Board (DAB) in advising the Milestone Decision Authority (MDA) for Acquisition Category (ACAT) ID programs (and ACAT IAM programs that have not been delegated). JCIDS also provides similar support to all other acquisition programs, regardless of the MDA.

**Figure 3: JCIDS and Defense Acquisition**

Figure 3 depicts the following key points:

- JCIDS uses a variety of approaches to determine capability requirements. The JCIDS Manual identifies some of these approaches, to include the conduct of a Capabilities-Based Assessment or other study. The key JCIDS intent is to identify the high-level operational capability requirements, establish quantifiable attributes and metrics, and articulate the
traceability from those capability requirements to the tasks, conditions, standards, missions, threats, and overall strategic guidance.

- JCIDS analysis compares capability requirements to current and programmed force capabilities to determine if there are any capability gaps that present an unacceptable level of risk and warrant development of capability solutions to mitigate or eliminate the gaps in capability. The DoD may then address these gaps using a combination of materiel and/or non-materiel solutions (non-materiel solutions would be changes to DOTmLPF-P).
- The Initial Capabilities Document (ICD) documents the results JCIDS analysis (commonly a CBA or other study) that the appropriate authority validates prior to the Materiel Development Decision (MDD). The operational attributes identified in the ICD are mission, not system specific, and also inform the Analysis of Alternatives (AoA) conducted during the MSA phase.
- The results of the AoA then inform the development of a draft Capabilities Development Document (CDD) to support Milestone A and inform the RFP for the TMRR phase contract. This draft CDD contains performance attributes, to include KPPs, KSAs and APAs that reflect the capability requirements for the solution selected at Milestone A. Toward the end of the TMRR phase, the prototyping and other activities (to include an AoA update, when appropriate) provide information to update the draft CDD that ultimately results in a validated CDD prior to the Development RFP Release Decision. This validated CDD in-turn informs the RFP for the EMD phase. Also, the KPPs from this validated CDD are inserted verbatim into the APB approved by the MDA at Milestone B.
- The validated CDD then drives EMD phase activities. After the system-level critical design review (CDR), this CDD is updated and designated a Capabilities Production Document (CPD), which is then validated prior to Milestone C. For an incremental acquisition program, the CDD may contain performance attributes for more than one increment while the CPD may contain only those attributes for the first production increment.

Fundamental to a successful program acquisition is the ability of the Requirements Manager (RM) to identify and clearly communicate warfighter capability needs and gaps and to team with the Materiel Developer on defining what is expected, both in terms of explicit and implicit requirements. Of significance when planning a program is realism in terms of understanding not only KPPs, KSAs, and APAs, but also those requirements resulting from sound engineering and manufacturing practice, with the ultimate goal of maturing and producing a design in the necessary quantities needed by the warfighter. This teaming arrangement also requires understanding further infrastructure requirements to utilize and sustain the new capability. Failure to recognize those latter imperatives leads to rework and cost/schedule growth.

Further information on CBA, as well as the nature and role of the Initial Capabilities Document (ICD), Capability Development Document (CDD), and Capability Production Document (CPD) can be found in the JCIDS Manual.

CH 1–3.2.1.1 Joint Requirements Oversight Council

10 USC 181 (para (b)), establishes JROC responsibilities. The Vice Chairman of the Joint Chiefs of Staff chairs the JROC and is also a member of the DAB. The Vice Chiefs of each military service are statutory members of the JROC. Also, unless directed by the JROC Chairman, the various Combatant Commanders (or Deputy Commanders) are highly encouraged to participate as appropriate when matters of that command will be under consideration by the JROC. For ACAT I and IA programs, and other programs designated as high-interest, the Joint Requirements Oversight Council (JROC) reviews and validates all JCIDS documents under its purview. For Acquisition Category ID and IAM programs, the JROC also makes recommendations to the DAB, based on such reviews. For all other ACAT level programs (ACAT II and III) the Service’s respective Army Requirements Oversight Council (AROC), Marine Corps Requirements Oversight Council (MROC), and Air Force Capability Development Council (AFCDC) address the capability gaps and validate the requirements documents.
10 USC 181 (para (d)), mandates key stakeholder advisors from across the Department and inter-DoD Agencies, when appropriate, to shape decisions in support of the Joint warfighter. This same Act specifically designated the following officials of the DoD as civilian advisors to the JROC:

- The Under Secretary of Defense (Acquisition, Technology, and Logistics)
- The Under Secretary of Defense (Comptroller)
- The Under Secretary of Defense (Policy)
- The Director of Cost Assessment and Program Evaluation
- The Director of Operational Test and Evaluation

Other civilian officials of the DoD may be designated by the SECDEF in accordance with the statute.

**CH 1–3.2.2 Planning, Programming, Budgeting, and Execution**

The purpose of the Planning, Programming, Budgeting, and Execution (PPBE) process is to allocate resources within the DoD. It is important for PMs and their staffs to be aware of the nature and timing of each of the events in the PPBE process since they may be called upon to provide critical information that could be important to program funding and success. The primary output of the PPBE process is the DoD funding proposed to be included in the President’s Budget (PB) that is submitted to Congress.

In the PPBE process, the SECDEF establishes policies, strategy, and prioritized goals for the Department, which are subsequently used to guide resource allocation decisions that balance the guidance with fiscal constraints. The PPBE process consists of three phases: Planning, Programming, and Budgeting.

**CH 1–3.2.2.1 Planning**

The Planning Phase of PPBE is a collaborative effort by the Office of the Secretary of Defense and the Joint Staff, with participation of the Services and Combatant Commands (COCOMs). It begins with issuance of the NSS (which defines national-level strategic outcomes that are to be achieved and are further refined in the SECDEF’s Defense Strategic Guidance [DSG] and the CJCS’s National Military Strategy [NMS]). It culminates with the Defense Planning Guidance (DPG). The DPG depicts a strategic view of the security environment and helps shape the investment blueprint for the Future Years Defense Plan (FYDP) (five years), informing the “programmers” on what to include in their Program Objectives Memorandum (POM) submission.

**CH 1–3.2.2.2 Programming**

The purpose of the Programming Phase is to allocate resources consistent with the DPG to support the roles and missions of the Military Services (i.e., Army, Air Force, Navy, and Marines) and Defense Agencies. During the Programming Phase, planning guidance contained in the DPG and other documents, OSD programming guidance, and congressional guidance are translated into detailed allocations of time-phased resource requirements that include forces, personnel, and funds. This is accomplished through systematic review and approval processes that “cost out” force objectives and personnel resources in financial terms for 5 years into the future. This process gives the SECDEF and the President an idea of the impact that present-day decisions have on the future defense posture. The OSD Director, Cost Assessment and Program Evaluation (D/CAPE) is responsible for overall coordination of the Programming Phase and is considered the official Lead for this phase of PPBE.

**CH 1–3.2.2.3 Budgeting**

The Budgeting phase of the PPBE process includes formulation, justification, execution, and control of the budget. The primary purpose is to scrutinize the first 1 or 2 years of a program’s budget to ensure efficient use of resources. The Under Secretary of Defense (Comptroller) (USD(C)) is responsible for overall coordination and is the Lead for the Budgeting phase of PPBE. While DoD Components submit their POMs to D/CAPE in mid-July and the Secretary of Defense/Deputy Secretary of Defense
(SECDEF/DEPSECDEF) is likely to sign the Program Decision Memorandum (PDM) in early November, the DoD Components submit their Budget Estimate Submission (BES), to the USD(C) in the fall, and SECDEF/DEPSECDEF signs Program Budget Decisions (PBDs) in November and December. The USD(C) and budget examiners from Office of Management and Budget (OMB) conduct a review of the DoD Components’ BES submission. Per agreement between OSD and OMB, senior budget examiners from OMB participate in the DoD budget review process at this point to preclude the necessity of OSD submitting the Defense Budget to OMB for a separate review as is required for all other federal agencies. The USD(C) and OMB emphasis during this review is on proper budget justification and ability to execute the proposed budget. OSD decisions pertaining to budget issues are reflected in PBDs (November/December) and incorporate all OSD decisions made during the Budgeting Phase. Four of the areas examined by the USD(C) budget analysts during the review and “scrub” of the Services’ and Agencies’ budget submissions include:

- Program Pricing
- Program Phasing
- Funding Policies
- Budget Execution

**CH 1–3.2.2.4 Execution**

The final activity in the PPBE process is the Execution Review, which occurs concurrently with the Program and Budget reviews. The purpose of the Program Review is to prioritize the programs that best meet military strategy needs, whereas the purpose of the Budget Review is to decide how much to spend on each of these programs. The purpose of the Execution Review, therefore, is to assess what is received for the money spent (e.g., actual performance versus planned performance). Performance metrics are developed and used to measure program achievements and attainment of performance goals. These metrics are analyzed to determine whether resources have been appropriately allocated.

The decisions associated with all phases of the PPBE process are reflected in the FYDP.

**CH 1–3.2.2.5 Funding Realism**

Based on the processes and reviews discussed previously, it is important that PMs recognize funding realism in terms of resources required to execute the program strategy—including personnel, funding, and facilities—that ought to be carefully planned, budgeted, and executed by the program. Further, it is well to recognize that the cycle for establishing and gaining funding is quite different and separate from the cycle for planning and executing an acquisition program.

**CH 1–3.2.3 Defense Acquisition System**

The Defense Acquisition System (DAS) is the management process for all DoD acquisition programs. DoDD 5000.01, Defense Acquisition System, provides the overarching management principles and mandatory policies that govern the DAS. DoDI 5000.02, Operation of the Defense Acquisition System, provides detailed procedures that guide the operation of the system through statutory and regulatory requirements that govern defense acquisition programs. One key principle of the DAS is the use of acquisition categories (ACATs). Programs are categorized by definitions and dollar thresholds. DoDI 5000.02 (Encl. 1, Table 1) prescribes the assignment of the cognizant Milestone Decision Authority (MDA) depending upon ACAT.

This results in a tiered acquisition category designation based on statutory requirements of increasing dollar value and management interest that are subject to increasing levels of oversight and reporting. While the category into which a program falls impacts acquisition procedures, documentation, and oversight criteria, the structure of a DoD acquisition program and the procedures employed should be tailored to the characteristics of the materiel solution being acquired, and consistent with the circumstances associated with the program, including operational urgency, risk factors, and affordability.
Statutory requirements are complied with, unless waived in accordance with relevant provisions. Figure 4 illustrates the interaction between the Capability Requirements Process of the JCIDS and the DAS.

**Figure 4: Interaction between JCIDS and Defense Acquisition System**

All acquisition programs respond to validated capabilities requirements that require the acquisition of a materiel solution.

**CH 1–3.2.3.1 Acquisition Category Definition Criteria, Thresholds, and Reporting**

The programs requiring the highest level of investment are known as Major Defense Acquisition Programs (MDAPs) or Major Automated Information System (MAIS) programs. MDAPs and MAIS programs have the most extensive statutory and regulatory reporting requirements. Refer to DoD[5000.02](Encl. 1, Table 1) for a description and categorization criteria for ACAT I through ACAT III.

Acquisition programs are divided into categories to facilitate decentralized decision-making, execution, and compliance with statutorily imposed requirements. The categories determine the level of review, decision authority, and applicable procedures. Figure 5 provides an overview of the Acquisition Categories, Decision Authority, and Reviews.

**Figure 5: Acquisition Categories, Decision Authority, and Reviews**

Note. AoA = Analysis of Alternatives; RFP = Request for Proposal.
For acquisition programs, the chain of command runs upward from the PM, through the PEO to the CAE; and for ACAT I, IA, and other programs so designated, to the DAE, refer to DoDI 5000.02 (Encl. 2, para 2).

**CH 1–3.2.3.1.1 ACAT I**

Acquisition Category (ACAT) I programs are MDAPs by statute when they meet either of the following criteria:

- The dollar value for all increments of the program is estimated by the DAE to require eventual expenditure for Research, Development, Test, and Evaluation (RDT&E) of more than $480 million (Fiscal Year [FY] 2014 constant dollars) or procurement, including all planned increments, of more than $2.79 billion (FY 2014 constant dollars).
- Programs can also be designated by the MDA as ACAT I programs based on a “special interest” designation. This designation is based on one or more of the following factors: technology complexity, congressional interest, a large commitment of resources, or the program is critical to achievement of a capability or set of capabilities, part of a system-of-systems, or a Joint program. Programs that already meet the MDAP and MAIS thresholds cannot be designated as Special Interest.

The USD(AT&L) designates programs as **ACAT ID** or **ACAT IC**:

- **ACAT ID** for which the MDA is the USD(AT&L).
- **ACAT IC** for which the MDA is the DoD Component head or, if delegated, the DoD CAE.
CH 1–3.2.3.1.2 ACAT IA

A *Major Automated Information System (MAIS)* program is a DoD acquisition program for an Automated Information System (AIS). It becomes an ACAT IA program when it is either designated by the MDA as a MAIS, or by statute when it is estimated to exceed:

- $40 million (FY 2014 constant dollars) for all increments, regardless of appropriation or fund source, directly related to the AIS definition, design, development, and deployment, and incurred in any single FY; or
- $165 million (FY 2014 constant dollars) for all expenditures, for all increments, regardless of appropriation or fund source, directly related to the AIS definition, design, development, and deployment, and incurred from the beginning of the Materiel Solution Analysis (MSA) phase through deployment at all sites; or
- $520 million (FY 2014 constant dollars) for all expenditures, for all increments, regardless of appropriation or fund source, directly related to the AIS definition, design, development, deployment, Operation and Maintenance (O&M), and incurred from the beginning of the MSA phase through sustainment for the estimated useful life of the system; or
- Programs can also be designated by the MDA as ACAT I programs based on a “Special Interest” designation. This designation is based on one or more of the following factors: technology complexity, congressional interest, a large commitment of resources or the program is critical to achievement of a capability or set of capabilities, part of a system-of-systems, or a Joint program. Programs that already meet the MDAP and MAIS thresholds cannot be designated as Special Interest.

Note: AISs do not include computer resources, neither hardware nor software, that: are an integral part of a weapon or weapon system; are used for highly sensitive classified programs (as determined by the SECDEF); are used for other highly sensitive Information Technology (IT) programs (as determined by the DoD Chief Information Officer [DoD CIO]); or are determined by the USD(AT&L) or designee to be better overseen as a non-AIS program.

The USD(AT&L) designates programs as ACAT IAM or ACAT IAC:

- **ACAT IAM** for which the MDA is the USD(AT&L) or as designated by the USD(AT&L). The “M” (in ACAT IAM) refers to MAIS.
- **ACAT IAC** for which the USD(AT&L) has delegated to the head of the DoD Component—the CAE. The “C” (in ACAT IAC) refers to Component.

CH 1–3.2.3.1.3 ACAT II

Programs are defined as those acquisition programs that do not meet the criteria for an ACAT I program, but do meet the criteria for a major system. A major system is defined as a program estimated by the DoD Component head to require eventual expenditure for RDT&E of more than $185 million in FY 2014 constant dollars, or for procurement of more than $835 million in FY 2014 constant dollars, or those designated by the DoD Component head to be ACAT II. The MDA is the DoD CAE.

CH 1–3.2.3.1.4 ACAT III

Programs are defined as those acquisition programs that do not meet the criteria for ACAT II. The MDA is designated by the CAE. This category includes less-than-major AISs.

CH 1–3.2.3.1.5 ACAT IV (Navy and Marine Corps Only)

Programs in the Navy and Marine Corps not otherwise designated as ACAT III are designated ACAT IV. ACAT IV programs fall into two categories: IVT (Test) and IVM (Monitor). ACAT IVT programs require Operational Test and Evaluation (OT&E), while ACAT IVM programs do not.
CH 1–3.2.3.1.6 ACAT and Non-ACAT programs in the Operations and Support Phase

Programs operating in this phase will require modifications and upgrades to remain viable and relevant to their operating environments. These efforts may or may not reach an ACAT level in dollar terms but it is likely some portion of the DoD 5000.02 guidance and document set will require completion. Tailoring of guidance and documentation should be consistent with the programs environment including operational urgency, risk factors, and affordability. Guidance and documentation should also account for sustainment elements that are not directly present in the acquisition process of new systems—organic labor and capital, existing sustainment contracts, Service O&M budgets.

CH 1–3.2.3.2 Defense Acquisition Program Models

As a starting point in structuring an acquisition program, an acquisition PM can use one of the program models described below and then tailor it to fit a specific acquisition program. DoD 5000.02 (para 5) provides a description of the four basic examples and two hybrid models.

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

CH 1-4.2.7 through CH 1-4.2.10 provide detailed information on specific types of programs including Information Technology (IT), International Acquisition and Exportability (IA&E), and Joint and Urgent Capability Acquisition.

CH 1–3.3 Organizing an Acquisition Program

The fundamental responsibility of the defense acquisition workforce is to ensure that high-quality, affordable, supportable, and effective defense systems are delivered as quickly as possible—all while balancing the many factors that influence cost, schedule, and technical performance. In order to achieve maximum program effectiveness and delivery success, the tailoring of acquisition process requirements is encouraged. (See Tailoring and Critical Thinking: Key Principles for Acquisition Success, Defense AT&L Magazine, September-October 2015, pages 7-11.)

The Department’s extensive use of high-value, complex systems guides the need for a world-class, highly competent program management workforce. The following Section describes key personnel and infrastructure concepts for defense acquisition programs.

CH 1–3.3.1 Program Executive Officer

A Program Executive Officer (PEO) is a senior acquisition manager and is typically responsible for a specific program, or for an entire portfolio of similar programs. The PEO normally only reports to, and receives guidance and direction from, the DoD Component Acquisition Executive (CAE). PEO assignment of acquisition program responsibilities is made by the CAE based on the criteria contained in (Encl. 2, para 3).

The PEO’s mission is to provide executive-level management of all assigned acquisition programs. The PEO has oversight responsibility for cost, schedule, and performance in a DoD acquisition program and/or portfolio. PEOs exercise executive-level authority and responsibility for program management, including: optimizing interoperability and standardization; technical and quality management; logistics support; and readiness management activities for assigned programs. PEOs are responsible for programmatic processes and the various aspects of planning and budgeting required to oversee their assigned program(s) through the applicable decision points and milestones. In this capacity, the PEO
provides overall direction and integration of assigned programs and assures effective interface with Defense-level headquarters and Departments, as well as other Services, combat system developers, and supporting commands and activities.

Program responsibilities for programs not assigned to a PEO or to a direct reporting PM may be assigned to a commander of a systems, logistics, or materiel command in accordance with DoDI 5000.02 (Encl. 2, para 3).

CH 1–3.3.2 Program Manager

The Program Manager (PM) is the designated individual with the responsibility and authority to accomplish program objectives for development, production, and sustainment of a capability that satisfies validated user requirements.

CH 1–3.3.2.1 Roles, Actions, and Activities

An effective PM has the "big picture" perspective of the program, including in-depth knowledge of the interrelationships among its elements. DoDi 5000.02 (Encl. 2, para 6) describes program management responsibilities.

PM’s have key responsibilities in four principal areas: Acquisition Management, Technical Management, Business Management, and Executive Leadership. Additional information regarding PM responsibilities is available in Introduction to Defense Acquisition Management (CH 3).

CH 1–3.3.2.2 PM Assignment

The CAE selects a PM and establishes a PMO to complete the necessary actions associated with planning the acquisition program with emphasis on the next phase. DoDi 5000.02 (Encl. 2, para 4) addresses PM selection criteria and assignment duration by program type. To reach the requisite level of confidence essential within the acquisition chain of command, successful PMs possess the specialized skills, tools, certifications, and experience standards that establish their credentials. They also possess skill in managing resources and sustaining an environment that enables the successful acquisition and management of the program.

The PM is identified as early as possible, and it is the PM’s responsibility, working with the PEO and CAE, to organize and staff a program management office commensurate with the scope and complexity of the program. See DoDi 5000.02 (Encl. 2, para 5) for more information.

CH 1–3.3.3 Program Management Office Key Leadership Positions

Designation of key program staff is critical to the operations of the PMO. Program staff is tailored to program size and complexity and comprised of individuals and groups who are required to perform program management functions, as well as support program management activities. They maintain certifications, standards, and sound business practice, as well as possess the knowledge and practical expertise necessary to successfully execute a program. USD(AT&L) memorandum, “Key Leadership Positions (KLP) and Qualification Criteria,” designates certain MDAP and MAIS program office positions as KLPs and prescribes qualification requirements essential for selection to these positions. Additional functional-specific requirements and preferences for KLPs are located at the DAU Certification & Core Plus Development Guides. These requirements are updated by the functional leader for the individual career field.

CH 1–3.3.3.1 Cross-Functional Competencies

As stated in the USD(AT&L) memorandum, “Key Leadership Positions (KLP) and Qualification Criteria,” listed positions are required to be assigned to each MDAP and MAIS program, and filled by properly qualified members of the armed forces or full-time employees of the DoD. Five factors are identified as requirements essential for KLP selection. Attachment 1 of the memorandum, Common Cross-Functional
KLP Requirements, lists the requirements for KLP selection. KLPs benefit from broad experience within the following cross-functional competencies:

- **Executive Leadership.** Demonstrated competencies in leading change, leading people, managing results, building coalitions, business acumen, and an enterprise-wide perspective. The DoD leader competency framework provides the governing model. Refer to DoDI 1430.16, Growing Civilian Leaders (Encl. 3, Table 1).
- **Program Execution.** The leadership and management of a defense acquisition program covering every aspect of the acquisition process, such as integration, engineering, program control, test and evaluation, deployment, configuration management, production and manufacturing, quality assurance, and logistics support.
- **Technical Management.** The organization, governance, and effective application of current technology, acquisition practice, design, and security considerations in building/acquiring and maintaining large complex systems.
- **Business Management.** The oversight of controlling, leading, monitoring, organizing, and planning for the business success of a program. This includes achieving best value to the government.

KLPs require a significant level of authority commensurate with the responsibility and accountability for acquisition program success. In accordance with the USD(AT&L) key leadership memorandum, the following positions are designated as mandatory KLPs for ACAT I and International Acquisition (IA) programs, and are designated in the position category associated with the lead function.

- The following KLPs are dedicated to a single ACAT Program:
  - Program Manager (PM) (additionally, ACAT II)
  - Deputy Program Manager (DPM)
  - Chief Engineer/Lead Systems Engineer
  - Product Support Manager (Program Lead Logician)
  - Chief Developmental Tester (see 10 USC 139b)
  - Program Lead, Business Financial Manager

The following lead positions on MDAP/MAIS programs are necessary when the function is required based on the phase or type of acquisition program. These lead positions may be associated exclusively with a single program or be shared across multiple programs:

- Program Lead, Contracting Officer
- Program Lead, Cost Estimator
- Program Lead, Production, Quality, and Manufacturing
- Program Lead, Information Technology
- Program Lead, International Acquisition

Key Program Management staff strive to improve critical thinking skills as a strong contributing factor for increasing personal and team program effectiveness and competitiveness in a resource-constrained environment. Additional functional-specific requirements and preferences for KLPs are located at the Defense Acquisition University (DAU) Certification & Core Plus Development Guides. These requirements are updated by the functional leader for the individual career field.

**CH 1–3.3.4 Key Stakeholders**

Program Managers (PMS) develop a program-specific stakeholder management strategy for their programs. Who are my stakeholders? Where does my communication plan fit in my Integrated Master Plan (IMP)/Integrated Master Schedule (IMS)? They can be individuals or groups that are both inside and outside the organization. These stakeholders can be positively or negatively impacted by the program. Stakeholders can positively or negatively influence program outcomes.
CH 1–3.3.4.1 Stakeholder Engagement Process

To increase the probability that the program or project succeeds, use the 6-stage (refer to Figure 6) “Stakeholder Engagement Process.”

**Figure 6: Stakeholder Engagement Process**

```
1) Identify Stakeholders (Stakeholder Map)
2) Prioritize Stakeholders (Power Grid)
3) Analyze Stakeholders (Interests, Expectations *Requirements
4) Focus Engagements (Involvement Matrix)
5) Plan Engagement Actions (What, When, Who)
6) Evaluate (Plan for Success)
Succeed!
```

This is a proven process that includes analysis, planning and execution, with an outcome that enhances the probability of success. While the first four stages are important, the Stage 5 engagement of the key stakeholders is the most crucial activity.

Step 1: Identify your stakeholders using a stakeholder map (refer to Figure 7).

**Figure 7: Stakeholder Map**

![Stakeholder Map Diagram](image)
Step 2: Prioritize stakeholders (primary, secondary, and other) by rating their influence and importance on the power grid (refer to Figure 8).

**Figure 8: Stakeholder Power Grid**

- Extent to which a stakeholder’s requirements, expectations and interests are affected by project/program outcomes
- Extent that a stakeholder is able to act on project/program planning or execution and affect or impact project/program outcomes

Step 3: Analyze the Interests, Expectations, and Requirements (IERs) for each key stakeholder. What are the stakeholder’s interests? What does the stakeholder like or desire? Perhaps the stakeholder desires cost control. Next, what are the stakeholder’s expectations? What does the stakeholder want from others? Perhaps the stakeholder has expectations of communication to avoid surprises. Finally, what are the stakeholder’s requirements? “What was agreed to?” Both the government and the stakeholder now have a contract and have agreed to a cost (refer to Table 1).

**Table 1: Stakeholder Interests, Expectations, and Requirements**

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Requirements</th>
<th>Expectations</th>
<th>Interests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supervisor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subordinates</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contractors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peers</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Step 4: Focus on engagement by assessing each stakeholder in an Involvement matrix to examine their current state (refer to Figure 9).
Step 5: Plan stakeholder engagement on where the government and stakeholders envision their future state as compared to the Involvement matrix, e.g., perhaps moving a stakeholder from being apathetic to being an advocate. How is the action going to be done (inform, consult, monitor, or partner). Who is responsible for carrying out the action, and when will that action be accomplished? This means a plan of what needs to be accomplished.

Step 6: Finally, engage and evaluate how stakeholder involvement is progressing. Strategy adjustments may be necessary to optimize success in stakeholder engagements.

**CH 1–3.3.5 Integrated Product and Process Development/Integrated Product Team**

Defense acquisition works best when all of DoD works together. Cooperation and empowerment are essential. Per DoDD 5000.01 (Encl. 1, para E1.1.2 – page 5), the Department's acquisition, financial, and capability needs communities use Integrated Product Teams (IPTs) to maintain continuous and effective communications with one another.

Integrated Product and Process Development (IPPD) is the management technique used in DoD to simultaneously integrate all essential acquisition activities through the use of multidisciplinary teams to optimize design, manufacturing, and supportability processes. One key tenet of program management is the use of multidisciplinary teamwork through IPTs.

IPTs are an integral part of the defense acquisition process and support to the PMO. For ACAT ID and ACAT IAM programs, there are generally two levels of IPTs: the Working-Level Integrated Product Team (WIPT) and the Overarching Integrated Product Team (OIPT). Figure 10 illustrates the Defense Acquisition IPT structure.
CH 1–3.3.5.1 Integrated Product and Process Development

Within the PMO under the PM leadership the IPPD integrates all acquisition activities starting with requirements definition through production, fielding/deployment, and operational support in order to optimize the design, manufacturing, business, and supportability processes. One of the key IPPD tenets is multidisciplinary teamwork through Integrated Product Teams (IPTs).

CH 1–3.3.5.1.1 IPPD Key Tenets

Integrated Product and Process Development (IPPD) stresses cross-functional communication throughout the acquisition process and includes the following key tenets:

- **Customer-focused.** Meet the customer's needs better, faster, and cheaper.
- **Concurrent development of products and processes.** Processes used during all phases are considered throughout product design and development.
- **Early and continuous life-cycle planning.** This begins with science and technology efforts and extends throughout the entire acquisition life cycle.
- **Maximize flexibility for optimization and use of various contractor approaches.** Contracts are designed to allow contractors to apply IPPD principles and make use of effective commercial standards, practice, and processes.
Encourage robust design and process improvement capability. Techniques are used that achieve quality through design, focus on process capability, and stress continuous process improvement.

Event-driven scheduling. Scheduling relates program events to their respective accomplishments and accomplishment criteria.

Multidisciplinary teamwork. Decision-making is based on input from the entire team to reduce risk and create a work environment that is more likely to result in successful suggestions.

Empowerment. Team members have the authority to make decisions at the lowest possible level commensurate with risk.

Seamless management tools. A management framework is established that helps show the interrelationship of all products and processes.

Proactive identification and management of risk. Risk analyses and user needs are evaluated to identify critical cost, schedule, and technical parameters.

CH 1–3.3.5.1.2 IPPD Pitfalls

Integrated Product and Process Development (IPPD) pitfalls can arise that impact the quality, effectiveness, and timeliness of the overall process. Some of these barriers include:

- Lack of commitment from top management, which can hurt team member motivation and impact their ability to achieve results.
- Need for significant cultural change due to the inherent hierarchical structure of the military, which contrasts with the philosophy set forth in the IPPD process.
- Lack of adaptation to the IPPD process by functional organizations, thereby reducing everyone’s performance.
- Lack of planning, which causes teams to rush to catch up, thus impacting quality.
- Poor or non-existent education/training in the IPPD process.
- No effort to identify and/or share best practice in IPPD implementation.
- A "not invented here" mentality that can arise due to the many functional areas involved in the IPPD process, which leads to a lack of information sharing.
- Contractually imposed practice that hinder a contractor’s flexibility.
- Use of IPPD by the contractor, but not by DoD, resulting in morale problems and less effective working relationships.
- Awarding of contracts to traditional approach contractors who are not familiar with the IPPD process, even if it is specified in the Request for Proposal (RFP).
- Unrealistic promises by contractor to implement IPPD.
- Poor contract award fees or incentives that don't encourage IPPD.
- Poorly run meetings or reviews, resulting in over-emphasis of a particular topic or functional area to the exclusion of others.

CH 1–3.3.5.2 Integrated Product Teams

Program oversight and IPPD processes are implemented through Integrated Product Team (IPT) members who represent technical, business, and support functions. The following guiding principles improve the productivity of any IPT:

- Chartering, launch, and initiation. To get the team off to a good start, prepare a charter documenting the mission, timeframe, and membership of the IPT; train participants in IPT principles and the role of each team member; and prepare a Plan of Actions and Milestones (POA&M).
- Goal alignment. Team leaders ensure that the goals and objectives of each team member are consistent with the goals of the project. Effective feedback mechanisms can be put in place to facilitate this.
• **Open discussions with no secrets.** Due to the unique design of IPTs in which each member has expertise in a specific area, free and open communication among all members is essential.

• **Empowered, qualified team members.** Team members have the authority to represent their superiors in the decision-making process. They remain in close communication with their bosses to ensure their advice is sound and not subject to change later, barring unforeseen circumstances.

• **Dedicated/Committed, Proactive Participation.** Because team success hinges on participation by members with institutional knowledge of functional areas, IPTs are organized so that all key stakeholders can contribute effectively. In many cases, this means minimizing membership to enhance communication and trust.

• **Issues Raised and Resolved Early.** All issues are raised openly and discussed at the earliest possible opportunity, and solved through team consensus and discussion, not isolated conversations "offline."

**CH 1–3.3.5.2.1 IPT Procedures, Roles, and Responsibilities**

Each program has an Overarching Integrated Product Team (O IPT) and at least one Working-Level Integrated Product Team (WIPT). WIPTs focus on a particular topic such as cost/performance, program baseline, Acquisition Strategy, test and evaluation, or contracting. An Integrating Integrated Product Team (IIPT), which is itself a WIPT, coordinates WIPT efforts and covers all program topics, including those not otherwise assigned to another IPT. IPT participation is the primary way for any organization to participate in an acquisition program. IIPTs are essential for ACAT ID and ACAT IAM programs to facilitate the PM’s engagement with Office of the Secretary of Defense (OSD) and Joint Staff-level stakeholders. IIPTs also provide the requisite input to the O IPT. Table 2 provides a summary of DoD IPT types, focus, and responsibilities.

<table>
<thead>
<tr>
<th>Org.</th>
<th>Type</th>
<th>Focus</th>
<th>Responsibilities</th>
</tr>
</thead>
</table>
| OSD and Components | O IPT (applies to MDAPs) | • Strategic Guidance  
• Tailoring  
• Program Assessment  
• Resolve Issues Elevated by WIPTs | • Program Success  
• Functional Area Leadership  
• Independent Assessment  
• Issue Resolution |
|                    | WIPTs                 | • Planning for Program Success  
• Opportunities for Acquisition Reform (e.g., innovation, streamlining)  
• Identify/Resolve Program Issues  
• Program Status | • Functional Knowledge & Experience  
• Empowered Contribution  
• Recommendations for Program Success  
• Communicate Status & Unresolved Issues |
| Program Teams & System Contractors | Program IPTs | • Program Execution  
• Identify & Implement  
• Acquisition Reform | • Manage the Complete Scope of Program, Resources & Risk  
• Integrate Government & Contractor Efforts for Program Success  
• Report Program Status & Issues |

**Table 2: Summary of DoD IPT Types, Focus, and Responsibilities**
The PM, or designee, in collaboration with OSD staff specialists from the offices of the OIPT Leader and other key stakeholders for the program, forms an Integrating IPT (IIPT) and WIPTs, as necessary. There is no "one size fits all" WIPT structure. IIPT/WIPTs may, but are not required to, be formed to support the development of strategies for acquisition and contracts, cost estimates, evaluation of alternatives, logistics management, test and evaluation, and other areas, as appropriate for that program. If formed, the IIPT assists the PM in the development of a WIPT structure to propose to the OIPT. The IIPT also coordinates the activities of the remaining WIPTs and ensures that issues not formally addressed by other WIPTs are reviewed. (Refer to Figure 10, which depicts a complete OIPT, IIPT, and WIPT structure.)

The membership of a particular WIPT depends on its purpose and includes relevant stakeholders, such as members of program oversight, user, testing, logistics, contracting, and systems engineering communities, as appropriate. Contractors, although not formal members, are not precluded from WIPT participation; however, since WIPTs have an oversight function that may require discussion of competition-sensitive and/or government information, contractor participation is considered on a case-by-case basis. WIPTs meet on an as required basis to help the PM plan the program’s structure and documentation, and resolve issues. While there is no one-size-fits-all WIPT approach, there are three basic tenets to which any approach adheres:

- The PM is in charge of the program.
- WIPTs are advisory bodies to the PM.
- Direct communication between the program office and all levels in the acquisition oversight and review process is expected as a means of exchanging information and building trust.

The leader of each WIPT is normally the PM or the PM’s representative, but the OSD action officer may co-chair WIPT meetings at the invitation of the PM. The following roles and responsibilities apply to all WIPTs:

- Assist the PM in developing strategies and in program planning, as requested by the PM.
- Establish WIPT Plan of Actions and Milestones (POA&M).
- Propose tailored documentation and milestone requirements.
- Review and provide early input to documents.
- Coordinate WIPT activities with the OIPT members.
- Resolve or elevate issues in a timely manner.
- Assume responsibility to obtain principals’ concurrence on issues, applicable documents, or portions of documents.

**CH 1–3.3.6 Program Leadership and Battle Rhythm**

Key to being a successful PM is integration of leadership with the program battle rhythm.

**CH 1–3.3.6.1 Program Leadership**

Program Managers need to think about the distribution of time to the challenges most important to program success. So how does one select where to spend their time? The key is to understand a PM’s role in establishing, managing, as well as leading an acquisition team. The PMs leadership roles are varied:

- The first is to set direction and establish goals. The establishment of goals contains emotional and logical elements. The emotional side of goal setting is for motivating and inspiring the team members to perform their best—not because they are directed to do so, but because they want to do it. The logical part of goal setting is tangible, measurable, and time-phased. Key management tools are the IMP/IMS.
• The second is establishing the culture of the team. Culture is the values, rituals, and symbols the team accepts, which are passed along by imitation from one generation to the next. How a team brands itself is critical to its performance. Key for program management is to have a disciplined culture that uses the program tools to accomplish the mission. The PM needs to lead this disciplined culture.

• The third is to provide a winning environment. Often, PMs too narrowly focus their efforts in this area on just resources. Does the team have the right people, enough money, a workable schedule, the proper materials, and access to information? But part of creating a winning environment entails building spheres of influence, which then allows team members to have sway with key stakeholders and their own chain of command. Finally, part of building a winning environment means an acquisition leader creates an environment for the team to evaluate and learn as it performs. In the book Clear Leadership, Gervase Bushe says the rapidness of change in the world today often means internal mental models for addressing challenges no longer apply. This is perhaps what the USD(AT&L) had in mind in the memorandum dated January 7, 2015, issuing the new DoDI 5000.02, by writing:

Successful defense acquisition depends on careful thinking and sound professional judgments about the best Acquisition Strategy to use for a given product. Even more than previous versions, this DoDI 5000.02 emphasizes tailoring of program structures, content, and decision points to the product being acquired.

• To move a program forward, the team is constantly aware of new opportunities in a changing environment. After meetings, reviews, and decisions, a leader holds timely discussions on what worked and what could be improved. What needs to change in the plan—the IMP/IMS? Don’t hold onto a plan that needs to change. Change the plan—the IMP/IMS. Leaders are not assigned to maintain the status quo.

• The fourth is to provide mentorship—that is, to grow the team. The previous bullet was about improving the synergy amongst team members. This is about the performance of individuals on the team. All leaders claim to care about their team. What separates the leaders of teams is that they go beyond saying they care to developing plans and strategies for demonstrating their concern for their employees’ growth and well-being. It is on their calendar.

• The fifth and final role is that leaders set and enforce standards of performance that drive command performance. Everyone on the team is responsible for cost, schedule, and performance. If performance expectations are not set down to the team level, there can be no expectation for teams to meet a standard of performance.

CH 1–3.3.6.2 Program Battle Rhythm

As for setting a battle rhythm, the key is to remember PMs are what they do—what is on the calendar. To set a good battle rhythm, routinely review the calendar to see where time is being spent. The tyranny of today’s challenges can easily distract a PM’s focus from fulfilling leadership responsibilities/roles. Every PM can commit to a daily routine of reviewing their calendar and recognizing how much of their time is committed to Leadership 101. An example battle rhythm is depicted in Table 3.

Table 3: Battle Rhythm Example

<table>
<thead>
<tr>
<th>Daily</th>
<th>Weekly</th>
<th>Monthly</th>
<th>Quarterly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walk the office</td>
<td>Weekly activity report</td>
<td>Update on status to your direct reports</td>
<td>All hands update</td>
</tr>
<tr>
<td>Be positive</td>
<td>Feedback to Senior Leaders</td>
<td>Feedback – formal (SBI)</td>
<td>Update org succession plan and review individual development plans</td>
</tr>
<tr>
<td>Communicate your purpose (Why &amp; How) today</td>
<td>Engage top-tier stakeholders</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Daily
- Say hello, thank you, and thanks for correction
- Live & maintain a climate of integrity, dignity, professionalism, & open communications
- Respect people’s time
- Lead from the front…personal example & appearance
- Keep commitments
- Appreciative Inquiry
- Give informal SBI (situation, impact, behavior) feedback
- Stress relief activity
- Take the job, not yourself, seriously
- Do not pass up the teachable moment

### Weekly
- Highlight WINS
- Delegate and monitor
- Reflect on week completed
- Reward positive behavior/correct negative behavior
- Always learning
- Celebrate the successes
- Alignment with stakeholders (user, industry, sponsor)

### Monthly
- Develop workforce (DAWIA, education, professional training, etc.)
- Get to know your people
- Hold second tier supervisors accountable to know their people, reward, feedback, etc.
- Hole exit interviews
- Review calendar for holidays, Service anniversaries, heritage months, etc.

### Quarterly
- All hands team building (chili cook-off, costume party, etc.)
- Formally update PEO/Senior Leadership
- Review latest program information (CRS, GAO, testimony, industry annual reports)

As the program leader, the PM, along with the other key leaders on the program, sets a rhythm along with a culture that empowers the PMO team. One thing the PM may want to consider is how the battle rhythm addresses or compensates for real or perceived personal or PMO challenges. As appropriate, given IPT dynamics, daily and weekly assessments help maintain an overall program execution status. This information flows into part of the overall daily, weekly, monthly, and quarterly program reporting process cycle.

Most PMO work activity is event-driven and outlined as tasks in the IMS to be accomplished in a sequence. Some work activity, especially management efforts such as cost, schedule, and risk management are cyclical. The event-driven and cyclical activities are planned into a battle rhythm that aligns with the major events for management of the program as outlined in the program IMP. It is critical that both technical and management tasks are tracked within the IMS. PMO team activities such as contracting actions and budget execution activities are tracked in the same schedule as the technical work, thus allowing for a complete picture for the program team on work that needs to be accomplished.

Establishing a realistic and executable battle rhythm enables the PM and PMO team to manage the work detailed in the program schedule (IMS) and to identify changes to the IMS when appropriate. The Acquisition Program Baseline (APB) may not change, but the details to reach that baseline will likely need to be adjusted as the program progresses.

Leading that effort with a realistic battle rhythm that allows for adjustments gives the team confidence to meet program execution challenges and grow in skill and ability. The PM-established and -led battle rhythm provides a higher probability of delivering a system that meets requirements within established cost and schedule.
CH 1–3.4 Integrated Acquisition Planning and Execution

As a solid understanding of requirements, both explicit and implicit, and realistic funding profile are necessary at the initiation of an acquisition, so also is a reasonable and realistic plan and schedule of work. Sound schedules merge with cost and technical data to influence program management decisions and actions. Robust schedules used in a disciplined manner help stakeholders make key go-ahead decisions, track and assess past performance, and predict future performance and costs. Proven and effective tools for planning, scheduling, and execution of work are the Integrated Master Plan (IMP) and Integrated Master Schedule (IMS). PMO realization of an IMP/IMS at the program level depends upon the development and integration of IMP and IMS inputs from all functional areas. This development and integration cannot happen on its own. Leadership example and active use of the tools are required. The IMP and IMS:

- Are management tools that enhance the management of acquisition, modification, and sustainment programs?
- Provide a systematic approach to program planning, scheduling, and execution.
- Are equally applicable to competitive and sole-source procurements with industry, as well as to government in-house efforts.
- Improve day-to-day program execution and facilitate ongoing insight into program status by both government PMO personnel and contractor personnel.
- Help develop and support “what if” exercises, and identify and assess candidate problem workarounds.

The IMP documents the significant criteria necessary to complete the accomplishments, and ties each to a key program event. The IMS expands on the IMP with an integrated network of tasks, sub-tasks, activities, schedule for deliverables, and milestones with sufficient logic and duration. It answers the question, “How will we do this and when will we be done?” The IMS also serves as a tool for time-phasing work and assessing technical performance. IMS activities are thus traceable to the IMP and the Work Breakdown Structure (WBS), and allow integrated assessments of cost, schedule, technical performance, and associated risks.

To assist the PM and the PMO team, refer to the IMS “Cheat Sheet” for additional information.

CH 1–3.4.1 Program Schedule

The PM working with the PMO team should develop a high-level Program Schedule in conjunction with the IMP development activities. This high-level Schedule along with the IMP will drive, and be driven by, the development of the program Acquisition Strategy. Additionally, this high-level Program Schedule is not the same as the IMS, but they must be fully aligned. The high-level Program Schedule maybe referred to as a “Program Roadmap” The high-level Program Schedule would provide a detailed graphic illustrating program milestones, phases, and events; it is usually a Power Point chart format. Depicted events and milestones will vary by program, but will minimally include key acquisition decision points; principal systems engineering and logistics activities such as technical reviews and assessments; planned contracting actions such as request for proposal (RFP) release, source selection activity, and contract awards; production events and deliveries; and key test activities. (Figure 11 is a notional depiction of the expected level of detail. For example, contract details will vary with the contracting approach and the plan for competition and multiple suppliers; the use of options, re-competes, and/or new negotiated sole source; etc.)

Figure 11: Notional Depiction of the Program Schedule
Each program has a high-level Program Schedule along with an Integrated Master Plan (IMP) and Integrated Master Schedule (IMS), and requires the same from its contractor(s). The IMP and IMS communicate the program execution expectations of the program team and provide traceability to the management and execution of the program by IPTs. The government program schedule should incorporate the contractor(s) schedule in the same manner the program WBS incorporates the contractor(s) WBS. This will also provide traceability to the program WBS, the Contract WBS (CWBS), the Statement of Work (SOW), and risk management, which together define the products and key processes associated with program execution. A best practice may be to provide the government IMP, along with other government planning documents (Program WBS, Systems Engineering Plan [SEP], Program Protection Plan [PPP], etc.) as a part of the RFP.

The IMP is an event-based plan consisting of a hierarchy of program events tailored and scaled according to the size, content, maturity, and risk of the program. It consists of three main elements: Program Events, Significant Accomplishments, and Accomplishment Criteria.

- **Program Events** are decision and/or assessment points that occur at the culmination of significant program activities. Typical examples might be major milestone reviews (such as a Milestone B), technical reviews (System Requirements Review [SRR]), Preliminary Design...
Review [PDR], Critical Design Review [CDR], etc., and program reviews (such as an Integrated Baseline Review [IBR]).

- **Significant Accomplishments** are typically entry and/or exit criteria relative to the program event. For example, want/desire requirements analysis to be "completed"—among other things—in order to claim credit for a successful PDR.
- **Accomplishment Criteria** describe the specific conditions necessary to claim full credit for a significant accomplishment. In this case, requirements analysis is "completed" at this PDR when the requirements analysis for element A, element B, and element C are all completed.

Construction in this fashion enables the IMP to reflect how program leaders characterize and make decisions about their programs. In addition, accomplishment criteria can be directly associated with specific WBS elements, IPT leader, SOW paragraphs, Contract Data Requirements Lists (CDRLs), or Risks and Opportunities. This facilitates very robust traceability as depicted in Table 4. The government PMO and contractor can each employ IMPs.

**Table 4: Example IMP Numbering System**

<table>
<thead>
<tr>
<th>Activity Number</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>IMP Event</td>
</tr>
<tr>
<td>A01</td>
<td>IMP Accomplishment</td>
</tr>
<tr>
<td>A01a</td>
<td>IMP Criteria</td>
</tr>
<tr>
<td>A01a01-n</td>
<td>IMS Task</td>
</tr>
<tr>
<td>A</td>
<td>PDR Complete</td>
</tr>
<tr>
<td>A01</td>
<td>Requirements Analysis Completed</td>
</tr>
<tr>
<td>A01a</td>
<td>Avionics Requirements Analysis Complete</td>
</tr>
<tr>
<td>A01a01</td>
<td>Perform Avionics Requirements Analysis</td>
</tr>
<tr>
<td>A01a02</td>
<td>Develop Avionics Draft Specification</td>
</tr>
<tr>
<td>A01a03</td>
<td>Coordinate Avionics Draft Specification for Review</td>
</tr>
<tr>
<td>A01a04</td>
<td>Publish Avionics Specification</td>
</tr>
</tbody>
</table>

The IMP and the program WBS then are used to develop the program IMS.

The PM and the PMO team determine an appropriate level of detail for the IMS. For the IMS, what level of detail is needed? In general, the IMS should go at least one level lower than the detail outlined in the WBS. Over time that detail is expanded as the program is further defined.

- **Proposal.** Include enough detail to allow for program documentation, such as cost estimates, SEP, TEMP, etc., can be linked together through the Integrated Master Schedule (IMS). Provide enough detail to convince the reviewers that the problem is understood and an executable solution is in place that takes anticipated risk and opportunities into consideration. Conduct a macro-level program schedule risk analysis with input from the overall IMS, thus allowing the program team to understand the impacts risk/opportunities will have on the schedule.
- **Execution.** Include lower level detail for all tasks as the required details for execution. This can be done in a “rolling wave” manner; thus, later tasks become more detailed and clearer through execution of early tasks. The program execution schedule should be supplemented by the contractor’s schedule. The two schedules are linked together through the program WBS, as the contract WBS is a subset of the program WBS.
Ultimately, the IMP and IMS represent the plan and schedules for satisfying the capability need. The IMP and IMS then allow for continuous program assessments of the program status. Therefore, the PMO team can greatly enable future program execution through the effective layout of the program IMP and IMS. The IMP and IMS help the PM and PMO team:

- Identify a baseline for program monitoring, reporting, and control.
- Plan, execute, and track risk and opportunity efforts.
- Support resource analysis and leveling, exploration of alternatives, and cost/schedule trade-off studies.
- Provide a roadmap for stakeholders.
- Enable effective communication within the government team and with the developer(s).

**CH 1–3.4.2.1 IMP/IMS Development**

The Key Leaders provide inputs to the program Integrated Master Plan/Integrated Master schedule (IMP/IMS). The team can use the IMP/IMS to integrate processes and products, and provide an auditable sequence of tasks and events that can be used to measure technical progress. A resource-loaded schedule can also be used to measure cost performance, as is done within Earned Value. Program Managers can consider how cost and technical performance tracking are integrated with the schedule. The riskier the program, the more value an integrated performance measurement approach will be. The development and analysis of program IMP/IMS data:

- Permit assessments of the developer's activities, efforts, and products.
- Contribute to a better understanding of the technical basis of cost and schedule variances.
- Provide a framework for developing corrective actions.

The PMO IMP is an event-driven government document that provides a framework against which all work is measured. It includes functional, focused activities necessary to successfully deliver the desired capability. It aids in defining and documenting tasks required to define, develop, and deliver a system, and facilitates operation and support of that system throughout its life cycle. The format usually reflects an Event-Accomplishment-Criteria hierarchical structure for program tracking and execution.

The IMS is an integrated, networked model containing all the detailed discrete tasks necessary to realize the IMP accomplishment criteria. The IMS is directly traceable to the IMP and the program WBS, and includes all the elements associated with development, production, modification, and delivery of the total product or program level plan. The result is a fully networked dynamic model that supports engaged leadership decision-making. There are two types of schedules:

- **Government Integrated Master Schedule (IMS).** This IMS is used to manage the program on a daily basis from the Materiel Development Decision (MDD) through disposal. This IMS tracks all government activities at a level appropriate for both management of the tasks as well as leadership decision-making. Note that the government work is scheduled to the same level as the contractors' work, thus allowing for a common approach across all IPTs. The government IMS draws status and forecasting information from contractor IMS, as required to maintain program situational awareness.

- **Contractor IMS.** This IMS is used to manage the contract on a daily basis from contract award through contract completion. This IMS tracks all contractor activities at a level appropriate for leadership decision-making, but also in a manner that accounts for all contract scope. This typically results in a "tiered" and linked IMS structure from program level down to detailed level. This IMS is typically anchored in the WBS and is resource-loaded. A best practice is to update the IMS on a regular basis as part of a monthly Contractor CDRL.

The IMS focuses on the product and relationship of the tasks/efforts required to execute the program. It is resource-loaded and includes margin for risk mitigation. The IMS supplements the IMP, but it can be
WBS-based or event-based. Either way, all of the tasks are mapped to a WBS element. When the IMP (Events-Accomplishments-Criteria) dictate the structure of the IMS, then the CWBS is integrated into this framework as a referenced substructure. When the CWBS dictates the structure on the IMS, then the IMP Criteria are integrated into this framework as a referenced substructure. It is important to keep this in mind when defining these items in order to arrive at a product that clearly articulates the PM’s intentions and is useable as a tool for managing the program.

The IMS describes the work required to complete the effort in sufficient detail to fully demonstrate understanding of the scope and flow of the work. It enables the PM to better understand the links and relationships among the various activities and the resources supporting them.

The first, best opportunity to explore in detail the relationship among cost, schedule, and technical risk is through close-up assessment of the IMP and IMS at an Integrated Baseline Review (IBR). IBRs examine the baseline as a means to assess risk and opportunity, and thus do not require Earned Value Management (EVM). They are simply a best practice approach. To assist the PM and the PMO team, refer to the IBR “Cheat Sheet” for additional information.

The PM and PMO team monitor development of the IMS by the contractor/developer to ensure that activity durations and resources are reasonable. However, monitoring is not management. The analysis and predictions include the impacts of the risk. If any mitigation works, the schedule moves left. The IMS also includes opportunities and the actions associated with their pursuit. This oversight aids risk and opportunity analysis, and the development of mitigation/pursuit plans.

Early identification of, and adherence to, critical path tasks are essential to ensure that the program remains on track toward achieving schedule and cost goals. The IMS provides linkages between tasks to capture the relationship of predecessor and successor tasks required to initiate or complete major tasks.

Lastly, remember the IMS is a living document that is continuously updated to reflect the progress of the program or project.

Three sources of comprehensive information on developing and using IMPs and IMSs are:

- Integrated Master Plan and Integrated Master Schedule Preparation and Use Guide
- NDIA, Planning & Scheduling Excellence Guide (PASEG)
- GAO Scheduling Assessment Guide
- PM CoP

CH 1–3.4.3 Functional Integrated Master Plan/Integrated Master Schedule Inputs

Accepting that detailed planning is a requirement for an acquisition program by both government and industry, the Integrated Master Plan/Integrated Master Schedule (IMP/IMS) construct should be used not just by the contractor, but also by the government PMO. Thorough planning in accordance with statutory, regulatory, and policy requirements at both the functional and program level is an ongoing necessity. As changes related to external and internal factors occur, they need to be accommodated in an integrated program plan, which is also represented in the program IMS. The use of a PMO IMP and IMS for daily, weekly, and monthly management of the acquisition at all levels, not just the prime Contractor(s), is both appropriate and effective.

The following seven figures (Figures 12 through 18) depict typical, but definitely not all-inclusive samples of Activities, Documentation, and Reviews by acquisition functional area and acquisition phase that, as applicable to the program, are considered in functional inputs to the PMO IMP/IMS. The graphics present higher level activities and events for which accomplishments and criteria would need to be agreed upon as the IMP is developed. IMPs for other ACAT and/or Acquisition Model programs would have similar activities and events tailored to the size and type of the acquisition being planned. The functional IMP inputs are also supported by functional IMS inputs, as the PMO IMP is implemented by a PMO IMS.
Development and utilization of IMPs and IMSs are intensive activities, but they provide PMs and functional leaders with necessary visibility into program execution to manage the acquisition.

**CH 1–3.4.3.1 Systems Engineering**

DoDI 5000.02 (Encl. 3, para 2) and CH 3–2.2, set requirements and expectations for Systems Engineering (SE) planning for any program, of any type or model, that is to be documented in the Acquisition Strategy (AS), Systems Engineering Plan (SEP), Program Protection Plan (PPP) and other documents. The plan is expected to be the most effective and efficient path to deliver a capability, from identifying user needs and concepts through delivery and sustainment.

Figure 12 provides a starting point for SE activities, reviews, and documentation by acquisition phase from Materiel Solution Analysis to Operations and Support. It serves only as an example—every IMP is tailored to the specific program being planned and executed.

**Figure 12: System Engineering Considerations**

```
<table>
<thead>
<tr>
<th>SE Activities</th>
<th>Documentation/Reviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluate material solution alternatives against capability requirements (include cybersecurity)</td>
<td>Inputs to ASR: AS, TEMP, LSCP</td>
</tr>
<tr>
<td>Conduct analysis to support preferred material solution</td>
<td>Inputs to CED/COM/MPU: Cases</td>
</tr>
<tr>
<td>Define balanced and achievable performance requirements</td>
<td>System Performance Specification (SEP/PPP)</td>
</tr>
<tr>
<td>Develop technical strategy/plans, including potential rapid approaches and technical risk opportunities</td>
<td>Updated SEP/PPP (w/ associated documents)</td>
</tr>
<tr>
<td>Assess and assess technical/risks</td>
<td>Updated inputs: AS, TEMP, LSCP</td>
</tr>
<tr>
<td></td>
<td>Initial Interface control documents</td>
</tr>
<tr>
<td></td>
<td>Functional/Allocated Baseline</td>
</tr>
<tr>
<td></td>
<td>RAMP-C Report</td>
</tr>
<tr>
<td></td>
<td>ASR</td>
</tr>
<tr>
<td></td>
<td>SWA, SFE, RMP, IPA, IIA</td>
</tr>
<tr>
<td></td>
<td>SE Activities</td>
</tr>
<tr>
<td></td>
<td>Inputs to CED/COM/MPU: Cases</td>
</tr>
<tr>
<td></td>
<td>System Performance Specification</td>
</tr>
<tr>
<td></td>
<td>Updated SEP/PPP (w/ associated documents)</td>
</tr>
<tr>
<td></td>
<td>Initial Product Baseline</td>
</tr>
</tbody>
</table>
```

**DAG Chapter 3 Systems Engineering, and DAG Chapter 9 Program Protection** can be used as guides to developing the SE input to the program IMP.

**CH 1–3.4.3.2 Product Support**

DoDI 5000.02 (Encl. 6) and CH 4–2.2 both address expectations for sustainment planning. DoDI 5000.02 (Encl. 6, paras 2 and 3) and Figure 13 list specific activities that should be considered in sustainment planning and content for the LCSP that is a deliverable at Milestone A.
DAG Chapter 4 provides best practice and guidance for executing a weapon system's sustainment planning and states that sustainment planning should begin as early as initial capability reviews as a best practice to ensure sustainment can be effectively executed when first production quantities are fielded.

Figure 13 has activities by phase that are in two Sections: Considerations and Documentation and Reviews. Developing a Sustainment IMP to be supported by an IMS can be a collection of parallel IMPs, the results of which would be documented in the LCSP. One or more sustainment IMPs would be initiated for later consolidation by Logistics Trade Studies and other activities listed in the Materiel Solution Analysis phase as for Risk, Issues and Opportunities; another for fielding strategy; or another for CORE, 50/50/ and DSO/R evaluation. The separate IMPs would feed a Product Support IMP initiated in the Materiel Solution Analysis phase leading to development of a draft LCSP that would be updated throughout the remaining acquisition phases.

**CH 1–3.4.3.3 Contracts**

Figure 14 identifies Considerations and Documentation and Reviews for defense acquisition, most of which are associated with developing and executing the Acquisition Plan (AP), which may be a separate
document or the required AP elements may be included in the AS. Whether planning a separate AP or incorporating required elements in the program AS development of a Contracts IMP that identifies key events, developing AP content with supporting IMS enables visibility and tracking throughout the acquisition. For more information on PM interactions with contracting activities refer to CH 1–4.2.11.

Figure 14: Contracts

CH 1–3.4.3.4 Test and Evaluation

DoDI 5000.02 (Encl. 4 and 5) detail Test and Evaluation (T&E) expectations to provide engineers and decision-makers with knowledge to assist in managing risks, to measure technical progress, and to characterize operational effectiveness, suitability, and survivability. Accomplishing those goals requires planning, resourcing, and executing a robust and rigorous T&E program. A T&E program begins early in the life cycle and continues through the life of the system, with major events at every phase of the acquisition. Planning, resourcing, and executing the T&E is a program management responsibility that is documented in the Test and Evaluation Master Plan (TEMP).
DoDI 5000.02 (Encl. 4 and 5) provide extensive expectations for program office involvement with test activities, including field activities. Figure 15 includes some, but hardly all, Considerations, Documentation and Reviews, by phase, for T&E. The information outlined in Figure 14, along with DoDI 5000.02 (Encl. 4 and Encl. 5), clearly indicates that in any defense system acquisition program, regardless of scope or cost, management needs a roadmap of T&E events. Those T&E events identify specified accomplishments and criteria to create an IMP that enables development of a T&E IMS to identify resources required and to track T&E progress. Refer to CH 8–3 for additional T&E guidance.

Figure 15: Test and Evaluation

CH 1–3.4.3.5 Budget, Cost Estimating, and Financial Management

Figure 16 is intended as a starting point for the input of a Business and Financial Manager (BFM) to the program Integrated Master Plan (IMP), to which events may be added or deleted depending on the program and its status. The following graphic includes both DAS and PPBE events in the sequential acquisition phases from which the PMO BFM can develop an IMP input with accomplishments and criteria in order to develop and deliver documentation for DAS and/or PPBE activities.

Figure 16: Budget, Cost Estimating, and Financial Management
CH 1–3.4.3.6 Production

Figure 17 represents typical, but not necessarily a complete or universal, set of Considerations, Documentation, and Reviews associated with weapon systems production to ensure integration of manufacturing readiness and risk as part of design activities. (Refer to CH 3–3.3.7 for additional information on production planning and manufacturing readiness activities.) Figure 17 indicates that as with other PMO processes, it is expected that planning for production should begin as early as the Materiel Solution Phase and continue through intervening phases until key events as the Production Readiness Review (PRR) CH 3–3.3.7, Physical Configuration Audit (PCA) CH 3–3.3.8 and Factory Acceptance Test (FAT) CH 8–4.4.1 are accomplished with achievement of previously established exit criteria.

**Figure 17: Production**
A Production IMP and supporting Production IMS that are populated with events and supporting activities enable program management not only to track progress toward those key events, but also to ensure that resources are in place at the right time.

**CH 1–3.4.3.7 International Acquisition and Exportability**

DoD instructions governing early consideration of International Acquisition and Exportability (IA&E) include **DoDI 5000.02** (Encl. 2, para 7.a.(1)), require program management to consider the potential for cooperative development or production, and/or foreign sales or transfers early in the acquisition planning process, and throughout the acquisition life cycle. See **CH 1–4.2.8** and **Chapter 1, Supplement 1 International Acquisition and Exportability (IA&E)** for details on IA&E actions during the acquisition phases. A top-level summary of IA&E considerations across the acquisition phases and related activities, documentation, and programs are illustrated in Figure 18.

*Figure 18: International Acquisition & Exportability*
CH 1–3.4.4 Organizing and Planning Pitfalls

When it comes to program management, and the integration and orchestration of program activities, including working with stakeholders and enabling sound decisions, there are a variety of pitfalls. The following is a list of concerns for PMs to consider.

- Starting to write before thinking through and understanding the risks and opportunities associated with the desired program outcomes.
- Flawed framing assumption(s) (refer to CH 1–4.2.4).
- Overly optimistic or incomplete acquisition planning (IMP/IMS) (refer to CH 1–3.4.2).
- Taking the easy road to generating the necessary program documentation by using “Fluff” and “Cut and Paste” approach.
- No margin—no ability to cope with unidentified risks.
  - Lack of substantive business planning:
    - Artificially limited scope
    - Contract type and contract incentive not aligned with program risks and opportunities
    - “Red” funding numbers in the near years
    - And the Biggy—following policy without knowing the why.
  - Poor integration within documents and with the other key documents.
- Linking high-technology dependency with a moderate-low technical risk assessment.
• Ignoring stakeholder concerns (refer to CH 1–3.3.4.1).
• Program lacks formal documented risk mitigation plans for all medium/high risks.
• Program fails to track execution progress toward mitigation plans, e.g., mitigation tasks do not have resources assigned, due dates, or the status of the task.
• Lack of off-ramps for major program risks.
• Programs underestimate the power of opportunity management and limit use of Should Cost techniques/thinking (refer to CH 1–4.2.17.1).
• Program performance baseline not well understood by the government PM.
• Risks and their mitigations are disconnected from Earned Value Management/Work Breakdown Structure/Integrated Master Schedule/Integrated Master Plan (EVM/WBS/IMS/IMP) planning and processes.
• Earned value management not effectively utilized as a program execution management tool (refer to CH 1–4.2.16).
• Program planning/execution does not link Technical Performance Measures with EVM/Risk Management/WBS/IMS/IMP.
• Program management fails to have a portfolio view of risk and opportunity management.
• Lack of internal training process.
• Failure to plan for international acquisition involvement—including program protection and exportability aspects—early enough.

Certainly, this is not an all-inclusive list, but it represents a good sanity check for PMs to walk through and reflect on whether their team has fallen into one or more of these pitfalls. The next question is: What other pitfalls do PMs need to be mindful of regarding successful delivery of the capability required?

CH 1–3.4.5 Organizing and Planning Expected Benefits

The expected benefit of planning and organizing an acquisition initially and throughout its life cycle is a higher probability of delivering a system that meets requirements within established cost and schedule. The JCIDS, PPBE, and DAS each have detailed expectations for program management that are not met in the absence of a sound understanding of those enterprises and their expectations. This requires the PMO, operating as an IPT, executing or overseeing the execution of many detailed plans that are captured in both a government and a contractor Integrated Master Plan and Integrated Master Schedule (IMP/IMS). These tools can be used to status program execution on a daily, weekly, and monthly basis. Clearly, the IMP and IMS are not the only tools in the tool box—but they enable the PMO to maintain visibility into all aspects of the program during the very complicated process of taking a capability requirement to a fielded system. Thoughtful and detailed planning that is documented in an IMP and IMS can enable the resourcing and timely execution of events documented in program acquisition documents such as the Acquisition Strategy, Systems Engineering Plan, Life Cycle Sustainment Plan, and Test and Evaluation Master Plan.

CH 1–4. Additional Planning Considerations

Section 4 presents more than 20 key considerations for program management consideration during development of an acquisition program, an Acquisition Strategy, and other documentation. While every acquisition program does not have to be concerned with each of the topics, most will. The level of detail is meant to be far more than an introduction to a subject. Enough significant detail is included to create a roadmap (IMP view) for program management. Checklists are omitted; most of the topics reference other resources for additional guidance and/or more details for addressing the topic as it pertains to an acquisition program or Acquisition Strategy.

CH 1–4.1 Acquisition Strategy

The Acquisition Strategy (AS) is the primary means that a PM uses to define the approach for an acquisition program. An Acquisition Strategy is a statutory requirement for Major Defense Programs (IAW 10 USC 2431a) at Milestone A, the Pre-RFP Milestone, and updates at Milestone C and Full Rate Production Fielding Decision. Acquisition strategies are required for all major system acquisition programs
by FAR 34.004, which states, the PM, as specified in agency procedures, shall develop an Acquisition Strategy tailored to the particular major system acquisition program. This strategy is the PM’s overall plan for satisfying the mission need in the most effective, economical, and timely manner. The strategy shall be in writing and prepared in accordance with the requirements of Subpart 7.1, except where inconsistent with this part, and shall qualify as the acquisition plan for the major system acquisition, as required by that subpart. The use and purpose of the Acquisition Strategy are further defined in DoDI 5000.02 (Encl2, para 6). The statutory topics required in an Acquisition Strategy (see DoDI 5000.02, Encl. 1, Table 2) include:

- Benefit Analysis and Determination
- Consideration of Technology Issues
- Contract Type Determination
- Cooperative Opportunities
- General Equipment Valuation
- Industrial Base Capabilities Considerations
- Intellectual Property (IP) Strategy
- Market Research
- Small Business Innovation Research
- Termination Liability Estimate
- Federal Acquisition Regulation 34.004, Acquisition Strategy, establishes broader requirements for the Acquisition Strategy (Acquisition Plan)

This Section provides a discussion on planning an acquisition strategy as well as related topics, including the capability being developed, budgeting, and listing of acquisition models from which to choose that best fit the performance, schedule, and cost of the acquisition being planned. Program Managers can use one of the following models as a starting point in structuring an acquisition program to acquire and tailor it to fit their specific acquisition program. DoDI 5000.02 (para 5) provides a description of the four basic examples and two hybrid 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)

After determining which of the models best fits the planned acquisition, PMs can consider how to address the statutory and regulatory requirements in the Acquisition Strategy. Additional considerations for developing a program strategy are found in CH 1–4.2.

For the PM and the PMO team, the Acquisition Strategy provides a comprehensive, integrated plan that identifies the acquisition approach and describes the business, technical, and support strategies that the PM plans to employ to manage program risks/opportunities and meet program objectives. It communicates the relationship between the acquisition phases and work efforts, and key program events as outlined in the Integrated Master Plan (IMP) referred to in CH 1–3.4.2 such as decision points, reviews, contract awards, test activities, production lot/delivery quantities, and operational deployment objectives.

The primary authors of the Acquisition Strategy are the PM and acquisition team (PMO). To assist in the development of the Acquisition Strategy, a template — the Milestone Document Information Tool (MDID) — has been developed to outline the required sections and key questions. Final approval of the Acquisition Strategy is made by the Milestone Decision Authority (MDA).

In addition to the statutorily required topics, the Acquisition Strategy addresses key elements such as requirements satisfaction, concept of operations/use cases, technical risks, resources requirements, and
funding requirements. For each of these broad topics, there are other program documents, such as the SEP, ICD, CDD, and TEMP, which provide the foundation for critical thinking that is summarized in the Acquisition Strategy. As such, the goal of the Acquisition Strategy is not to provide all the foundational information, but sufficient information and data with references to demonstrate validity of the specific approach and planning for the acquisition.

Once approved by the MDA, the PM will execute the Acquisition Strategy to complete the program. A significant caution in developing a program Acquisition Strategy is the framing assumptions that underlie the overall strategy. If they are not identified and taken into consideration, or prove to be incorrect (see CH 1–4.2.4 for a discussion on Framing Assumptions), there will be, at some point in the acquisition, realization that the Acquisition Strategy is flawed. Frequently, the failure of a framing assumption is a precursor to a restructuring of the program.

Revisions/updates to the Acquisition Strategy are required at major milestones (by statute), prior to the release of an RFP (if independent of a milestone), and after a Nunn-McCurdy determination. These updates can range from a minor update to a major rewrite with change pages for the MDA’s approval.

10 USC 2305, Contracts: Planning, Solicitation, Evaluation, and Award Procedures establishes a requirement for acquisition planning. According to 10 USC 2305 (a)(1)(A), in preparing for the procurement of property or services, the head of an agency shall— (ii) use advance procurement planning and market research.

In addition to the Acquisition Strategy, the PM is also responsible for developing another document—the Acquisition Plan. According to the Defense Federal Acquisition Regulation Supplement (DFARS 207.103(g), “the PM or other official responsible for the program has overall responsibility for acquisition planning.” FAR 7.104(c)) states that, "The planner [read as PM] shall coordinate with and secure the concurrence of the Contracting Officer in all acquisition planning."

From a regulatory perspective, FAR 34.004 – Acquisition Strategy, states, “The strategy shall be in writing and prepared in accordance with the requirements of FAR Subpart 7.1, except where inconsistent with this part, and shall qualify as the acquisition plan for the major system acquisition, as required by that subpart.” Those requirements are divided into two main Sections (i.e., Acquisition Background and Objectives, and Plan of Action) as depicted in FAR Subpart 7.105. A summary is provided below:

- **Acquisition Background and Objectives**
  - Statement of Need and applicable conditions, including:
    - Cost (life-cycle cost; design-to-cost; and application of should-cost)
    - Capability or performance
    - Delivery or performance-period requirements
    - Tradeoffs; risks; acquisition streamlining

- **Plan of Action**
  - Sources
  - Competition
  - Contract type selection
  - Source-selection procedures
  - Acquisition considerations
  - Budgeting and funding
  - Product or service descriptions
  - Priorities, allocations, and allotments
  - Contractor versus government performance
  - Inherently governmental functions
  - Management information requirements
  - Make or buy
  - Test and evaluation
  - Logistics considerations
CH 1–4.2 Considerations in Developing a Program Strategy

The following subsections present potentially significant subjects for PM consideration in developing the program plan and acquisition strategy.

CH 1–4.2.1. Improving Acquisition Outcomes

Improving acquisition outcomes is a perennial goal, and every acquisition professional has a role. From early materiel solution analysis onward, requirements and acquisition professionals can team to find efficient solution alternatives to minimize the need for customized or DoD-unique solutions to capability gaps. As solutions are acquired, the drive to capture opportunities to reduce life-cycle cost is the focus of many initiatives (aka “Should Cost”—see CH 1–4.2.17.1) on a program or across a portfolio. And finally, throughout operations and support, program teams continue to capture opportunities that increase net buying power through cost-effective enhancements to fill emerging capability gaps, or to more efficiently support existing capabilities. These efforts help our warfighting customers make efficient use of precious discretionary funds to meet portfolio-wide capability needs.

During program planning and execution, including well into sustainment, the following key areas warrant consideration to improve acquisition outcomes:

CH 1–4.2.1.1 Program Affordability

At its core, affordability requires teamwork. OSD and Service decision authorities (requirements, programming, and acquisition communities) ensure a system can be afforded in future budgets by conducting an affordability analysis at the portfolio level, to establish both production and sustainment affordability caps before a program is initiated. This customer-defined affordability goal, reviewed at each major milestone, enables a PM to focus the acquisition team on program cost drivers, and to offer requirements tradeoffs if needed, across the planned life cycle. See CH 1–4.2.15 for more information.

CH 1–4.2.1.2 Achieving Dominant Capabilities While Controlling Life Cycle Costs

- Agility vs. Responsive and Emerging Threats. Most capability areas face responsive threats; moreover, new threats mature with shorter lead times than in past decades. Being adaptive warrants a very strong Acquisition, Intelligence, and Requirements (AIR) community triad to inform portfolio planning, technology development, system design, product improvement, and technical refresh.
  - Critical Intelligence Parameters (CIP). Use of CIPs focuses the program management team on the importance of integrating with the requirements and intelligence communities on key threat performance levels that could impact the viability of the materiel solution being acquired. PEOs and PMs work with requirements sponsors to identify threshold values for CIPs to enable the intelligence community to alert them when an adversary’s capability substantially changes or seems likely to change. Timely notification of threat changes relative to a CIP enables a conversation on whether to change operational requirements and make a design change, or to take other appropriate actions. CIPs are continuously monitored by the Intelligence Community (IC), and should be discussed at the program’s annual Configuration Steering Boards
If a CIP is breached, the CAE can convene an out-of-cycle CSB to deal with the threat change.

Integration of Intel at Major Milestones. Program Managers can factor in planning and resourcing for operational intelligence mission data (IMD) requirements across the life cycle. The acquisition strategy and systems engineering approach can also factor in the latest threat projections including review of program CIPs.

- **Cybersecurity.** Program teams address cybersecurity planning and execution across the program life cycle. Protection is also critical for classified and unclassified program information as well as potential access to DoD products in the field and through the supply chain. The DoD Chief Information Officer (CIO) published guidance to go beyond information assurance (IA) and focus on overall cybersecurity. The guidance replaced the former DOD-unique process (called “DIACAP”) with the Risk Management Framework (RMF) for implementing and certifying cybersecurity. The USD(AT&L) and the DoD CIO jointly published a DoD Program Manager’s Guidebook for Integrating the Cybersecurity Risk Management Framework into the System Acquisition Lifecycle. The T&E community also published a DoD Cybersecurity Test and Evaluation Guidebook that is useful for program planning.

**CH 1–4.2.1.3 Incentivizing Productivity and Cost Savings**

Business strategies can increase buying power based on a variety of considerations:

- **Careful selection of contract type.** The use of incentive-type contracts (Cost Plus Incentive Fee [CPIF] and Fixed Price Incentive [Firm Target] [FPIF]) has been highly correlated with better cost and schedule performance. Although not mandated for use, OSD guidance reinforces a preference for these types of contracts when appropriate. [Note: The title of this paragraph is linked to a convenient table on contract type considerations.]
- **Effective use of Performance-Based Logistics (PBL) Arrangements:** PBL arrangements can balance cost and performance, whether industry or the government is the provider. PBL provides explicit productivity incentives that drive increased DoD buying power, particularly for service contracts such as maintenance and support contracts. For more details on best practice, consult the DoD PBL Guidebook: A Guide to Developing Performance-Based Arrangements.
- **Removing Barriers to Commercial Technology Use.** Military products are developed and fielded on longer time scales than pure commercial products, particularly electronics and information technology. Cycle time could be reduced through more effective use of commercial technologies. This initiative can be accelerated by small business research and development initiatives and the use of Modular Open Systems Architectures (MOSA) where practical, to foster shorter update cycles and to ease commercial tech insertion.

**CH 1–4.2.1.4 Incentivizing Industry and Government Innovation**

Acquisition outcomes can often be increased by fostering innovation and more timely technology insertion for the products DoD uses. Use of commercial technology is a way to boost productivity and reduce cycle times.

- **System architecture considerations to stimulate innovation.** Since many defense systems have long life cycles, incremental enhancements are commonplace; this expectation drives initial design and sustainment planning. The selection of MOSA (see CH 3–2.4.1 and CH 6–3.7.1.1) is one way to enable agility to more rapidly insert new capabilities, or to enhance cybersecurity, both of which provide needed military advantage throughout the life cycle. OSD has published a guidebook of best practice on Contracting for MOSA (DoD Open Systems Architecture Contract Guidebook for Program Managers). Architecture considerations are central to the program’s systems engineering planning; likewise, the
Intellectual Property Strategy (CH 1–4.2.18.1) can enable the program to leverage the MOSA throughout the product life cycle.

- **Emphasize technology insertion and refresh in program planning.** Early focus on “developmental planning” efforts enables program offices to understand refresh/replacement cycle timelines for various technologies. This enables life-cycle opportunities for technology insertion to be part of program plans. The PM leads life-cycle forecasting with the user, and Science and Technology (S&T) communities. Opportunities can include commercial technologies, S&T transitioning from government laboratories, and military technologies being matured through rapid prototyping, including industry Independent Research and Development (IRAD)-funded efforts.

- **Engage industry early and often.** Much of the Defense acquisition community’s program results are attained in relationship with industry, be it firms focused on defense-related products and services, commercial products, or firms that provide DoD a wide spectrum of support services. The following specific efforts to improve acquisition outcomes are focused on leveraging a strong and open relationship with industry:
  - **Provide draft technical requirements to industry early, and iteratively if necessary.**
    - Program teams that do not communicate with suppliers about requirements may be operating under misconceptions.
    - A typical Request for Proposal (RFP) will give industry 30-60 days to provide a proposal, even for large-scale systems developments. Short timelines are beneficial only if RFPs and industry proposals have had the benefit of previous sharing of thinking on issues such as risks, cost drivers, performance drivers, and technology opportunities.
    - A spectrum of interaction can be very advantageous—using broad industry days to share business opportunities across a portfolio, and focused engagements like RFIs, Program Industry Days with one-on-one meetings, and draft RFPs.
  - **Involve industry in funded concept definition.** Beyond early communications, consider funding competitive concept definition studies (e.g., early design trade studies and operations research) to inform decisions about requirements and as inputs to the formal Analyses of Alternatives (AoAs). Although this is an up-front expense, it can boost net buying power by fueling industry innovations, which can enable better user requirements that enable more responsive capability solutions.
  - **Provide industry clear definitions of “best value.”** The customer funding a solution is the best judge of the value they place on increased capabilities. Therefore, in RFIs, program teams capture customer value, in monetary terms, of higher levels of performance than minimally acceptable or threshold levels. OSD has published updated DoD Source Selection Procedures with more details on these practices.

**CH 1–4.2.1.5 Eliminate Unproductive Processes to Reduce Cycle Time and Cost**

PEOs and PMs are positioned to influence a drive for leaner processes at the Service/Agency and OSD levels. Moreover, PEOs and PMs can, through their actions, drive the factors that can create a lean culture in their program teams—a culture that pervades the processes they govern. Some suggestions:

- **Create a Lean culture.** The use of incentives is one way to overtly demonstrate an interest in driving more lean business practice. Command- or Agency-sponsored internal suggestion or “IDEA” programs can provide financial rewards and more importantly, peer recognition of innovative ideas.
- **Leverage Value Engineering.** Value Engineering is a DoD-wide program that focuses on creating more value—it can recognize ideas from government or contractor employees or teams. On contracts, the Value Engineering Clause can be used to incentivize Value Engineering Change Proposals from contractors (and their subcontractors, through the prime) that ultimately increase the government’s buying power.
- **Reduce Cycle Times.** Eliminating non-valued added staffing of numerous program documents can certainly help reduce cycle times. It is incumbent on PEOs and PMs to
advocate program tailoring to the maximum extent in program planning, leveraging early reviews of program strategy outlines and in-process reviews of tailored program plans.

**CH 1–4.2.1.6 Promote Competition through Market Research to Increase Small Business Participation**

Market research is the cornerstone of determining supplier capabilities in DoD acquisition and can reveal sweet spots for small business utilization. In addition, program offices and PEO teams can work with their Service Small Business Office to plan and participate in at least one small business-focused outreach event each year. Such events can inform the Small Business industrial base on policy updates and enable Small Business matchmaking with program offices and S&T organizations.

**CH 1–4.2.1.7 Improve Tradecraft in Acquisition of Services**

- **Improve requirements definition for services.** Defining requirements well is a challenging, but essential prerequisite to achieving desired services acquisition outcomes. As most services are integrated into the performance of a mission, it is critical for the program office (the acquirer) to get the mission owner (often an operational commander) involved in the requirement definition, as well as the acquisition and execution phases. Clearer, more focused requirements will help prevent clarifications that lead to protracted source selections and/or contract modifications to correct vagueness. For more specific program management actions for planning services acquisition, see CH 10–2.1.1.

- **Improve the effectiveness and productivity of contracted engineering and technical services.** DoD relies extensively on contracted services for technical management, systems engineering, and engineering services. CAEs and PEOs are expected to pursue enterprise approaches for acquiring these Engineering and Technical Services (ETS). PMs can leverage such enterprise contracts to reduce acquisition lead times and reduce costs for acquiring such support services.

**CH 1–4.2.1.8 Continuously Improve Acquisition Workforce Skills and Qualifications**

PMs and PEOs can have a great impact on their team, especially in terms of creating a culture of continuous learning. There are many skills that can offer significant leverage, if cultivated carefully and continuously:

- **Cultivate organic program office engineering and critical thinking capabilities.** PEOs and PMs can strengthen organic engineering capabilities by equipping the technical workforce with essential education, training, and job experiences, along with the right physics-based tools, models, data, and engineering facilities. These organic engineering capabilities posture the program team to better understand and manage requirements and technical risks. Moreover, program office and staff members with non-technical backgrounds can hone systems thinking skills, as well as more skilled critical thinking, through training and mentoring. Program Managers can proactively manage their organic workforce and elevate to the PEO any specific organic skill gaps that add risk in managing their projects.

- **Improve ability to perceive and mitigate technical risk and capture cost-saving opportunities.** Successful product development requires understanding and actively managing risks, beginning with requirements formulation, through planning and conducting a risk-reduction phase, if needed, and in structuring and executing development and test activities. PMs recognize that often net buying power is increased by spending money upfront on active risk management or to capture opportunities that will have the greatest net impact on program performance. Anticipating possible adverse events, evaluating probabilities, understanding potential consequences and secondary cost/schedule impacts, and taking timely action to limit their impact if they occur is the essence of risk management. Likewise, opportunity management requires astute perception of favorable events that, if
cultivated, could result in net cost savings and therefore improve acquisition outcomes. Capturing cost-saving opportunities is the essence of “Should Cost.” PMs lead risk management activities throughout the program life cycle. The DoD Risk, Issue, and Opportunity Management Guide for Defense Acquisition Programs is a reliable, up-to-date reference and team training tool.

The goal of improving acquisition outcomes is an overriding focus that permeates program management. There are specific actions acquisition professionals can take to be effective in this quest for efficiency in the midst of rapidly changing threats and technologies. Innovation comes from many sources, and increasingly, it comes from the commercial sector, including small businesses, and from both the United States and allied nations.

**CH 1–4.2.2 Program Structure**

Every program is different and should be individually structured. Determining the best structure for a program starts with an understanding of the product to be acquired. The program Acquisition Strategy should be based on tailoring one of the six models, but program content and decision points can be influenced by the following, among other considerations:

- Technology maturity
- Level of risk
- Design maturity and complexity
- DoD’s experiences with similar designs or products
- Integration aspects
- Manufacturing technology and capabilities
- Life-cycle sustainment
- International or Joint program intent

While all programs will have a Materiel Development Decision Milestone, these considerations and others inform the decision of whether a Technology Maturation and Risk Reduction phase is needed, and the required duration prior to the start of Engineering and Manufacturing Development (EMD). Similar processes guide the structure beyond the EMD through Production and Deployment, and into Operations and Support.

In addition to a thorough understanding of the product itself and the risk inherent in developing and producing it, a range of other considerations that might influence program structure can be considered:

- Urgency of product delivery
- Industry capability to design and produce the product
- Uncertainty or imbalance of cost and capability
- Customer’s priorities for performance
- Resource constraint effects on program risks

Each program is structured in a way that optimizes the chances of success. Evidence leading to a strong probability of a successful acquisition program is reflected in the program Acquisition Strategy. The thought process and the supporting data that led to the specific, unique Acquisition Strategy are well documented and clearly communicated to senior leadership during program reviews and when presenting program plans.

Additional program structure considerations are described in CH 1–4.2.2, CH 3–3.1.1, CH 6–3.2, CH 9–3.2.5 and CH 9–3.3.1.

Also refer to “The Optimal Program Structure,” an article by Frank Kendall, Under Secretary of Defense (AT&L), and Defense AT&L magazine: July–August 2012.
CH 1–4.2.2.1 Relevant Documents and Data Research and Analyses

Most, if not all, defense acquisition system programs share characteristics with other already developed and fielded systems. In developing a program plan and other documentation for a new acquisition, it is worth the effort for the PMO to seek out and understand the planning, strategies, and experiences of those similar programs during development, production, testing, fielding, and support. Comparing the planned strategy with the executed strategy—as well as planned and achieved capabilities, resources utilized, and schedule—can provide valuable insight into issues encountered and how, at what impact to the program, they were addressed and mitigated. The Services and Department have a wealth of historical, relevant data on the development and execution of Defense acquisition programs. CH 1–5.4 provides an overview of relevant databases to which reporting is required for most programs. Access can be requested to review documentation and data for a PM’s own program, as well as documentation and data from other related programs. In addition, market research to gather information about potential solutions and sources is critical.

CH 1–4.2.3 Tailoring

A PM has the opportunity to use tailoring of regulatory requirements and acquisition procedures to more efficiently and effectively achieve program objectives consistent with statutory intent, sound business practice, and the specific risks associated with the product or service being acquired. It is unlikely that all DoD programs require the complete spectrum of the regulatory process; therefore, an individual acquisition program and the associated procedures used should be tailored as much as possible to the unique characteristics of the product/service being acquired. Such tailoring should also consider the circumstances associated with the program, including operational urgency, complexity, and risk factors. Program Managers work with their staffs and MDA to tailor program strategies and oversight, including program information, acquisition phase content, the timing and scope of decision reviews, and decision levels to the minimum required to satisfy validated capability requirements. Program Managers and their staffs maintain focus on the basics of sound acquisition planning, management, and decision-making as their primary responsibility.

Tailoring is not a one-time event, but rather a continuous review of the program’s maturity and circumstances (costs, risks, technical progress, etc.). Tailoring is always based upon the logical progression of development, deployment, and fielded usage of the product/service. Tailoring is always appropriate when it will produce a more efficient and effective acquisition approach for the specific product. Also refer to CH 6–3.1 and CH 1–4.2.10.1 for additional information on tailoring for Information Technology and Urgent Capability Acquisition/Quick Reaction Capability programs.

CH 1–4.2.3.1 Program Tailoring

As discussed in DoDi 5000.02 (Encl. 2, paragraph 2), the Acquisition chain of command has the responsibility and authority for all aspects of program planning and execution to achieve maximum efficiencies and effectiveness from the Defense Acquisition System. The policy and procedures in DoDi 5000.02 authorize and strongly encourage MDAs to tailor regulatory requirements and procedures, including:

- Strategies
- Oversight
- Program information
- Phase content
- Timing and scope of decision reviews
- Decision levels based on specifics of the product being acquired

When there is a strong threat-based or operationally driven need to field a capability in the shortest time, MDAs are authorized to implement additional procedures designed to accelerate acquisition system responsiveness as long as adequate oversight of the program is maintained and all statutory requirements are met. See DoDi 5000.02 (Encl. 13).
In consultation with the appropriate stakeholders, PMs may propose, for MDA approval, tailoring of regulatory program information. MDAs will document all information tailoring decisions. While the DoD encourages tailoring, acquisition managers ensure that programs comply with the mandated requirements of DoDI 5000.02 (Encl. 1). As the program progresses through the acquisition phases and decision points, program tailoring continues, based on the outcomes and performance results determined by executive-level decision forums, and the tenets and processes of Integrated Product Teams (IPTs), program assessments, and periodic reporting. Non-MDAP and non-MAIS programs will use analogous DoD Component processes.

Additional or modified procedures and tailoring considerations applicable to IT programs and Defense Business Systems (DBS) are described in CH 6–3.1.

Urgent Capability Acquisition (UCA) tailoring procedures are described in DoDI 5000.02 (Encl. 13) and summarized in CH 1–4.2.10. Additional information regarding Tailoring is available at:

- DoDI 5000.02 (5.c.(3).e))
- DoDI 5000.02 (Encl. 13, para 3)

CH 1–4.2.3.2 Documentation Tailoring

DoDI 5000.02 (Encl. 1, para 3 and following tables) describe Acquisition Program Information Requirements at Milestones and Other Decision Points. Program management assesses these information requirements early to allow sufficient time to collect the information, coordinate with participating DoD Components, and provide for timely routing. A significant number of documents with appropriate information and data are required to support Milestone Reviews and other critical program decision points. A determination of how these issues are addressed and the specific supporting documentation required are the result of a tailoring process between the PM and MDA.

DoDI 5000.02 (Encl. 1) identifies the specific Information Requirements (Statutory and Regulatory) for each milestone and decision point by:

- Program Type – Table 2
- Recurring Program Reports – Table 5
- Waivers, and Alternative Management and Reporting Requirements – Table 6
- Reporting Requirements - CH 1–5.1.

Information Requirements unique to the Urgent Capability Acquisition/Quick Reaction Capability Process are included in Encl. 13.

Information listed in the Tables required by statute is addressed and cannot be waived unless the statute specifically provides for waiver of the stated requirement. Information listed in the Tables required by regulation may be tailored at the MDA’s discretion.

DoD maintains the Milestone Document Identification (MDID) tool that presents a collection of information requirements based on user selected filtering of program acquisition category (and subcategory type if applicable), life-cycle event, and the source of the information requirement (Statutory or Regulatory). Each information requirement is linked to an information card containing pertinent content and linked sources (Description/Definition, Notes, Approval Authority, and DAG Topic Discussions). A capability is provided for ad-hoc filtering by keyword. Note that DoDI 5000.02 policy takes precedence over the MDID tool. The MDID Tool is discussed in CH 1–5.3.1.

CH 1–4.2.4 Framing Assumptions

Framing assumptions are any explicit or implicit assumptions that are central in shaping the cost, schedule, and/or performance expectations for a program. Their purpose is to inform acquisition leadership of key program assumptions, stimulate discussion of their validity, and establish context for
Framing assumptions are critical, without work-arounds, foundational, and program-specific.

- **Critical.** An invalid framing assumption significantly affects the program's cost, schedule, or performance.
- **Without Work-arounds.** The consequences of an incorrect framing assumption cannot be easily mitigated. The effects are generally outside the project team’s control.
- **Foundational.** A framing assumption represents some central feature of the program. It is not subordinate, derivative, or linked to other assumptions.
- **Program-Specific.** A framing assumption reflects some specific aspect of the program rather than presenting a general statement that could describe many programs.

Framing assumptions are required to be presented at the Milestone A, Development RFP Release, and Milestone B reviews; and are documented in the Acquisition Strategy. They may change and evolve as a program progresses through the acquisition life cycle. The following subsections discuss the steps and considerations when identifying and tracking framing assumptions.

**CH 1–4.2.4.1 Framing Assumptions Development**

Framing assumptions are created by the program office, owned by the PM, reviewed and approved by acquisition leadership, and documented in the Acquisition Strategy. Identifying and tracking framing assumptions is a multi-step process that includes representatives from the different functional and technical areas. The following subsections contain the steps that are followed when identifying and tracking framing assumptions.

**CH 1–4.2.4.1.1 Brainstorm Candidate Framing Assumptions**

This phase is one of idea generation, where no candidate framing assumption is immediately dismissed. The goal is to obtain a robust list that will be pared down using eligibility criteria. For an assumption to be central to a program’s cost, schedule, or performance expectations, it is considered and assumed true (explicitly or implicitly) during development of the program’s requirements, cost and schedule estimates, and Acquisition Program Baseline (APB). Whether a framing assumption is applicable to a specific program depends on whether it is inherent to the program’s Acquisition Strategy and procurement environment.

Sources of candidate framing assumptions include technological and engineering challenges; cost, schedule, and requirements tradeoffs; effectiveness of program-specific managerial or organizational structures; suitability of contractual terms and incentives to deliver specific expected outcomes; interdependencies with other programs; and industrial base, market, or political considerations. While brainstorming, the following questions can be asked:

- What is essential to believe about this system?
- If it doesn’t happen, does it change the nature of the program?

The resultant or final list of candidate framing assumptions only includes those suppositions that have grave consequences if not true. One potential pitfall is to focus solely on risks. While risks are important, “sure bets” are equally as important. If failure of a “sure bet” will significantly impact the program, then the “sure bet” is included as a candidate framing assumption. An example of a “sure bet” that could be a framing assumption is “Significant commercial demand for this class of product will reduce unit cost.”

**CH 1–4.2.4.1.2 Validate Candidate Framing Assumptions**

Determine the eligibility of each candidate framing assumption by asking the following three questions:

- Is it critical?
- Is it foundational?
Eliminate or rework those candidate framing assumptions that do not meet all three criteria. Candidate framing assumptions that are determined not to be foundational may be grouped to form a foundational framing assumption. Validated candidate framing assumptions become potential framing assumptions. Examples of framing assumptions that meet these criteria are:

- Commonality of variants will be at least x percent.
- Open systems architecture and available technical data rights allow for competition.
- Legacy performance requirements are adequate for this system.
- Re-use of legacy components or subsystems will meet requirements and reduce cost.

**CH 1–4.2.4.1.3 Prioritize and Limit Potential Framing Assumptions**

Once framing assumptions are validated, evaluate how critical each framing assumption is to the success of the program and order the framing assumptions by criticality. The top three to five items become the framing assumptions.

**CH 1–4.2.4.1.4 Identify Benefits/Consequences and Metrics**

Since framing assumptions are central to the system, if a framing assumption is true, then a number of benefits will follow. If it is not true, then a number of logical consequences will follow. The benefits and consequences are used as input to metric definition, as it is often easier to measure the consequences than the actual framing assumptions. Determine the benefits and consequences of each framing assumption, and then decompose the framing assumptions into metrics that will be used to confirm or negate the framing assumptions as the program is executed.

**CH 1–4.2.4.1.5 Track and Report on the Metrics**

Once framing assumptions have been developed and metrics identified, it is imperative the metrics are tracked, as failure to meet a metric is an early indicator that a framing assumption is invalid and provides warning of future program consequences. Since by definition framing assumptions are critical to a program’s success, further analysis is then completed to determine the root cause of the problem. Metrics are reported in the Defense Acquisition Executive Summary (DAES) reports and at program reviews.

**CH 1–4.2.5 Risk, Issue, and Opportunity Management**

The PM is charged with directing the development, production, and deployment of a new defense system within the cost, schedule, and performance parameters specified in the Acquisition Program Baseline (APB). A Risk and Opportunity Management process helps achieve this objective by supporting the PM’s responsibilities for prioritizing planning and work effort.

The PM integrates risk and opportunity management with other program processes during all phases of the program. The program uses the WBS and IMS to identify risks and opportunities during periodic reviews of work packages, and then pursues appropriate activities and tracks mitigation/effectiveness. Mitigation and pursuit activities are linked to the associated work packages in the IMS to track progress. The IMP includes major program-level risks or opportunities.

Two sources of information and lessons learned can be found at:

- The Risk and Opportunity Community of Practice (CoP)
CH 1–4.2.5.1 Setting the Stage

When all is said and done, attention to risks, issues, and opportunities is probably one of the PM's—and the PMO's—most important jobs as they have the potential to significantly positively or negatively impact approved cost, schedule, and performance baselines. Moreover, the PMO and contractors’ dynamic, visible, and positive attention to risk, issues, and opportunities is an indication of active program management that seeks to influence outcomes vice waiting for events to occur.

Senior acquisition leaders agree that the most important decisions to control risk and issues or to pursue opportunities are made in the planning activities of a program. Development of a PMO IMP and supporting IMS as early as possible from functional IMP and IMS inputs provides the basic structure of a program. With a plan available, the PMO leadership can actually identify risks, issues, and opportunities associated with accomplishing IMP events. The PMO can game multiple “what if” alternative events toward developing an achievable Acquisition Strategy. That strategy includes an understanding of, and plans to address, identified risks and opportunities toward planning for a realistic (defendable) program entry point, as well as cost and schedule to complete the program and deliver required performance. If re-planning a program that includes possibly changing requirements, seeking relief on cost and schedule expectations or entry at an earlier acquisition stage to address risks that are already issues is a sound consideration. One rule of thumb for program planning is “to do the hard things first.” A realistic IMP with accomplishments and criteria for events and accompanying IMS will enable program management to address that rule of thumb.

Figure 19 illustrates a simple portrayal of technical, programmatic, and business events that may lead to risks, issues, and opportunities, each with cost, schedule, or performance consequences, both positive and negative. When scoping Risk and Opportunity Management Plans, PMs consider whether “the cost of a risk mitigation or opportunity pursuit is less than the cost of the realized risk or provides greater gain than not pursuing the opportunity.”

Figure 19: Technical, Programmatic, and Business Events Considerations

As mentioned previously, continuous positive attention to risk, issues, and opportunities by program management fosters an environment in the PMO and with industry, that the organization is strong enough, experienced enough, competent enough, to handle emergent situations—which is characteristic of high-performing organizations. Notably, is every new risk viewed as a crisis requiring “all hands on deck” to address? Or is there a PMO-wide awareness of the need for constant attention to the internal and external environment, geared toward establishing a positive attitude of identifying risks as early as possible in the
planning process? Is program management cognizant of other risks that may be identified as the program progresses, and are required plans being developed to address both “original” and “emergent” risks, issues, and opportunities? The task of program management, as is the task of any leadership group, is to establish an environment that positively renews careful planning, including identification of risks early in the planning cycle, but also does not “kill the messenger” when new risks are identified as the program progresses through the acquisition phases. In the best of all worlds, proactive leadership is continuously seeking program risks, issues, and opportunities. Such leadership is analogous to the captain of a ship, squadron commander, or battalion commander who has a plan, but recognizes the primary function once the battle is engaged is to look across the whole engagement to identify what could go wrong, what could be done better, and to take steps to address either or both.

Program management is all about proactively shaping and controlling risks, issues, and opportunities, not just observing progress and reacting as events unfold. Anticipating possible adverse or positive events, evaluating probabilities of occurrence, understanding cost and schedule impacts, and deciding to take cost-effective steps ahead of time are the essence of effective risk, issues, and opportunity management. Concepts and processes for risk and issue management are well documented; opportunity management follows the same processes, but does not always enjoy the same urgency as risk and issue management, perhaps because while acting on the latter is seen as necessary, acting on the former, while potentially beneficial, introduces new risk to the program. That said, program management ought to be as focused, or possibly more focused, on seeking opportunities to reduce cost and schedule without affecting performance, particularly where there is a significant Return on Investment (ROI) in production and/or life-cycle support. Alternately, there may be an opportunity for an acceptable modification to performance requirements that can have a positive effect on the program’s likelihood of successful execution.

Opportunity management and Should Cost management are closely aligned—both seek to identify different ways to execute a program that reduces cost and schedule without negatively affecting warfighter satisfaction.

Successful program management not only includes continuous proactive attention to the possibility of changing circumstances, but also a disciplined process of identification and tracking program risks, issues, and opportunities. That includes establishing rational, executable, and resourced mitigation or pursuit plans, which are tracked to completion within PMO and/or Contractor IMP and IMS. Top program risks and opportunities, and respective risk and pursuit plans are detailed in the program Acquisition Strategy and presented at all relevant decision points and milestones.

**CH 1–4.2.5.2 Risk, Issue, and Opportunity Management Process**

All PMO functional disciplines retain a role in planning and execution of risk, issue, and opportunity management. Risk, issue, and opportunity management can be managed similarly—the basic risk management framework can be adapted to issue and opportunity management. The process encompasses identification, analysis, handling, and monitoring risks. [Note that issues and opportunities are discussed in CH 3–4.1.5 and the DoD Risk, Issue, and Opportunity (R, I, & O) Management Guide for Defense Acquisition Programs.]

Without duplicating the information in either CH 3 or the Guide, the following paragraphs briefly overview the process toward ensuring a full view of this key program management function.

**CH 1–4.2.5.2.1 Risk Identification**

The single most important question is, “What can go wrong?” Program Managers are encouraged to ask the question, “What is hard or difficult?” CH 3–4.1.5 and the DoD Risk, Issue, and Opportunity (R, I, & O) Management Guide for Defense Acquisition Programs provide a list of potential approaches to creatively identifying risk. As a baseline, the program management team considers risk in the technical, programmatic, and business areas. One subject that deserves significant consideration is Framing Assumptions used in program planning. Program leadership can consider and document program Framing Assumptions because of the risks they may introduce should the assumptions prove invalid. See Framing Assumptions CH 1–4.2.4. In addition, the PM documents key risk management ground rules to
be used across the risk management program. Typical ground rules for risk management relevant to programs include time frame, time of risk event, and WBS level.

Programs can fall into the trap of identifying ongoing baseline program activities as risk handling activities, without the requisite changes to the planning, requirements, or program budget/resource allocation. This approach is typically insufficient. In most situations, reliance on previously planned program activities results in the program’s de facto acceptance of the risk.

**CH 1–4.2.5.2.2 Opportunity Identification**

Opportunities may be realized in Research, Development, Test, and Evaluation (RDT&E), production, and Operations and Maintenance (O&M). Opportunity management measures potential program improvement in terms of likelihood and benefits.

Through the opportunity management process, the PM identifies potential enhancements to cost, schedule, and/or performance. Opportunities may be identified continuously during program planning and execution, and across the program life cycle. Important sources of opportunities include system and program changes that yield reductions in total ownership cost. For example, a modular open systems approach or securing appropriate government rights to a technical data package can offer opportunities for competition in sparing and later modifications. During production, the PM continuously seeks opportunities for design and manufacturing changes that yield reductions in production costs. Design changes to production configurations (and the product baseline) may take the form of a Value Engineering Proposal and Value Engineering Change Proposals within the context of ongoing production contracts. These may change the system performance, but could yield production or support cost reductions.

During the Operations and Support (O&S) phase, opportunities often may arise from the observation and analysis of actual in-service performance. In addition, the emergence of more efficient production practice or better performing components can provide opportunities for improved reliability, more efficient fuel consumption, improved maintenance practice, other reduced support costs, or economic capability enhancements.

**CH 1–4.2.5.3 Risk Analysis**

The risk analysis process answers the questions, what is the likelihood and consequence of the risk? For PMs to more effectively make decisions regarding handling of risks commensurate with available resources, PMs compare cost-burdened risk and handling strategies. There are a variety of techniques for estimating cost exposure from realization of a given risk. However, multiple factors, including Return on Investment (ROI) as well as potential schedule and performance impacts, are considered when determining a risk mitigation strategy. Figure 20 shows a sample excerpt of a risk analysis register for use at a Risk Management Board, Program Management Review, or other type review.

*Figure 20: Sample Risk Analysis Register*
CH 1–4.2.5.3.1 Opportunity Analysis

As with risk, after identification the next step is to perform a cost, schedule, and performance benefit analysis for each approved opportunity and document the results. Opportunities with sufficient potential are then evaluated relative to potential handling options.

Opportunities are evaluated for both advantages and disadvantages. This is important because potential benefits associated with an opportunity may be overstated and corresponding risks may be understated. In addition, all candidate opportunities are thoroughly screened for potential risks before they are approved, and handling plans are developed and implemented as appropriate. Figure 21 shows a sample of an Opportunity Analysis Register for use at Opportunity Management Boards, Program Management Reviews, or other type reviews.

**Figure 21: Opportunity Analysis Register**
Better understanding of the defense industry, specifically the companies involved with a particular program, is important for DoD PMs. With understanding provided by market research and business knowledge, they can provide best taxpayer value to the government on defense products while providing defense companies a fair and reasonable profit. Whether systems or services companies, a wide range of PM market research and business knowledge increases a program’s chance of success. Understanding industry is important for other key acquisition workforce positions such as senior program engineer, product support manager, senior business finance manager, Contracting Officer, and senior-level IPT Leads who interface with Defense contractors.

Increasing market intelligence starts with a good general view of current defense industry markets. Follow that with a closer look at how and why the companies competing in a given market segment develop and execute strategies to grow, compete, propose, and provide customer solutions. Many powerful market intelligence tools are available online—some for a cost, some for free. The company’s own annual (10K) and quarterly (10Q) reports are a good place to start.

In generally assessing an overall company’s market position, some specific areas are important for PMs to consider. These include, but are not limited to:

- How is a company of interest organized?
- What is its financial health?
- What investments is it making for the future, both in capital and research and development?
- What business strategy does it advertise—and follow?
- What are its core products—or new products?
- Who are its competitors and what other market segments?
- Who are its Tier 1 and 2 suppliers?
- What risks tied to potential incentives/strategies is it willing and capable of handling?
Defense companies are generally focused on the long term— to earn profits that exceed the cost of capital, attract investors by demonstrating profitability, and attract and retain world-class employees. The company’s financial pipeline is kept afloat by sales, orders, cash flow, and profit. Business development personnel work the corporate strategy into a nominal 5-year operating plan where picking the right program priorities is paramount based on the marketing funnel, market intelligence, and capture plans. The Wall Street factor is always in play because the shareholders own the company—unless it’s not public.

Company financial health is measurable, but not always clear. The language of finance—when better mastered and in sync between government and business—improves a program’s and company’s probability of success. Company incentives, motivations, and rewards lead to best-value negotiating strategies for the company to get the right contract consistent with accepted risk.

Considering some important business areas would help in understanding:

- Key financial ratios are used to show how companies and stakeholders measure financial performance trends and investment potential to achieve the revenues and profit margins needed to keep companies in business. While not all-inclusive, some general considerations are shown below on financial performance areas important at different company levels. Government PMs can consider what these ratios represent in terms of how changes in the areas represented in the numerators and denominators may impact key performance measures, which may in turn affect different levels of decision-making within the company:

  A **contractor general manager** motivated by:

  \[
  \text{Return on Assets (ROA)} = \frac{\text{Profit}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total Assets}} + \text{Cash Generated}
  \]

  A **chief operating officer** motivated by:

  \[
  \text{Return on Equity} = \frac{\text{Profit}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Shareholder Equity}}
  \]

  A **chief executive officer** measured and motivated by:

  \[
  \text{EPS} = \frac{\text{Profit}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Shareholder Equity}} \times \frac{\text{Shareholder Equity}}{\text{Shares Outstanding}}
  \]

- Find additional company information on its view of financial health in its quarterly (10Q) and annual (10K) financial reports. These reports can be quickly reviewed for financial and risk data provided directly from the company to help understand financial, operational, and strategic considerations. The reports on each public company are readily available at [The Securities and Exchange Commission](https://www.sec.gov) website.

- Understand operating plan cost components leading to profit margins that all companies use to make their numbers (financial reporting via financial statements and ratios that are used by customers, investors, and competitors to compare a company’s efficiency and progress as a business).

- Understand the financial health of companies when making program decisions. These revenues and profit margins are outlined in companies’ operating plans. Profitable and Predictable are best.

- Look at impacts of company cost, prices, and rates to margins; time value of money; and resourcing projects compared to competitors in that market segment.
Consider supplier management issues which are important both for pre- and post-contract award, through the production and sustainment phases. Outsourcing, international, and make-buy decisions are all important in supplier and subcontractor management when considering desired business outcomes.

Business communications and understanding requirements are critical, especially leading to the RFP development phase. Business acumen and the language of finance are critical to a company’s financial success across its supply chain. All companies are not the same, so understanding each company will help with better incentives, motivations, and rewards as they pursue “making their numbers”—competing in their market space to deliver DoD customers best-taxpayer-value, quality products on cost, schedule, and performance.

**CH 1–4.2.7 Defense Acquisition Information Technology (IT) Programs**

The following subsections provide an overview of the different types of Information Technology (IT) programs that can be based on acquisition program models 2, 3, or 6 (or a combination of those models). In amplification of the following, if planning an IT acquisition program, DoDI 5000.02 (Encl. 11) for Information Technology and/or DoDI 5000.02 (Encl. 12) for Defense Business Systems, as appropriate, and CH 6–2.1 should be consulted.

**CH 1–4.2.7.1 Information Technology**

Information Technology (IT) is any equipment or interconnected system or subsystem of equipment used in the automatic acquisition, storage, analysis, evaluation, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information by the executive agency. IT equipment constitutes the equipment used by the executive agency directly, or used by a contractor under a contract with the executive agency that requires:

- IT equipment be used by DoD directly or used by a contractor under a contract with the DoD that requires use of that equipment.
- IT equipment be used to a significant extent in the performance of a service or the furnishing of a product.

IT equipment includes computers, ancillary equipment (including imaging peripherals, input, output, and storage devices necessary for security and surveillance), peripheral equipment designed to be controlled by the central processing unit of a computer, software, firmware, and similar procedures, services (including support services), and related resources. For additional information, refer to 40 USC 11101.

*Note: IT equipment does not include any equipment acquired by a federal contractor incidental to a federal contract. IT includes both National Security Systems and Defense Business Systems. Refer to CH 6–2.1 for a more complete discussion regarding IT Systems acquisition.*

**CH 1–4.2.7.2 JCIDS Information Technology (IT) Box Model**

The JCIDS IT Box model applies to Information Systems (IS) involving software development only, integration onto Commercial Off-The-Shelf (COTS) hardware, and IS programs with costs exceeding $15 million. Refer CH 6–3.5.1 and the JCIDS Manual (Encl. D) for additional information.

**CH 1–4.2.7.3 National Security Systems**

A National Security System (NSS) is any information system (including any telecommunications system) used or operated by an agency or a contractor of an agency, or other organization on behalf of an agency. The function, operation, or use of NSS involves intelligence activities; cryptologic activities related to national security; the command and control of military forces; equipment that is an integral part
of a weapon or weapons system; or equipment that is critical to the direct fulfillment of military or intelligence missions. The last item (direct fulfillment of military or intelligence mission) does not include systems to be used for routine administrative and business applications (including payroll, finance, logistics, and personnel management applications). Net Ready Key Performance Parameter (KPP) requirements for NSS are documented in the JCIDS Manual (page D-E-1, Appendix E to Encl. D) and acquired under the acquisition process defined in DoDI 5000.02 (Encl. 11, para 1 and para 2.b). Refer to the National Institute of Standards and Technology (NIST) Standard SP-800-59 for additional information.

CH 1–4.2.7.4 Defense Business Systems

Defense Business Systems (DBS) are information systems other than a National Security System (NSS), operated by, for, or on behalf of DoD, including financial systems, management information systems, financial data feeder systems, and the Information Technology (IT) infrastructure used to support business activities. Business activities may include contracting, pay and personnel management systems, some logistics systems, financial planning and budgeting, installations management, and human resource management. DBS generally do not fall under JCIDS for the development and validation of capability requirements documents; instead, they employ a Problem Statement (see below). Refer to the JCIDS Manual for additional discussion on JCIDS and DBS. DBS are governed by DoDI 5000.02 (Encl. 12); the JCIDS Information Technology (IT) Box model does not apply to DBS.

A Problem Statement is applicable to DBS and is a stand-alone document to support the Materiel Development Decision (MDD) and later key decision events and milestones. The Problem Statement documents DBS requirements and is approved by the Investment Review Board (IRB) chair. It documents business and supporting analyses and evolves over time as those needs are refined. The Joint Staff (JS) (J-8) reviews the initial Problem Statement to determine if there is JS interest.

An Annual Investment Decision Certification is also required for all DBS per 10 USC 2222 and as described in DoDI 5000.02 (Encl.12). The obligation of DoD funds for a covered DBS program that has not been certified is a violation of 31 USC 1341(a)(1)(A).

CH 1–4.2.7.5 Information Systems

Information systems are a discrete set of information resources organized for the collection, processing, maintenance, use, sharing, dissemination, or disposition of information.

CH 1–4.2.8 International Acquisition and Exportability Considerations

Many DoD acquisition programs include allied and friendly nation participation either as a cooperative partner on an International Cooperative Program (ICP), or as a customer through Foreign Military Sales (FMS) programs, Building Partner Capacity (BPC) programs, or though industry Direct Commercial Sales (DCS). These programs not only contribute to DoD and U.S. Government (USG) security cooperation objectives but also provide opportunities to enhance DoD acquisition outcomes. In these international acquisition programs, the PM is responsible for delivering a capability to an international partner or customer that may be involved in future coalition operations with the DoD.

CH 1–4.2.8.1 Identifying International Acquisition Programs

DoDD 5000.01 (Encl. 1, para E.1.1.1.18) and DoDI 5000.02 (Encl. 2, para 7.a.) requires the acquisition managers consider international cooperation and exportability, develop systems that are interoperable with coalition partners, and identify potential technologies from both domestic and foreign sources. DoDI 2010.06, Materiel Interoperability and Standardization with Allies and Coalition Partners (para 3.a), addresses design efforts to enhance coalition interoperability. See also 10 USC 2431a (c)(2)(G), Section 2350a regarding international involvement, including FMS and cooperative opportunities.
CH 1–4.2.8.2 International Acquisition Management

The term International Acquisition and Exportability (IA&E) encompasses all of the elements of international involvement in a DoD program—Foreign Solutions, ICPs, Exportability Design, Technology Security and Foreign Disclosure (TSFD), and Foreign Sales or Transfers. Consult the Chapter 1, Supplement 1 International Acquisition and Exportability (IA&E) for more details on foreign solutions, foreign sales and transfers, defense exportability integration, the Defense Exportability Features (DEF) Pilot Program, and other related topics. The DAU Acquisition Community Connection International Acquisition Management Community of Practice website contains best practice Job Support Tools that address key aspects of these various IA&E functional areas.

To comply with Congressional and DoD policies, and gain the benefits of IA&E activities, the PM should address the following international considerations at the beginning of the acquisition planning process:

- Are there existing foreign systems or foreign systems under development that DoD can use or modify to meet DoD’s requirements?
- Are there coalition interoperability requirements for the system?
- What is the potential for developing the system cooperatively?
- Does the likelihood of future foreign sales warrant designing in exportability?
- What DoD/U.S. Government TSFD and export control approvals will be required?

CH 1–4.2.8.2.1 Advantages

The potential benefits of including IA&E activities in acquisition program planning and execution include some of the following:

- Reducing overall life-cycle costs by designing exportability and interoperability capabilities into systems or equipment during early development phases;
- Leveraging foreign government investments in research and development, production, and logistics support, thereby reducing DoD costs, markedly enhancing U.S. and partner nation affordability throughout the life cycle; and,
- Delivering interoperable and exportable systems that are coalition-ready, thereby reducing costly requirements for upgrades later in the life cycle and increasing overall coalition operational effectiveness.

CH 1–4.2.8.2.2 Challenges

International cooperation and exportability initiatives to facilitate foreign military sales require program management understanding of, and compliance with, the statutory and policy requirements associated with international cooperative programs and technology security and foreign disclosure approvals. Navigating these issues can be challenging and the Department has a number of resources available to assist program offices prepare for and execute international cooperative development programs and plan for foreign sales of U.S. defense articles. The Chapter 1, Supplement 1 International Acquisition and Exportability (IA&E) provides a number of reference documents and organizations that can assist program office staff in developing international aspects for their programs.

CH 1–4.2.8.3 Planning and Execution

Planning IA&E efforts should be documented in the International Involvement Section of the program’s Acquisition Strategy as required by 10 USC 2431a and 10 USC 2350a, as amended. Updates to the International Involvement Section of the Acquisition Strategy at each respective Milestone include an analysis of IA&E requirements and foreign sales potential. For a detailed description of the International Involvement Section, refer to CH1-S–3. Table 5 outlines the IA&E planning actions that occur during each
acquisition phase and may be considered for incorporation into the program IMP/IMS CH 1–3.4.2 and, if applicable, an International Business Plan.

**Table 5: IA&E Actions during the Acquisition Phases**

<table>
<thead>
<tr>
<th>Acquisition Phase</th>
<th>IA&amp;E Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre-Materiel Solution Analysis</strong></td>
<td>• Conduct an initial IA&amp;E assessment to identify potential existing foreign solutions, ICP opportunities, foreign technology, or potential for future foreign sales.</td>
</tr>
<tr>
<td></td>
<td>• Review Initial Capabilities Document (ICD) to identify potential coalition requirements, and potential foreign market to gain an understanding of coalition interoperability and exportability requirements.</td>
</tr>
<tr>
<td><strong>Materiel Solution Analysis</strong></td>
<td>• Assess procurement or modifications of existing U.S. or foreign solutions as part of the OSD CAPE Analysis of Alternatives prior to starting a new development program.</td>
</tr>
<tr>
<td></td>
<td>• Assess program’s potential for international cooperative research, development, production, logistics support, interoperability, and defense exportability.</td>
</tr>
<tr>
<td></td>
<td>• Update the program’s IA&amp;E assessment to identify specific existing or projected international agreements(s), Joint Requirements Oversight Council (JROC)-validated coalition interoperability requirements, international markets, and potential program protection issues and requirements.</td>
</tr>
<tr>
<td></td>
<td>• Use the program’s Acquisition Strategy at Milestone A to advise the Milestone Decision Authority if the program should address international involvement (e.g., foreign solutions, coalition interoperability, ICP participation, future foreign sales, and design for exportability) during TMRR.</td>
</tr>
<tr>
<td><strong>Technology Maturity and Risk Reduction</strong></td>
<td>• Consider establishing one or more mutually beneficial system development ICPs.</td>
</tr>
<tr>
<td></td>
<td>• Consider establishing cooperative RDT&amp;E projects under the terms of existing RDT&amp;E MOUs with allied and friendly nations.</td>
</tr>
<tr>
<td></td>
<td>• Continue TSFD planning and approval activities.</td>
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<tr>
<td></td>
<td>• Conduct defense exportability feasibility study and design efforts.</td>
</tr>
<tr>
<td></td>
<td>• Conduct initial FMS planning efforts.</td>
</tr>
<tr>
<td></td>
<td>• Use the program’s Acquisition Strategy at Milestone B to advise the Milestone Decision Authority which international involvement efforts should be planned and implemented during EMD.</td>
</tr>
<tr>
<td><strong>Engineering and Manufacturing Development</strong></td>
<td>• Continue TSFD and export control efforts in support of existing ICPs, as appropriate.</td>
</tr>
<tr>
<td></td>
<td>• Complete defense exportability design efforts.</td>
</tr>
<tr>
<td></td>
<td>• Establish initial FMS arrangements in the latter stages of EMD and Low Rate Initial Production (LRIP), as appropriate.</td>
</tr>
<tr>
<td></td>
<td>• Use the program’s Acquisition Strategy at Milestone C to advise the Milestone Decision Authority which international involvement efforts should be planned and implemented during Production &amp; Deployment phase.</td>
</tr>
<tr>
<td></td>
<td>• For programs with substantial international involvement, develop an initial International Business Plan (IBP).</td>
</tr>
<tr>
<td><strong>Production and Deployment</strong></td>
<td>• Use the updated IBP to achieve synergies and economies of scale through a combination of DoD and foreign recurring production procurement requirements or non-recurring product improvement investment.</td>
</tr>
<tr>
<td></td>
<td>• Pursue appropriate type(s) of ICPs and foreign sales/transfer arrangements throughout the program’s life-cycle.</td>
</tr>
<tr>
<td><strong>Operations and Support</strong></td>
<td>• Use the updated IBP to achieve synergies and economies of scale affordability benefits through a combination or coordination of DoD and foreign Operations and Support (O&amp;S) non-recurring investment and recurring O&amp;S phase procurement requirements.</td>
</tr>
<tr>
<td></td>
<td>• Enhance logistics support for foreign operators of U.S. systems through logistics support ICPs, FMS/DCS, or Acquisition and Cross-Servicing Agreements (ACSA)s throughout the program’s lifecycle.</td>
</tr>
</tbody>
</table>
Defense exportability integration is a critical tool to help program management achieve the range of successful IA&E actions discussed above. Defense exportability integration refers to DoD activities within the Defense Acquisition System to incorporate technology protection measures (i.e. “defense exportability features” (DEF)) in initial designs – including the design and development of anti-tamper and differential capabilities - leading to production of exportable system configurations for ICPs or foreign sales. Incorporating DEF in initial designs facilitates timely, efficient implementation of future DoD cooperative programs or foreign sales and transfers.

Program management may pursue differential capability initiatives either under the sponsorship of the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics OUSD (AT&L) DEF Pilot Program, or outside of the pilot using other sources of budgeted and authorized funding (i.e., DSCA Special Defense Acquisition Fund (SDAF), or FMS funding). Consistent with MDA decisions at each Milestone, these DEF efforts may include investigating the feasibility of differential capability and enhanced program protection measures for exportable configurations in the early phases of the acquisition process. Consult IA&E CH1-S–4 for more details on DEF planning and integration.

**CH 1–4.2.8.4 International Cooperative Programs**

An ICP is any acquisition program or technology project that includes participation (e.g., cooperative development, cooperative production, and research and development) by the United States and one or more foreign nations through an international agreement during any phase of a system’s life cycle.

Program management should assess the system’s ICP prospects based on known and projected allied/friendly nation capability requirements, plans for development of similar systems in the global defense market, previous foreign purchases of similar U.S. systems undergoing major upgrades, and other indicators of prospective foreign demand for the new system. If the system is not restricted as a U.S.-only system, the program manager must plan for export to safeguard CPI and any other controlled or classified information. DoDI 5000.02 (Encl. 2, para 7.b.) establishes overall ICP program management requirements.

**CH 1–4.2.8.4.1 ICP Management**

In deciding whether to pursue an ICP, the PM consults with their respective DoD Component International Programs Organization (IPO) (i.e., Deputy Assistant Secretary of the Army for Defense Exports and Cooperation [DASA-DE&C], Navy International Programs Office [Navy IPO], or Deputy Under Secretary of the Air Force for International Affairs [SAF-IA]), and consider the following criteria:

- Ability of the partner nation(s) to participate in an ICP, taking into account TSFD considerations, where there are clear DoD benefits (e.g. interoperability, cost savings, operational burden-sharing, and political-military benefits);
- Ability to establish an ICP management structure in the international agreement where the designated PM (U.S. or foreign) is fully responsible and accountable for the cost, schedule, and performance of the resulting system; and
- Demonstrated DoD Component and partner nation(s’) willingness to fully fund their share of the ICP.

Program Managers, working closely with their DoD Component’s IPO, are encouraged to follow the procedures outlined in IA&E CH1-S–6 to establish international agreements for ICPs with allied and friendly nations, the procedures in IA&E CH1-S–9 for TSFD considerations, and the guidance in IA&E CH1-S–4 regarding designing in exportability as part of ICP efforts. Once an ICP is established via a signed international agreement, the DoD Component remains responsible for approval of most statutory, regulatory, and contracting reports and milestone requirements, as listed in DoDi 5000.02, Enclosure 1, Table 2.
CH 1–4.2.8.4.2 Developing an ICP

As outlined in IA&E CH1-S–2.2, several mechanisms are available to identify potential international cooperative program opportunities. Some key examples include:

- International Fora
- International exchanges of information and personnel
- Exploratory discussions
- Science and Technology cooperation
- Coalition Warfare Program (CWP) cooperative projects

While most funding for cooperative RDT&E activities may need to be provided from program funding, program management should explore additional parallel funding for these efforts through the OUSD(AT&L)/International Cooperation CWP and/or the Military Department’s International Cooperative Research and Development (ICR&D) programs. See IA&E CH1-S–5.5 for more on CWP.

CH 1–4.2.8.4.3 International Agreement Procedures

U.S. law requires an International Agreement (IA) for all ICPs. DoDD 5530.3, "International Agreements," defines IAs, along with the authorities and processes to establish them. For AT&L-related IAs only, DoDI 5000.02 (Encl. 2, para 7.b.(1)) encourages the use of separate, streamlined agreement procedures to establish IAs for ICPs.

- Programs staff members should refer to IA&E Supplement Section 6 and the IC in AT&L Handbook for a detailed description of these procedures.

CH 1–4.2.9 Joint Acquisition Programs

When a defense acquisition program involves the satisfaction of validated capability requirements from multiple DoD Components and/or international partners, and is funded by more than one DoD Component or partner during any phase of the acquisition process, a Joint Program Office is established in accordance with DoDI 5000.02 (Encl. 2, paragraph 5.b).

CH 1–4.2.9.1 Identifying Joint Capabilities

As part of CJCS Instruction 3170.01, Joint Capabilities Integration and Development System (JCIDS), the Joint Staff J-8, with the assistance of the DoD Components, evaluates all JCIDS documents, regardless of Acquisition Category or previous delegation decisions, to determine whether the proposal has Joint Force implications. The Joint Staff documents—CJCS Instruction 5123.01, Charter of the Joint Requirements Oversight Council (JROC), CJCS Instruction 3170.01, and the JCIDS Manual—provide full detail and direction on this topic.

CH 1–4.2.9.2 Joint Acquisition Management

Reasons for initiating a Joint acquisition effort are many and varied, but are generally based on an anticipated operational or economic advantage to the Department. One or more of the following factors is typically considered:

- Improvement of Core Mission Area Capabilities. An improvement to or elimination of a gap within a Core Mission Area Capability. DoD’s core mission areas are: homeland defense and civilian support; deterrence operations; major combat operations; irregular warfare; military support to stabilization, security, transition, and reconstruction operations; and military contribution to cooperative security.
- Coordination of Efforts. Reduces fragmentation, duplication, and overlap to enhance productivity, achieve cost savings, and facilitate individual Service efforts into a mutually coordinated, single effort.
• **Interoperability.** Ability of systems, units, or forces to provide data, information, materiel, and services to, and accept the same from, other systems, units, or forces and to use the data, information, materiel, and services so exchanged to enable them to operate effectively together.

• **Reduction in Development Cost.** Joint funding of one program based on solution component compatibility, and that program consolidation does not unduly increase risk, minimize alternatives, or reduce performance to an unacceptable level.

• **Reduction in Production Costs.** Consolidated production requirements result in lower unit price through savings in set-up costs, learning curve impacts, and quantity production.

• **Reduction in Logistics Requirements.** Standardization offers potential for reduction in support (spares, storage, transportation, and training) costs while improving support to operating forces.

• **Affordability.** Joint funding of one program to improve the program potential (over individual Service programs) to be produced and supported within reasonable expectations for future budgets.

These factors, as well as other influences are for the establishment of a Joint Program Office to plan and execute a Joint acquisition program. Few programs become Joint without some initiative by the Joint Staff, USD(AT&L), or Congress.

**CH 1–4.2.9.2.1 Challenges**

Joint programs face challenges to successfully balance competing requirements, priorities, and budgets. Program costs, strategic importance and urgency, as well as other factors influence the program’s visibility and certainly affect how the Joint program operates and reports. Furthermore, since Joint programs have the continuing interest of each participating DoD Component or international partner, the Department, and Congress, additional requirements for coordination and documentation should be expected. There is no doubt that Joint programs require considerably more planning, coordination, and time-consuming effort than do single-Service programs.

**CH 1–4.2.9.2.2 Advantages**

Acquisition programs that contribute to Joint capabilities or provide a budgetary/financial advantage may be managed as Joint acquisition programs. A "Joint acquisition" is any acquisition system, subsystem, component, or technology program with a strategy that includes funding by more than one DoD Component or partner during any acquisition phase. DoDI 5000.02 (Encl. 2, paragraph 5.b.(2)) addresses DoD Component fiscal responsibilities associated with participation in programs under Joint acquisition management.

**CH 1–4.2.9.2.3 Designation**

Considering the recommendation of the Joint Staff and the Heads of the DoD Components, the Milestone Decision Authority decides whether to place the program under Joint acquisition management. The Milestone Decision Authority makes this decision and, if appropriate, designates the Lead Executive DoD Component as early as possible in the acquisition process.

The DoD Components periodically review their programs to determine the potential for Joint cooperation. The DoD Components can structure program strategies to encourage, and to provide an opportunity for, multi-DoD Component participation.
CH 1–4.2.9.2.4 Execution

The designated Lead Executive DoD Component for a Joint acquisition acts on behalf of all DoD Components involved in the acquisition. A Memorandum of Agreement (MOA) should specify the relationship and respective responsibilities of the Lead Executive DoD Component and the other participating components. The MOA addresses system capabilities and the development of capabilities documents, funding, manpower, and the approval process for other program documentation.

The following additional considerations have proven effective in managing Joint programs:

- The assignment of a Lead Executive DoD Component considers the demonstrated best business practice of the DoD Components, including plans for effective, economical, and efficient management of the Joint program; and the demonstrated willingness of the DoD Component to fund the core program—essential to meeting Joint program needs.
- The Milestone Decision Authority and DoD Components can consolidate and co-locate the supporting efforts of the Joint program at the Lead Executive DoD Component's program office to the maximum extent practicable.
- The Component Acquisition Executive of the Lead Executive DoD Component can optimally use the acquisition organizations, test organizations, and other facilities of all Military Departments.
- The designated Lead Executive DoD Component selects the qualified program under Joint acquisition. The single PM can then be fully responsible and accountable for the cost, schedule, and performance of the development system.
- If the Joint program results from a consolidation of several different DoD Component programs, each with a separate PM, the selected Joint Program Manager can have the necessary responsibility and authority to effectively manage the overall system development and integration.
- A designated program under Joint acquisition can have one quality assurance program, one program change control program, one integrated test program, and one set of documentation and reports (specifically: one set of capabilities documents, with Service-unique capability requirements identified), one Information Support Plan, one Test and Evaluation Master Plan, one Acquisition Program Baseline, etc.).
- The Milestone Decision Authority designates the lead Operational Test Agency to coordinate all operational test and evaluation. The lead Operational Test Agency produces a single operational effectiveness and suitability report for the program.
- Documentation for decision points and periodic reporting flow only through the Lead Executive DoD Component acquisition chain, supported by the participating DoD Components.
- The program can use inter-DoD Component logistics support to the maximum extent practicable, consistent with effective support to the operational forces and efficient use of DoD resources.
- Unless statute, the Milestone Decision Authority, or an MOA signed by all DoD Components direct otherwise, the Lead Executive DoD Component can budget for and manage the common RDT&E funds for the assigned Joint programs.
- Individual DoD Components can budget for their unique requirements.

The MOA signatories can conduct periodic reviews, as necessary, to ensure MOA accuracy and relevancy for the successful acquisition and management of the Joint program.

Acquisition managers of a Joint program having the potential for international partner participation can refer to CH 1–4.2.8 regarding the IA&E programs.
**CH 1–4.2.9.2.5 Joint Program Manager Perspectives**

At the outset of a Joint program, the Joint PM conducts a detailed technical requirements review that examines mission requirements, operational concepts and environments, and performance parameters. The PM ensures that requirements are well understood, conflicts are resolved, and that there is ample latitude to make tradeoffs critical to a program’s success. The PM’s review accomplishes:

- Identifying similarities and differences in DoD Components’ or partners’ requirements and in the operational environments.
- Determining a clear distinction between the “would like to have” and the “must have” requirements.
- Identifying principal areas of technical risk or uncertainty.
- Identifying similarities and differences in the DoD Component or partner logistics concepts, requirements, or processes, including their approach to implementation of the life-cycle cost concepts.
- Determining the most effective program structure and tailoring criteria to effectively achieve requisite capabilities.

Some Joint programs may be considered successful only if they develop identical or near identical acquisition solutions for use by all participants. Trying to develop identical or near identical solutions for all participating DoD Components or partners may frustrate the program and, ultimately, lead to its failure. Solution variations are based on requirements and operational environments in relationship to cost, schedule, and performance considerations. The approaches for long-term sustainment of the Joint program’s solution are not made within narrow organizational boundaries. Consideration of the full range of capabilities in the enterprise identifies a more cost-effective option. Such a consideration would help determine whether the enterprise has the capability to sustain such a solution and, if not, whether it would be beneficial to develop the capability.

The preparation for each Milestone and Decision Point review includes a re-examination of the same items reviewed at the initiation of the Joint program. This re-examination determines not only that the participating DoD Components’ or partners’ perceptions of the requirements have not changed, but also that the threat or other basis for acquiring the capability remains consistent with the initial requirements(s).

**CH 1–4.2.10 Urgent Capability Acquisition**

*[DoDI 5000.02 (Encl.13)](DoDI 5000.02)* provides policy and procedure for acquisition programs that provide capabilities to fulfill urgent operational needs and other quick-reaction capabilities that can be fielded in less than 2 years and are below the cost thresholds of Acquisition Category (ACAT) I and IA programs. The following paragraphs are an overview of Urgent Capability Acquisition as a point of reference for program management. Encl. 13 has significant additional content about the execution of an Urgent Capability Acquisition, specifically amplification of the activities in the phases depicted in Figure 22, including reporting requirements.

*Figure 22: Urgent Capability Acquisition*
CH 1–4.2.10.1 Urgent Operational Needs and Other Quick-Reaction Capabilities

DoD’s highest priority is to provide warfighters involved in conflict or preparing for imminent contingency operations with the capabilities urgently needed to overcome unforeseen threats, achieve mission success, and reduce risk of casualties, as described in DoD Directive 5000.71, Rapid Fulfillment of Combatant Commander Urgent Operational Needs. The objective is to deliver capability quickly, within days or months. DoD Components use all available authorities to expeditiously fund, develop, assess, produce, deploy, and sustain these capabilities for the duration of the urgent need, as determined by the requesting DoD Component.

- **Application.** DoDI 5000.02 (Encl. 13) policies and procedures apply to acquisition programs for the following types of Quick-Reaction capabilities:
  - Validated Urgent Operational Need (UON). UONs include:
    - Joint Urgent Operational Needs (JUONs) and Joint Emergent Operational Needs (JEONs). These are either an urgent need (JUON) or an emergent need (JEON) identified by competent authority.
    - Warfighter Senior Integration Group (SIG)-Identified Urgent Issue. This is a critical warfighter issue identified by the co-chairs of the Warfighter SIG in accordance with DoD Directive 5000.71. They approve a critical warfighter issue statement and provide instructions to the DoD Component.
    - Secretary of Defense/Deputy Secretary of Defense Rapid Acquisition Authority (RAA) Determination. Such a determination is made in response to a documented deficiency following consultation with the Joint Staff. RAA is considered when a waiver of a law, policy, directive, or regulation will greatly accelerate delivery of effective capability to the warfighter.

- **Procedures**
o **Tailoring and Streamlining.** MDAs and PMs tailor and streamline program strategies and oversight. A risk area for urgent acquisition programs is the potential to compromise product support.

o **Parallel Processes.** DoD Components employ parallel rather than sequential processes to identify and refine capability requirements, resources, and execution to expedite delivery of solutions.

o **Support.** DoD Components ensure that all support organizations and contractors are fully aware of the urgency of the need and of expedited action.

o **Funding.** Generally, funds are reprioritized and/or reprogrammed to expedite the acquisition process.

o **Fielding.** If the desired capability cannot be delivered within 2 years, the MDA assesses the suitability of partial or interim capabilities that can be fielded more rapidly. In those cases, the actions necessary to develop the desired solution may be initiated concurrent with the fielding of the interim solution.

o **Documentation and Reviews.** Expected activities are a highly tailored version and are intended to expedite the fielding of capability by tailoring the documentation and reviews normally required. Figure 22 depicts a representative acquisition.

### CH 1–4.2.11 Contracting

This Section addresses the relationship between the PM and the Contracting Officer as well as key program management concerns in the development of RFPs and executing the contract.

#### CH 1–4.2.11.1 Roles

Acquisition is a team responsibility. The FAR states the “Acquisition Team”: Consists of all participants in government acquisition, including not only representatives of the technical, supply, and procurement communities, but also the customers they serve, and the contractors who provide the products and services. Some members of the team are called out more often in law, regulation, policy, and guidance. Chief among those are the Program Manager, Contracting Officer, and Contracting Officer’s Representative.

**Program Manager.** Designated individual with responsibility for and authority to accomplish program objectives for development, production, and sustainment to meet the user's operational needs. The PM shall be accountable for credible cost, schedule, and performance reporting to the MDA. (DoDD 5000.01)

**Contracting Officer.** Person with the authority to enter into, administer, and/or terminate contracts and make related determinations and findings. The term includes certain authorized representatives of the Contracting Officer acting within the limits of their authority as delegated by the Contracting Officer. Administrative Contracting Officer (ACO) refers to a Contracting Officer who is administering contracts. Termination Contracting Officer (TCO) refers to a Contracting Officer who is settling terminated contracts. A single Contracting Officer may be responsible for duties in any or all of these areas.

**Contracting Officer’s Representative.** An individual, including a Contracting Officer’s Technical Representative (COTR), designated and authorized in writing by the Contracting Officer to perform specific technical or administrative functions. (FAR 2.101)

A Contracting Officer’s Representative (COR) may be called by various titles (e.g., Contracting Officer's Technical Representative [COTR], Quality Assurance Evaluator [QAE], and Quality Assurance Representative [QAR]). Whatever the title, the COR must be designated and authorized, in writing, by the Contracting Officer. Recommendation of the COR most likely comes from the program office. [Note: More than one COR may be appointed, but, to avoid confusion in such cases, roles and responsibilities must be clearly distinguished.]
CH 1–4.2.11.2 Responsibilities

The responsibilities of PMs and Contracting Officers, and their authorized representatives are predominantly governed in different ways.

The responsibilities of PMs are governed by the “5000 series” (e.g., DoDD 5000.01, DoDI 5000.02, and DoDI 5000.74). The 5000 series is comprised of policy and guidance for use internal to the DoD. The documents in the 5000 series are not regulations.

The responsibilities of Contracting Officers and their authorized representatives are governed by title 48 Code of Federal Regulations (CFR) Chapters 1 and 2 (i.e., Federal Acquisition Regulation [FAR] and Defense Federal Acquisition Regulation Supplement [DFARS]). “The FAR and DFARS are issued under statutory authority and published in conformance with required statutory and regulatory procedures. FAR § 1.301(b). Accordingly, those regulations have the force and effect of law.” (Davies Precision Machining, Inc. v. U.S., 35 Fed. Cl. 651 [1995]).

The FAR and the DFARS are applicable to all members of the PMO Team, including specific responsibilities for PMs (e.g., conducting acquisition planning; developing an Acquisition Strategy; promoting full and open competition and sustaining effective competition between alternative major system concepts and sources; executing certification of non-personal services; assigning technical representation in contractor facilities to perform non-Contract Administration Service [CAS] technical duties; and providing liaison, guidance, and assistance on systems and programs).

Similarly, the 5000 series includes responsibilities for the Contracting Officer and authorized representatives (e.g., preparing an acquisition plan, seeking small business opportunities, solicitation content preparation, formally validating and accepting the contractor’s EVM system, negotiating contract funds status reporting, and conducting quality assurance inspections).

The COR assists the Contracting Officer in the technical monitoring or administration of the contract. The COR is the “eyes and ears,” but not necessarily the “mouth” of the Contracting Officer. As the eyes and ears of the Contracting Officer, the knowledge of the COR is imputed to the Contracting Officer for purposes of contract management and contract administration, including any litigation.

The COR serves as the on-site technical manager responsible for assessing actual contractor performance against contract performance standards. The COR shares with the acquisition team personal field experience in surveillance of the contract. The COR performs the actual surveillance of the contractor's work. However, the COR may not be delegated responsibility to perform functions that have been delegated to a Contract Administration Office (CAO) (e.g., Defense Contract Management Agency). The Contracting Officer may retain almost any of these functions, and delegate them to a COR. Some functions are, however, retained exclusively for the CAO.

CH 1–4.2.11.3 Relationships

A fundamental question (or issue) often discussed between PMs and Contracting Officers is, “Whose contract is it, the PM’s or the Contracting Officer’s?” The answer is, “Neither.” A glance at the cover page of a contract (e.g., Standard Form [SF] 26, Award/Contract, Block 20B, or SF 33, Solicitation, Offer and Award, Block 27) reveals the answer, which is “United States of America.”

Program Managers and Contracting Officers, and their authorized representatives function in what should be a beneficial symbiotic relationship—a relationship that should benefit the nation’s warfighters and the United States of America. In doing so, they fulfill the vision for the Federal Acquisition System addressed in the statement of guiding principles for the Federal Acquisition System, “... to deliver on a timely basis the best value product or service to the customer, while maintaining the public’s trust and fulfilling public policy objectives.” (FAR 1.102(a)).

To make those relationships operate more smoothly, consider the following:
• A meeting between the PM and Contracting Officer is appropriate and advantageous—together up front, and early on and often.
  o The best time is before the PMO Team begins to write documentation that may otherwise need to be rewritten.
  o It is best to establish a working relationship when things are going well rather than trying to establish one in a period of program problems or crisis management.
  o An invitation to the Contracting Officer as a regular attendee to program office staff meetings is appropriate and advantageous.
  o If appropriate and feasible, co-locate the Contracting Officer within the program office, thereby shortening the lines of communication and allowing for greater flow of information.

• Acquisition is a document-driven process. The PM and the Contracting Officer Jointly establish a Standard Operating Procedure (SOP) that addresses what constitutes a complete acquisition package to kick off a contract action. The SOP addresses all the items in a contract file that require program office input (e.g., requirements document, funding, new start validation, market research, acquisition plan, organizational conflict of interest, advisory and assistance service determinations, and make-or-buy program decisions). The SOP also contains a set of standard, reasonable timelines for various kinds of contract actions.

• The PM and Contracting Officer may need to address special or unique contracting actions. Although the Standard Operating Procedures (SOP) have a set of standard timelines, each contract action is unique, including: developing and agreeing to each piece of documentation required for the contract file; identifying the final approval authority, if any; assigning responsibility for the contract’s development and coordination; and stating a date by which the contract is required to be produced. In this case, the PM and Contracting Officer may find it beneficial to establish a signed agreement for any modifications to the SOP. Both parties need to sign the agreement.

CH 1–4.2.11.4 Contract Types

“Contract types are grouped into two broad categories: fixed-price contracts (see FAR Subpart 16.2) and cost-reimbursement contracts (see FAR Subpart 16.3). The specific contract types range from firm-fixed-price, in which the contractor has full responsibility for the performance costs and resulting profit (or loss), to cost-plus-fixed-fee, in which the contractor has minimal responsibility for the performance costs, and the negotiated fee (profit) is fixed. In between are the various incentive contracts (see FAR Subpart 16.4), in which the contractor’s responsibility for the performance costs and the profit or fee incentives offered are tailored to the uncertainties involved in contract performance” (FAR 16.101(b)). In addition to those two broad categories, there are also Time-and-Materials (T&M) and Labor-Hour (LH) contracts, under which the government pays the contractor a fixed hourly rate for labor. Under a T&M contract, the government typically reimburses materials at actual cost.

Fixed-price and cost-reimbursement contracts may also be divided into Completion and Term forms. The Completion form normally requires the contractor to complete and deliver the specified end product within the estimated cost, if possible. However, in the event the work cannot be completed within the estimated cost, the government may require more effort without increase in fee, provided the government increases the estimated cost. The Term form describes the scope of work in general terms and obligates the contractor to devote a specified level of effort for a stated time period (see FAR 16.306). Fixed-price type contracts are generally of the Completion form, except for firm-fixed-price, level-of-effort term contracts, which require the contractor to provide a specified level of effort, over a stated period of time, on work that can be stated only in general terms (see FAR 16.207-1).

There is a preference in contract type for fixed-price contracts over cost-reimbursement contracts. Firm-fixed-price contracts, which best utilize the basic profit motive of business enterprises, are to be used when the risk involved is minimal or can be predicted with an acceptable degree of certainty. When that is not the case, other contract types may be more suitable. T&M and LH contracts are the least preferred of contract types, only to be used when no other contract type is suitable. There is a preference in the FAR for the Completion form of contract types over the Term form.
Under a fixed-price contract, the contractor commits to delivering a quality “acceptable” product at a fixed price regardless of actual cost. Thus, under a fixed-price type contract, the possibility exists that the contractor could ultimately end up losing money on the effort.

Under a cost-reimbursement type contract, the government agrees to pay all of a contractor’s allowable costs up to the amount of funding obligated under the contract. Above that limit, the contractor is not obligated to expend funds in performance of the contract, but may do so at its own risk. Costs are required to meet certain requirements to be allowable under a contract (i.e., Reasonableness; Allocability; Standards promulgated by the CAS Board, if applicable – otherwise, generally accepted accounting principles and practice appropriate to the circumstances; terms of the contract; and any limitations set forth in FAR 31.2). With the government reimbursing all allowable cost up to the specified limit, that means that the risk to the government is high, with no guarantee that a usable product will be delivered. The contractor only “...agrees to use its best efforts to perform the work specified in the Schedule and all obligations under this contract within the estimated cost . . .” The risk to the contractor is low because all of its allowable costs are reimbursed by the government. Refer to Figure 23 which compares Risk to Contract Types.

**Figure 23: Risk to Contract Types**

- **Greatest Cost Risk to the Contractor**
- **Greatest Cost Risk to the Government**

<table>
<thead>
<tr>
<th>Technical Risk</th>
<th>Contractor Delivers “Best Effort”</th>
<th>Contractor Delivers Acceptable Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vague technical requirements;</td>
<td>CPFF: Cost Plus Fixed Fee</td>
<td>FPI(F): Fixed Price Incentive-Firm</td>
</tr>
<tr>
<td>labor and material costs uncertain</td>
<td>CPIF: Cost Plus Incentive Fee</td>
<td>FPAF: Fixed Price Award Fee</td>
</tr>
<tr>
<td>Technical requirements defined;</td>
<td>CPAF: Cost Plus Award Fee</td>
<td>FFP: Firm Fixed Price</td>
</tr>
<tr>
<td>fair and reasonable prices determinable</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For supplemental information regarding contract types and incentives go to: Contract Pricing Reference Guides or Guidance on Using Incentive and Other Contract Types.

Selecting the contract type is generally a matter for negotiation and requires the exercise of sound judgment. Negotiating the contract type and negotiating prices are closely related and are to be considered together. The objective is to negotiate a contract type and price (or estimated cost and fee) that results in reasonable contractor risk and provide the contractor with the greatest incentive for efficient and economical performance (FAR 16.103 (a)). Use market research, industry days, and other pre-solicitation communication with industry to help determine the risk to all parties and the right contract type for a given situation.
Although the Contracting Officer ultimately determines the selection of contract type, it is a topic that is best carefully discussed between the PM and the Contracting Officer. Any contract type or combination of contract types described in the FAR may be used in an acquisition. The cost-plus-a-percentage-of-cost system of contracting is prohibited by law. In addition, there are some limitations on contract type based on method of contracting used (e.g., commercial item acquisition and sealed bidding).

Program Managers and Contracting Officers ensure the selection of contract type and contracting approach is a "best fit" business solution to achieving their program goals. The Contracting Officer manages these business solutions in a manner that optimizes the program’s ability to achieve successful results. Source selection evaluation factors and contract incentives reflect the principal goals and risks of the program. Once the contracting approach and contracting type are established, the PM can see where risks and special objectives have been addressed in the selected business solution(s).

During the Defense Acquisition Life Cycle, different contract types are more appropriate for each phase. Figure 24 illustrates “typical” contract types by phase, keeping in mind that the best contract type is one that appropriately shares the risk between government and contractor.

![Figure 24: Typical Contract Types by Acquisition Phase](image)

Although the specified types may be “typical,” selection is based on the following 12 factors (FAR 16.104):

CDD: Capability Development Document
CDD-V: Capability Development Document-Validation
CDR: Critical Design Review
CPAF: Cost Plus Award Fee
CPD: Capability Production Document
CPFF: Cost Plus Fixed Fee
CPIF: Cost Plus Incentive Fee
DRFRD: Development Request for Proposal Release Decision
FFP: Firm Fixed Price

FOC: Full Operational Capability
FP (EPA): Fixed Price Economic Price Adjustment
FPIF: Fixed Price Incentive Firm
FRP: Full Rate Production
ICD: Initial Capabilities Document
IOC: Initial Operational Capability
LRIP: Low-Rate Initial Production
PDR: Preliminary Design Review
In the Materiel Solution Analysis phase, programs contract for analytical studies, usually using Firm-Fixed-Price (FFP) contracts. In Technology Maturation and Risk Reduction, programs contract with multiple contractors for competitive prototyping of critical program technologies. This creates a competitive situation that provides built-in incentives for contractors to perform well, so specific incentives are generally unnecessary. Cost Plus Fixed Fee (CPFF) contracts frequently make the most sense in this situation. In Engineering and Manufacturing Development, programs contract for completion of the system design and preparation for production. Although Fixed Price Incentive-Firm (FPI-F) contracts are preferred in EMD, the Milestone Decision Authority may approve a different contract type, consistent with the level of program risk. In Production and Deployment, programs contract for low-rate and full-rate production as well as initial sustainment. At this point in the program, requirements are well known and stable, and the design has been proven in testing. Therefore, the program risk is now low enough to use fixed-price type contracts from Milestone C forward.

CH 1–4.2.11.5 Specifications

10 USC 2305, Contracts: Planning, Solicitation, Evaluation, and Award Procedures, establishes the requirements for specifying requirements in DoD acquisition. The PM and the Contracting Officer need to describe agency needs in contractual requirements and specifications in such a fashion as to promote full and open competition. Restrictive provisions or conditions are included only to the extent necessary to satisfy the needs of the agency or as authorized by law.

The type of specification included in a solicitation depends on the nature of the needs of the program and market availability of solutions to meet those needs. To the maximum extent practicable, requirements are stated in terms of:

- Function to be performed so that a variety of products or services may qualify.
- Performance required, including specifications of the range of acceptable characteristics or of the minimum acceptable standards.
- Essential physical characteristics or design requirements (FAR 11.002).

Some or all of a requirement’s performance levels or performance specifications may be identified in a solicitation (e.g., RFP) as targets rather than as fixed or minimum requirements. Some performance levels may include threshold and objective values.

The PM may select from existing requirements documents, modify or combine existing requirements documents, or create new requirements documents to meet program needs. In doing so, the PM follows the following order of precedence:

- Documents mandated for use by law.
• Performance-oriented documents (e.g., a Performance Work Statement [PWS] or Statement of Objectives [SOO]).
• Detailed design-oriented documents.
• Standards, specifications, and related publications issued by the government outside the Defense or Federal series for the non-repetitive acquisition of items (FAR 11.101).

Note: See FAR Part 11 and DFARS Part 211 for specific guidance on Describing Agency Needs.

When an RFP cites a requirements document listed in the General Services Administration (GSA) Index of Federal Specifications, Standards and Commercial Item Descriptions, the DoD Acquisition Streamlining and Standardization Information System (ASSIST – Account and CAC required) or other agency index identifies each document's approval date, and the dates of any applicable amendments and revisions. General identification references are discouraged, such as “the issue in effect on the date of the solicitation” (FAR 11.201(a)). Unless changed after contract award, this is the specific document that establishes the contract requirement. If the document is updated in the contract, an equitable adjustment may be appropriate.

Part of the purpose of conducting market research and discussing requirements with industry is to determine the availability of commercial items and non-developmental items. The government has a preference for the acquisition of commercial items, including providing special, less cumbersome methods for acquiring commercial items. The PM defines requirements in terms that enable and encourage offerors to supply commercial items or, if commercial items are unsuitable or unavailable, non-developmental items (FAR 11.002(a)(2)(ii)). These provide offerors of commercial items and non-developmental items an opportunity to compete in any acquisition to fulfill program requirements. If no commercial or non-developmental items can meet the government's requirement, the PM considers whether the requirement can be modified.

The PM and the Contracting Officer engage industry as early as possible in the acquisition process, beginning with the establishment of the requirement. These engagements improve the understanding of government requirements and industry capabilities. Exchange of information helps the government shape requirements, which enhances the ability of the government to get the supplies and services it needs. Exchange of information allows potential offerors to decide whether or how they can satisfy the government’s requirements, make bid/no-bid decisions, and consider partnering arrangements with subcontractors or teaming arrangements with other contractors. There are numerous ways that a PM can engage industry, but particularly useful are Requests for Information (RFIs) and one-on-one meetings with potential offerors.

To the extent practicable and consistent with organizational conflict of interest issues, potential offerors are given an opportunity to comment on agency requirements or to recommend application and tailoring of requirements documents and alternative approaches. Release of a draft RFP can be useful in providing that opportunity. The PM applies specifications, standards, and related documents initially for guidance only, making final decisions on the application and tailoring of these documents as a product of the design and development process. The government refrains from dictating detailed design solutions prematurely.

Before releasing the final RFP, the program office needs to allow enough time to develop and mature the performance and functional specifications that are included in the RFP. When carefully prepared, the RFP and supporting technical documentation clearly define the government’s expectations in terms of the performance and functional specifications, program planning, program process, risks, and assumptions. The RFP also directs potential offerors to integrate their approach to reflect the government’s expectations. See CH 3–2.7 for additional information on the Systems Engineering role in contracting.

There are certain things a PM and Contracting Officer typically avoid, or use carefully, in establishing contract requirements and specifications:
Use of brand name or equal purchase descriptions. The use of performance specifications is preferred to encourage offerors to propose innovative solutions. However, the use of brand name or equal purchase descriptions may be advantageous under certain circumstances. To further competition, brand name or equal purchase descriptions include, in addition to the brand name, a general description of those salient physical, functional, or performance characteristics of the brand name item that an “equal” item is required to meet to be acceptable for award. Use brand name or equal description, without a discussion of what constitutes “equal,” may prove to be problematic in the event of a protest.

Items peculiar to one manufacturer. Requirements are not written to require a particular brand name, product, or a feature of a product peculiar to one manufacturer, thereby precluding consideration of a product manufactured by another company, unless the particular brand name, product, or feature is essential to the government’s requirements, and market research indicates other companies’ similar products, or products lacking the particular feature, do not meet, or cannot be modified to meet, the agency’s needs.

Inherently governmental functions. In drafting purchase descriptions for service contracts, the government avoids requiring contractors to perform inherently governmental functions. [Note: A list of inherently governmental functions may be found at FAR 7.503.] In addition, there are functions that are generally not considered to be inherently governmental functions, but are closely related or may approach being in that category. This may be as a result of nature of the function, the manner in which the contractor performs the contract, or the manner in which the government administers contractor performance. If these latter requirements are to be included in a contract, careful consideration is given to the writing of the requirement.

CH 1–4.2.11.6 Work Statements
The PM pays particular attention to work statements, as they drive to what standards offerors are to write their proposals and, ultimately, the contract requirements that drive contractor performance. These are key documents as they serve as a baseline for stating what the contractor is to accomplish and for determining the success of their performance.

The PM works with the Contracting Officer early in the development process of the work statement to ensure delivery of a quality product to the Contracting Officer, consistent with any “contract” they have established. The PM ensures alignment between the work statement and the Program Work Breakdown Structure (PWBS), and the work statement and the Contract Work Breakdown Structure (CWBS). The work statement, also described in CH 1–4.2.11.6.1 and CH 3–4.1.1.1 are aligned with the acquisition milestones and phases.

There are different types of work statements (i.e., Statement of Work [SOW], Performance Work Statement [PWS], and Statement of Objectives [SOO]).

CH 1–4.2.11.6.1 Statement of Work
Statement of Work (SOW) is the portion of a contract that establishes and defines all non-specification requirements for contractor's efforts either directly or with the use of specific cited documents. This document describes the actual work that is to be performed by the contractor and often uses references to such documents as specifications and documents incorporated into the SOW as compliance documents or reference documents. Some documents can be presented in full text while others may be incorporated by reference. The SOW specifies in clear, understandable terms the work to be done in developing or producing the supplies to be delivered or services to be performed by a contractor. Preparation of an effective SOW requires both an understanding of the supplies or services that are needed to satisfy a particular requirement and an ability to define what is required in specific, performance-based, quantitative, or qualitative terms. A SOW prepared in explicit terms enables offerors to clearly understand the government's requirements, including international acquisition documents (International Agreements, Foreign Military Sales Letters of Offer and Acceptance), as applicable. This understanding facilitates the preparation of responsive proposals and delivery of the required supplies or
services. A well-written SOW also aids the government in selecting the source for contract award, and for contract management and contract administration after award. A Data Requirements Review Board (DRRB), Solicitation Review Panel (SRP), “Murder Board,” or other such group may review each SOW to ensure compliance with the policy, guidance, and procedures contained in MIL-HDBK-245D, Department of Defense Handbook for Preparation of Statement of Work (SOW).

CH 1–4.2.11.6.2 Performance Work Statement

Performance Work Statement (PWS) is a statement of work for performance-based acquisition that describes the required results in clear, specific, and objective terms with measurable outcomes. These are often used in services, but can also be used in supply contracts when describing outcomes. The PWS states requirements in general terms of what is to be done (result), rather than how it is done (method). The PWS gives the contractor maximum flexibility to devise the best method to accomplish the required result. The PWS is written to ensure that offerors compete fairly based on their capabilities. The government can remove PWS requirements that unfairly restrict competition. However, the PWS is descriptive and specific enough to protect the interests of the government, including international acquisition documents (International Agreements and Foreign Military Sales Letters of Offer and Acceptance, as applicable), and promote competition unless otherwise specified by the FMS customer nation. The clarity and explicitness of the requirements in the PWS invariably enhance the quality of the proposals submitted. A definitive PWS is likely to produce definitive proposals, thus reducing the time needed for proposal evaluation.

- Preparing a PWS begins with an analytical process, often referred to as a "job analysis." It involves a close examination of the agency's requirements and tends to be a "bottom up" assessment with "re-engineering" potential. This analysis is the basis for establishing performance requirements, developing performance standards, writing the PWS, and producing the quality assurance plan. Those responsible for the mission or program are essential to the performance of the job analysis.

- A different approach to the analytical process is described in the Guidebook for the Acquisition of Services. It describes the Requirements Roadmap Process and the availability of a database PWS and Quality Assurance Surveillance Plan (QASP) authoring tool known as the Acquisition Requirements Roadmap Tool (ARRT). The ARRT provides authoring question-and-answer "wizards" to guide users through the requirements roadmap process. The ARRT allows an author to use standardized PWS and QASP templates to create a PWS and QASP tailored to a specific requirement. The requirements roadmap process includes two specific tasks: (1) Define the desired outcomes—what must be accomplished to satisfy the requirement? and (2) Conduct an outcome analysis—what tasks must be accomplished to arrive at the desired outcomes?

CH 1–4.2.11.6.3 Statement of Objectives

The Statement of Objectives (SOO) is an alternative to a SOW or PWS. It is a summary of key agency goals, outcomes, or both, that is incorporated into a performance-based acquisition so that competitors may have maximum flexibility in proposing their own specific solutions. Solutions may include a technical approach, performance standards, and a quality assurance surveillance plan, which may be based on commercial business practice. SOO content depends both on the type of supplies or services and on the program phase. It is possible that a "mature" program, such as a software product, which is the maintenance phase, could require slightly more detail in the SOO to properly integrate with other software programs under development or operation. The key is to keep the document short and concise. The SOO does not specifically address each Work Breakdown Structure (WBS) element, but each WBS element is traceable to the SOO. For example, a SOO may instruct the offerors to address an engineering approach. That is not a particular WBS element, but several WBS elements might be created to break out the engineering tasks. Try not to group all WBS elements in the same objective. In so doing, end users get the best supplies or services, and competition is enhanced if dissimilar solutions are submitted in response to the solicitation. There is no predetermined length for the SOO document. Ideally, it is a concise, cogent document of appropriate length.
The following actions provide the conceptual process for developing the SOO:

- Conduct market research to determine whether commercial items or non-developmental items are available to meet program requirements.
- Review the requirements documents that authorize the program, various DoD, Military Departments, Joint Services requirements documents, and applicable international acquisition documents (International Agreements, Foreign Military Sales Letters of Offer and Acceptance) for program management and acquisition management impact to the program.
- Prepare a bibliography citing the specific portions of all applicable governing directives, instructions, specifications, and standards with which the program is required to comply. Keep these requirements to the absolute minimum.
- Develop the program objectives by completing a risk assessment that highlights the high and moderate risks in the areas of business, programmatic, and technical identified in the program based on the requirements and users’ high-level objectives.

Access more information on creating a SOW, PWS, or SOO on the Acquisition Community Connection website (e.g., MIL-HDBK-245D).

**CH 1–4.2.11.7 Request for Proposal Sections L & M**

When the government seeks to acquire supplies or services, including major systems, it does so through “Solicitation” (i.e., FAR 2.101). Solicitation means any request to submit offers or quotations to the government. Solicitations under sealed bid procedures are called “invitations for bids.” Solicitations under negotiated procedures are called “Requests for Proposal.” Solicitations under simplified acquisition procedures may require submission of either a quotation or an offer. Other than for simplified acquisition, the solicitation is likely to be a Request for Proposal (RFP).

The RFP is structured using a Uniform Contract Format (UCF) so that solicitations and contracts have a common structure (see Figure 25). The common structure makes it easier for the government and contractors to work together.

*Figure 25: Uniform Contract Format (Table 15-1 of the FAR)*
The UCF provides the structure for the RFP, including how offerors are to structure offers and proposals (i.e., Section L Instructions, conditions, and notices to offerors or respondents) and how the government evaluates those offers and proposals (i.e., Section M Evaluation factors for award). Sections A through K constitute the "Model Contract"—what the government anticipates the final contract to look like. When Sections A through K have been filled in by the offeror, and signed by both parties, the resultant document becomes the contract between the government and the contractor. Section K representations, certifications, and other statements of offerors or respondents are not present in the contract document; however, the representations and certifications are incorporated by reference in the contract by using a contract clause.

Although the Contracting Officer signs the contract on behalf of the United States of America, most of the input for the solicitation and contract comes from the PM and the PM’s other functional experts. Section I, Contract Clauses, is probably the one section where the Contracting Officer has the most responsibility, but even then many of the contract clauses selected are driven by the needs of the program.

Figure 26 shows the documents that are provided in the solicitation, are provided in an offeror’s proposal, and will be in the final contract. From a source selection perspective, Sections L and M may be the most important, and require particular attention of the PM and the Contracting Officer. Section M is the PM’s statement of what looks like success in the eyes of the government, and how offers and proposals will be differentiated or distinguished from one another. Having established what is important in Section M, Section L is written to assure that the government has all the information that is needed to make an assessment.

Figure 26: Contract Document Linkages
The government does not generally request any information from offers under Section L that is not to be evaluated under Section M. Similarly, the government does not generally evaluate anything under Section M where offeror information has not been requested under Section L. In addition, there should be alignment between Sections L and M, and the remainder of the solicitation. The PM and the Contracting Officer are following a best practice by completing a compliance matrix (refer to Table 6) to ensure this alignment. It might prove beneficial to offerors to include the matrix in the RFP. Many, if not most, offerors will develop a matrix as part of the proposal development process if the government does not provide one. Such a matrix ensures a compliant offer and proposal.

**Table 6: Sample Compliance Matrix**

<table>
<thead>
<tr>
<th>Provided in RFP</th>
<th>Provided in Proposal</th>
<th>On Contract at Award</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model Contract</td>
<td>Model Contract</td>
<td>Contract Sections A-K</td>
</tr>
<tr>
<td>Section L</td>
<td>Proposal Narratives/ Volumes</td>
<td></td>
</tr>
<tr>
<td>Section M</td>
<td>IMP/IMS</td>
<td>IMP</td>
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* The contract line items (CLINs) will be reflected in the structure of Sections B Supplies or services and prices/costs, D Packaging and marking, E Inspection and acceptance, and Deliveries or performance of the Model Contract and Contract.
The PM and Contracting Officer explain in Section L of the RFP (Instructions, Conditions, and Notices to Offerors or Respondents) the structure, format, and content of an offeror’s offer and proposal. The PM and Contracting Officer ensure the instructions for submission of proposals are complete and thorough, but not overly long, complex, or restrictive. Submission instructions vary, but most agencies have a standard or preferred format that is familiar to Contracting Officers and evaluators. For example, proposals may be submitted via disks, electronic media, orally, or in paper-based form. The most common content items to be prescribed in the instructions include the following: volumes, page limits, font, spacing, and other layout instructions. Reference the DoD Source Selection Procedures for additional instructions.

Some solicitations include a requirement for oral presentations. Oral presentations may be of two different kinds. The first kind is where information provided orally is a substitute for information that would normally be provided in written form. The second kind is a “test” in which the information is used to determine an offeror’s understanding of the requirements, capability to perform, or other purpose. When using oral presentations, have the presenter be the proposed PM or other person assigned to the program, not a professional speaker.

The key to successful use of any evaluation factor is to establish a clear relationship between the work to be performed under the contract, Section L of the solicitation, and Section M (Evaluation Factors for Award) of the solicitation. The evaluation factors selected should link clearly with the Statement of Work (SOW) or Performance Work Statement (PWS), and represent those areas that are important to stakeholders or have been identified as high risk during risk analysis. Refer to DFARS 215.300, which incorporates DoD Source Selection Procedures by reference.

Section M is uniquely tailored for each contract and is intended to give offerors guidance concerning the basis of award. All the evaluation factors and significant subfactors that will be considered in making the source selection, along with their relative order of importance, are explained (see FAR 15.304).
Although evaluation factors and significant subfactors are at the broad discretion of the government, some factors are required by law. An evaluation of cost or price to the government is required, and the Government Accountability Office has ruled that this evaluation is a "significant" factor. Unless waived by the Contracting Officer, past performance is also a required evaluation factor. Quality of the product service shall be a consideration, but it need not be a stand-alone evaluation factor. A statement is also required in Section M as to whether all evaluation factors other than cost or price, when combined, are significantly more important than, approximately equal to, or significantly less important than cost or price.

One of the main challenges in determining best value is assessing performance risk. This is challenging because the offerors may be proposing different approaches that can be difficult to compare (an apples-to-oranges comparison). While Section M of a solicitation provides the basis for evaluation, there is no precise science to assessing dissimilar approaches toward fulfilling a Performance-Based Acquisition (PBA) requirement.

**Evaluation Factors/Subfactors.** Be sure that Section M is clear and complete in describing the evaluation factors and significant sub-factors to be used. Factors/subfactors are to be fully explained and their relationship to one another (relative importance) clearly stated. The goal here is to make the offerors fully aware of how the source selection will be made.

**CH 1–4.2.12 Industrial Base**

The development and implementation of acquisition plans for each Major Defense Acquisition Program requires, by law (10 USC 2440, Technology and Industrial Base Plans) consideration of the national technology and industrial base. These considerations are enumerated in law (10 USC 2501, National Security Strategy for National Technology and Industrial Base) and include, among other things: reconstituting industrial capabilities; providing for the development, manufacture, and supply of items and technologies; providing for the generation of services; maintaining critical design skills; ensuring reliable sources of materials; and reducing the presence of counterfeit parts.

**CH 1–4.2.12.1 Strategic Perspective**

Industrial capability, in the context of Title 10, generally refers to entire industrial sectors and their underlying infrastructure and processes. Industrial sectors are usually thought of broadly such as aircraft, ground vehicles, electronics, etc. These sectors consist of a variety of discrete capabilities found in a work breakdown structure such as control surface actuators, diesel engines, microprocessors, etc. In many cases, industrial capabilities support both military and civilian customers. It is often, but not always, the case that industrial base issues arise with capabilities that are defense-specific such as tactical aircraft propulsion, tank armor, or trusted electronics. The degree and timing of industrial capability issues in any of these areas can exceed the ability of any individual program, Service, or Agency to address, and sometimes are elevated and addressed at the DoD level. Sometimes coordination across programs and across Services is necessary to address risk. In other cases, there may be no existing programs and in order to ensure future availability of specific industrial capabilities, the Department makes its own direct investments. To address industrial base considerations at a strategic level, the Department has an executive-level Industrial Base Council, with Service and Agency representatives, a senior-level working group, multiple cross-program and cross-Service working groups, and multiple sector-wide risk remediation tools.

**CH 1–4.2.12.2 Industrial Base Consideration in Program Planning**

10 USC 2440 requires consideration of the national technology and industrial base in acquisition plans for each MDAP. DoD has implemented these requirements through DoDI 5000.02 (Encl. 2, para 8), DoDI 5000.60, Defense Industrial Base Assessment, and DoD 5000.60-H, Assessing Defense Industrial Capabilities. These policies and handbook incorporate the statutory requirement for industrial base analysis into acquisition planning and execution, and the importance of documenting industrial base considerations in acquisition strategies.
Because of this broad, strategic focus, it may not be necessary, or even desirable, for each PM to perform an independent analysis of all industrial base considerations when developing a program's Acquisition Strategy. At the beginning of Acquisition Strategy development, it is highly recommended that PMs consult with their Service's industrial base assessment activity and the OSD Office of Manufacturing and Industrial Base Policy to determine what work has already been done, what risks are known, what risks are considered relevant, and what knowledge gaps remain to be addressed. These organizations will later be reviewers of the Acquisition Strategy. A proactive approach reaching out to the reviewers prior to developing the strategy can result in a very efficient, cost-effective, and highly tailored consideration of industrial base factors.

Addressing Industrial base considerations should not be confused with market research, another important part of effective acquisition. Market research tends to be focused on identifying the full range of capabilities, opportunities, and alternatives that are available in the market at the top tier of the supply chain for a complete end product or weapon system. There is an emphasis on identifying commercial products and services that may be applied to military requirements, and an expectation that most such information will be relatively easy to discover. On the other hand, industrial base assessment focuses much more on the risks that certain discrete capabilities—frequently defense-unique, often at lower tiers of the supply chain—won’t be available. It also looks at the difficulty of constituting or reconstituting at-risk capabilities and what can be done to address those risks. Supply chain risks tend to be carefully guarded as trade secrets and quite difficult, if not impossible, to identify with public information. Once an at-risk capability is identified though, market research can be quite valuable to identify alternatives. Review more information on Market Research at the Defense Acquisition University Continuous Learning Module CLC 004 – Market Research.

To minimize the expenditure of program resources, avoid repeating complex assessments. To quickly tap into DoD corporate knowledge of essential industrial base issues and to efficiently tailor industrial base considerations in program acquisition strategies, it is highly recommended that PMs consult with the Office of Manufacturing and Industrial Base Policy (MIBP) and other appropriate members of the Joint Industrial Base Working Group at the beginning of Acquisition Strategy development.

**CH 1–4.2.12.3 Industrial Base Analysis Program Process**

The Industrial Base Analysis Program process is simply to focus attention on specific industry sectors, identify relevant information, assess capability and risk, act, and start over refocusing attention. Sustained efforts and continuous learning maintain and strengthen the process over time. The reservoir of knowledge accumulated in the process contributes to Acquisition Strategy decisions, helps ensure realistic program objectives, reduces programming swings that disrupt companies' investments and operations, and contributes to the Department's merger, acquisition, and divestiture reviews and other industrial base policies. Review the Industrial Base Analysis Program for more information regarding Objectives and Assessment Methodology.

**CH 1–4.2.12.4 Fragility and Criticality Assessment**

Fragility and Criticality (FaC) Assessment are designed to systematically evaluate the need for program adjustments or investments to sustain specific niches in the defense industrial base. This common framework allows DoD leadership to compare industrial capabilities across all the sectors and tiers of the industrial base and combine scores for industrial capabilities that contribute to multiple programs, allowing portfolio analysis as part of DoD's normal budget process.

Industrial base issues are usually thought of in terms of risk. What is the risk that the defense department will not be able to get what it needs when it needs it? Specialized terms and criteria have been developed for industrial base risk assessment. Criticality is the difficulty of constituting or reconstituting a capability if disrupted. Fragility is the likelihood that a capability will be disrupted.

Fragility and Criticality (FaC) is similar to the familiar risk model of probability and consequence although the methodology is not the same. Industrial base FaC assessment results make a valid comparison of
industrial base risks to each other within a sector but only a Program Manager (PM) can make the
determination of how important a particular capability is to their particular program. Given a rigorous FaC
assessment of a sector, a PM can make a separate determination of how identified industrial base risks fit
into their overall program risk framework of probability and consequence. Figure 27 illustrates then
process assessment activities, actions and outcomes.

**Figure 27: FAC Assessment Activities, Actions and Outcomes**

<table>
<thead>
<tr>
<th>Process Activity</th>
<th>Action</th>
<th>Outcome</th>
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<tbody>
<tr>
<td>Select Sector/SubSector</td>
<td>Scope the problem (existing risk assessments; program shutdowns)</td>
<td>Sector Taxonomy</td>
</tr>
<tr>
<td>Search Available Data</td>
<td>Identify IB-related risks &amp; related capabilities/products</td>
<td>Potential IB Risks/Issues</td>
</tr>
<tr>
<td></td>
<td>Identify suppliers and market</td>
<td></td>
</tr>
<tr>
<td>FaC Screening/Filtering</td>
<td>Focused set of IB-related risks for further assessment</td>
<td>Screened IB/Issues Capability-Supplier Pairs</td>
</tr>
<tr>
<td>Conduct FaC Matrix Assessment</td>
<td>Facilitated scoring, based on standardized criteria, by SMEs</td>
<td>FaC Risk Matrix</td>
</tr>
<tr>
<td>Validate &amp; Mitigate High Risk IB Issues</td>
<td>SME “deep dive” into IB risk areas; facility visits</td>
<td>Solutions to High Risk IB Issues</td>
</tr>
</tbody>
</table>

Process Activity Steps are as follows:

**CH 1–4.2.12.4.1 FaC First Activity**

The first activity in the FaC assessment process is to **select** the assessment subject and scope. The
assessment generally begins by choosing an industrial base sector or subsector within that sector. However, as additional insight is acquired, future iterations may focus on more limited technology or commodity areas. Selection of a program or sector for a FaC assessment is based on leadership priorities, industrial base analysis, and the results of prior industrial base assessments.

**CH 1–4.2.12.4.2 FaC Second Activity**

The second activity in the process is to **search** for data and filter out non-industrial base issues to support industrial base assessment. In a resource constrained environment, the analyst cannot afford to conduct an open, unbounded search for information. Once the assessment scope is selected, industrial base analysts will evaluate available data sources for potential inclusion in the FaC assessment. Specific program or sector and supplier information included in existing databases, tools, programs, etc. is identified through the FaC criteria lens. Care is taken to ensure a transparent link to all data sources, and to share data sources among the FaC assessments. When the analyst finds deficiencies in the available information, they may contact subject matter experts (SMEs) knowledgeable in relevant technologies or the acquisition supply chain to augment the knowledge base.
A DoD platform can have thousands of parts and associated vendors and an industrial base sector has even more – so many that it would be impractical to evaluate all of them in any single assessment. Accordingly, before conducting a FaC assessment, the IPT applies a set of filters to arrive at the target set of capabilities and vendors. The filtering activity is essential to the FaC process: filtering rids the assessment of non-industrial base issues, and it protects against data overload by focusing the efforts of the IPT on areas of higher probability of risk.

**CH 1–4.2.12.4.3 FaC Third Activity**

The third activity is to **conduct** the FaC assessment. The heart of the assessment process is the set of criticality and fragility criteria that serves as indicators of potential industrial base-related risk. Criticality, from an industrial base perspective, consists of indicators to identify when a capability would be difficult to replace if it was lost or disrupted. Fragility indicators focus on the robustness of current suppliers of a capability and the availability of potential firms in the current marketplace. Go to [Fragility and Criticality factors](#) for a complete listing of characteristics.

The information required to assess FaC criteria in combination with demographic and economic data of the commercial organizations permits industrial base analysts to sort risks based on whether a given risk is rooted in broad industrial base issues or is unique to a particular capability. Armed with the filtered list of target capabilities to assess, SMEs evaluate the criticality and fragility factors for each capability. This assessment process leads to a FaC Assessment Risk Matrix, identifying the most critical capabilities and fragile suppliers. The high-risk capabilities become the subject for further investigation and validation. SME recommendations for areas that require further investigation, along with any risk mitigation suggestions, are some of the workshop results and a basis for follow-up actions.

**Figure 28: Fragility & Criticality Risk Matrix Assessments**
CH 1–4.2.12.4.4 FaC Fourth Activity

The fourth activity is to **validate** high-risk industrial issues and develop mitigation strategies. Figure 28 presents a visual example of a final FaC Assessment Risk Matrix generated by the pilots. The dots representing capability/supplier pairs in the upper right quadrant of the chart are capabilities that represent potential risks to the DoD in the industrial base. The scoring allows analysts to focus on the highest risk (red-orange) items as the most critical and fragile elements, which are also mapped back onto the taxonomy to reveal whether specific subcomponents contain multiple risks.

The scores from a FaC assessment should not be taken at face value but verified with follow-up to specific vendors. As much information as possible should be gathered by phone calls, interviews, site assessments and other means confirm that an issue has been accurately identified and appropriately.

CH 1–4.2.12.4.5 FaC Fifth Activity

The fifth activity is to **document** results in the acquisition strategy. Fragility and Criticality assessment results and risk mitigation plans should be documented in the industrial capabilities section. Industrial base risks comparable in magnitude to other program risks should also be documented in the risk section.

The scores from a FaC assessment should not be taken at face value but verified with follow-up to specific vendors. The collection of as much information (phone calls, interviews, site assessments, etc.) is warranted to ensure that an issue has been accurately identified and appropriately mitigated. Very often, industrial base considerations for a program are pervasive in an industrial sector or technology group, and are not specific to a program or weapons system. In the industrial base portion of an acquisition strategy, this can present an opportunity for collaboration and considerable reuse of existing work with a resultant savings in resources as well as better results.

CH 1–4.2.12.4.6 Resulting Risks

Given that industrial base considerations are generally pervasive in an industrial sector or technology group, identified risks very often cross program, Service and Agency boundaries. From the perspective of a program, there exists shared industrial base or sector common risks. Figure 29 illustrates the set of potential causes of risk. In an economic concept known as the “tragedy of the commons,” individual users acting independently according to their own self-interest may sometimes behave contrary to the common good by depleting that resource or adding to its risks. In the closely related “free-rider” phenomenon, an individual program may be very reluctant to address a risk in the industrial commons out of concern that other programs or Services will pay less than their fair share and ride free one program’s risk reduction investments.

**Figure 29: Industrial Base Risk Causes**
CH 1–4.2.12.5 Cross Program Working Groups

Cross program working groups, the Joint Industrial Base Working Group, the Industrial Base Council, Sector Working Groups, and strategic portfolio reviews may all be entry points to collaborative efforts ensuring that costs of industrial base risk reduction are shared equitably. While there are thousands of possible industrial base risks, they are generally only a few types of causes.

Assessing Defense Industrial Capabilities, A DoD Guide to 5000.60 provides the framework and guidelines for evaluating, on a case-by-case basis, the need for Government action to preserve industrial capabilities vital to national security. There are a wide variety of methods to address industrial base risk, depending upon the nature and severity of the risk.

CH 1–4.2.12.5.1 Joint Industrial Base Working Group

The Joint Industrial Base Working Group (JIBWG) is an action officer level forum with membership that parallels the industrial base council. In general, the JIBWG includes nearly all of the people in the DoD engaged full time in industrial base assessment and embodies the Department’s corporate knowledge in this field. The JIBWG shares industrial base insights and, when applicable, performs the staff work and implements the decisions of the IBC.

CH 1–4.2.12.5.2 The Industrial Base Council

The Industrial Base Council (IBC) is an executive level forum for senior DoD leaders to review and discuss key defense industrial base trends and issues to:

- Inform DoD investment decisions
- Foster innovation and collaboration between government and industry
- Encourage relationships with new commercial partners.
The IBC includes representatives from all the Services and from Agencies with major acquisition responsibilities.

- The IBC receives insights and analyses on:
  - Global market trends
  - Foreign direct investments
  - Innovative technology suppliers
  - Fragile and critical capabilities in the industrial base

It also reviews opportunities available to address related concerns. It acts to:

- Inform and facilitate enterprise-wide program investment decisions
- Develop policies, programs and business incentives to mitigate industrial base vulnerabilities and attract innovative technology suppliers
- Seek ways to diversify investments to attract new and innovative technology suppliers.

IBC outcomes include:

- Forward-looking view of the IB enterprise from the strategic to operational levels
- Alignment of industrial base efforts to DoD’s strategic priorities
- More timely and effective consideration of industrial base issues across the DoD enterprise
- Ability to facilitate the best business decisions to acquire the latest-state of the art industrial capabilities and sustain the current ones

**CH 1–4.2.12.5.3 Sector Working Groups**

There are a variety of inter-Service, inter-Agency working groups that address industrial base issues. Examples include the Space Industrial Base Working Group (SIBWG), the Critical Energetic Materials Working Group (CEMWG), the Fuze Integrated Product Team (IPT), and the Joint Army, Navy, NASA, Air Force (JANNAF) interagency propulsion committee. These working groups are excellent sources of information about known industrial base issues and industrial base assessments that could save a program a considerable amount of effort addressing industrial base concerns to meet acquisition strategy requirements.

**CH 1–4.2.13 Small Business Participation**

Small business considerations are important and relevant to every Acquisition Strategy because they affect cost, schedule, performance, vendor lock, supply chain diversity, and flexibility of approach. The following subsections provide information on program management activities with the small business community, including:

- What Small Businesses Offer to DoD
- Small Business Programs
- Program Management Expectations for Small Business Professionals
- Program Management Engagement with Small Business Community

**CH 1–4.2.13.1 What Small Businesses Offer to DoD**

Small businesses are typically more innovative, agile, and willing to take greater risks than larger firms with entrenched and rigid corporate strategies and profitability structures. Small businesses often have the flexibility to quickly adapt to changing requirements or to adopt high-risk ventures or technologies that larger companies will not be willing to engage. Due to lower indirect costs and overhead costs, small companies often offer lower prices for services. These characteristics of small business can lead to lower
prices, faster delivery, and greater performance for the program if the small businesses are intelligently integrated into the Acquisition Strategy.

CH 1–4.2.13.2 Small Business Programs

Small business participation is not limited to traditional small businesses or socioeconomic subcategories, such as Service-Disabled, Veteran-Owned Small Business or Historically Underutilized Business Zones (HUB Zones). In fact, many small business programs are specifically designed to integrate cutting-edge, high-risk, and high-reward technology into existing and future major programs. The Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) provide cutting-edge research firms the seed capital to conduct research and development that will be useful to the DoD. SBIR contracts are intended to reach commercialization after demonstrating feasibility and creating a working prototype. Commercialization includes insertion into major programs of record, as well as private sector applications. The Rapid Innovation Fund (RIF) program inserts promising and mature technologies with immediate application potential, including SBIR, into programs of record.

CH 1–4.2.13.3 Program Management Expectations for Small Business Professionals

Program Managers can expect small business specialists to provide intelligent analysis and suggestions regarding the possibility of small business participation in the Acquisition Strategy. They can also expect small business specialists to justify any recommendations for the use of small business in terms of how it benefits the program and the defense industrial base, not simply in terms of meeting small business annual goals.

Small business specialists understand the mission and important goals of the program, and are able to provide suggestions to avoid vendor lock and to diversify the supply chain with vendors. They provide recommendations that use the advantages of small businesses to directly increase the strategic strength, effectiveness, or efficiency of the program. This comes in the form of (a) identifying work or requirements that can be performed by small business, and (b) identifying and providing background information and capabilities of specific small businesses that can perform the work or complete the requirements.

Early Acquisition Strategy decisions that do not include small business considerations can force the program into vendor lock (i.e., reliance on only one source, creating poor negotiation and pricing conditions). Diversity of the supply chain strengthens the defense industrial base, lowers pricing, and creates better conditions for optimal performance and schedule metrics.

Program Managers and their teams can expect the small business specialists to provide suggestions for the insertion of any beneficial and relevant SBIR, STTR, or RIF technologies into the program. The small business specialists can explain technologies and the vendors who developed them in terms of how the technologies may strengthen the overall program. For the more traditional small business programs, the small business specialists are able to suggest vendors and small business or socioeconomic subcategories that can perform the work, as well as identify work that is appropriate to set-aside for small businesses.

Program Managers and their teams can expect their Small Business Office specialists to provide the following:

- An overview of Small Business Programs, such as SBIR or the Mentor-Protégé Program (MPP), which may be relevant to the program.
- Near-expert insights on the providers of products and services on the part of the industrial base associated with the program.
- Screening of small businesses that desire to meet with government small business representatives.
- Market Research to support Acquisition Strategies and to stay abreast of the industrial base in general, particularly the small business industrial base.
- Insights on how prime contractors are using small businesses as subcontractors.
- Small business goals for the PMOs and clear expression of each program’s contribution to achieving small business goals.
- Answers to any process questions associated with an Acquisition Strategy such as subcontracting considerations.
- Answers to any process questions associated with Contracting such as the responsibilities associated with completing the Small Business Coordination Review (DD 2579).
- Advice regarding contract bundling or consolidation.

**CH 1–4.2.13.4 Program Management Engagements for Small Business**

The following subsections address engaging with small business specialists as well as small and large contractors regarding developing small business involvement in an acquisition program.

**CH 1–4.2.13.4.1 Engaging with Small Businesses**

Program Managers can expect Small Businesses to work through the small business specialist for PMO access. To make the first meeting between a PM and a small business specialist mutually beneficial, the small business specialist informs small businesses about the program. When successfully accomplished, the small business can then effectively present how its capabilities are relevant to the program, along with the rationale for its relevancy. It also enables small businesses to ask questions that are relevant to solving challenges faced by the program. One topic of concern is how small business addresses cybersecurity expectations. Program Managers can review Defense Cybersecurity Requirements: What Small Businesses Need to Know and discuss cybersecurity issues further with small business participants. The PM can expect small businesses to provide a one-page capabilities document that outlines the work they do, their North American Industry Classification System (NAICS) and Data Universal Numbering System (DUNS), past performance, certifications, and characteristics that differentiate them from others in their industry such as SBIR experience.

**CH 1–4.2.13.4.2 Engaging with Prime Contractors (Not Small Businesses)**

If the prime contractor is other than a small business, it is important the program management team develop challenging SB subcontracting goals. Once on contract, it is also important to hold the prime contractors accountable for meeting their small business subcontracting goals. This means ensuring that the Contracting Officer reviews and accepts subcontracting reports uploaded to the electronic Subcontracting Reporting System (eSRS). Program Managers can expect other than small business prime contractors to provide the following:

- How they will subcontract.
- Possible SBIR Phase III activities.
- Possible Mentor-Protégé program activities.
- An overview of their capabilities, such as a Small Business Liaison Office, to engage with small businesses in their supply chain.
- Updates on their performance in meeting small business subcontracting goals.

Program Managers, as they develop and refine the program Acquisition Strategy, are likely to find great benefit in the engagement of their local small business specialist and the small businesses that can bring innovation and competition to their program strategies.

**CH 1–4.2.14 Intelligence Dependencies**

Threat analysis and intelligence supportability assessments are increasingly critical to DoD acquisition programs. Early identification of the threat and Intelligence Mission Data (IMD) needs will also inform a program’s technical risk assessment and can optimize system performance and warfighting capability, while minimizing costs to the government across both the intelligence support and acquisition processes. Support to the acquisition community from the intelligence community involves a number of staff
organizations and support activities that may be unfamiliar to members of the requirements and acquisition communities. CH 7–3.1, Intelligence and Requirements describes the importance of the dedicated supporting intelligence subject matter expert to the requirements developer and PM (requirements and acquisition communities).

Early and consistent involvement and collaboration with the DoD Intelligence Community (DoD IC) helps reduce program risks to schedule, cost, and performance. Early collaboration also increases the likelihood that the delivered system will be fully capable and more survivable against relevant adversary threats through the following categories of reduced risk to schedule, cost, and performance:

- Reduced risk to schedule is derived from the early identification of work to be performed by the DoD IC, tasking of the DoD IC through production and collection requirements, identification of capability gaps, costing, and negotiated delivery dates for products.
- Reduced risk to cost is derived from the earliest identification of the costs and resource strategies to realize the full scope of intelligence support needed to close capability gaps throughout the acquisition life cycle. Collaboration with the DoD IC assists both the DoD IC and the acquisition communities in determining the costs to be borne by the DoD IC and/or the program.
- Reduced risk to performance is driven by obtaining and incorporating threat analysis information and intelligence support requirements from Materiel Solution Analysis through Full-Rate Production phases.

Supportability refers to the availability, suitability, and sufficiency of intelligence support required by a program or capability. Assessing supportability requires a comparison of the sponsor’s stated operational/capability requirements with the derived intelligence support requirements and the intelligence support capabilities, as expected throughout a program or capability’s life cycle. For a discussion of the relationship between the requirements and intelligence communities, refer to CH 7–3.1 and CH 7–3.2, also see CH 7–4.1.3, Life-cycle Mission Data Plan (LMDP).

For Program Protection, Security, and Counterintelligence support to acquisition programs, refer to CH 7–4.3 and CH 9–4.4.

**CH 1–4.2.15 Program Affordability**

Affordability has long been an overarching mandate in DoDD 5000.01 that until recently was not clearly specified in policy. The January 2015 release of DoDI 5000.02 (Encl. 8) clarifies affordability through two specific overarching processes that ensure affordability (refer to Figure 30).

*Figure 30: Elements of Affordability at Component Level*
The first process is Affordability Analysis, which—like the PPBS and JCIDS process—is a DoD Component leadership responsibility outside the PM’s responsibility and purview. The PM provides information into this process, but does not conduct the analysis or make the decisions.

The second process is the management of the program to stay within Affordability Constraints (goals or caps), which are assigned to the program by the Milestone Decision Authority (MDA) and are based on the DoD Component’s affordability analysis. Program affordability management involves various aspects across this guidebook, such as program management, strategies, systems engineering, and design elements of life-cycle sustainment. Those functions that relate to affordability management are centralized in this Chapter to help clarify for the PM how they interrelate.

A useful overview of key elements of the affordability processes can be found in the Defense AT&L magazine article, "Dispelling the Myths of DoD’s Affordability Policy". (Ohlandt, 2013).

The DoD Component determines when updates are needed to its affordability analysis, including recommendations to the MDA to adjust a program’s affordability constraints when a program can no longer stay within the assigned constraints. Any such adjustments need to meet the basic criteria specified in the DoDI 5000.02 (Encl. 8, para 2) and may entail program cancellations, curtailments, and other negative effects on the program in question or other programs.

**CH 1–4.2.15.1 Component Decisions and Tradeoffs**

Affordability analysis involves DoD Component leadership decision-making and tradeoffs reflecting policy, strategy, and requirements, as defined in DoDI 5000.02 (Encl. 8, para 2). The objective is to determine how many dollars the DoD Component can afford to provide the program. Requirements tradeoffs may be needed to reflect technical, industrial, and other programmatic realities from the PM so that the program is viable. The dollars afforded are summarized in the affordability constraints that DoD Component leadership proposes to the MDA.
When affordable, margins in the constraints are highly recommended so that the program is more likely to be executable and manageable from its beginning. Generally, programs in early stages have high risk if their constraints are set without a margin for such uncertainties, leaving the programs little room for engineering problems and threat-based adjustments on developmental programs. Of course, if the constraint is all the DoD Component can afford, then the program will need to live within that constraint, making engineering tradeoffs and potentially seeking relief from Key Performance Parameters (KPPs) and Key System Attributes (KSAs). If the constraint is below the current cost estimate, then by definition the program is not currently affordable as configured.

There is not (and should not be) a predefined “textbook” margin recommended for affordability constraints. If a DoD Component can afford a margin, the size of that margin is based on the availability of resources in the affordability analysis, the relative importance of the program in question, and the magnitude of the uncertainties in the program. Flexibility and professional judgment are applied.

**CH 1–4.2.15.1.1 Program Manager and Cost Analysis Inputs**

While affordability analysis is the responsibility of DoD Component leadership, the acquisition community (including the PM) plays a role in informing those decision makers of the practical implications (e.g., risks and realities from cost, schedule, technology, engineering, and interoperability perspectives) as tradeoffs are considered and made. This includes the magnitude of uncertainties and the associated implications of setting affordability constraints at or near current cost estimates.

Fundamentally, however, it is important to remember that affordability analysis and constraints are not synonymous with cost estimation, but rather are a top-down process by which the resources a DoD Component has available are projected for allocation to a system, given inventory objectives and all other fiscal demands on the DoD Component. Cost estimates are generated in a bottom-up or parametric manner, and provide a forecast of what a product will cost for budgeting purposes. The difference between the affordability constraints and the cost estimates indicates whether actions are in order to further reduce cost and thereby remain within affordability constraints.

**CH 1–4.2.15.1.2 Component Portfolio Analysis**

DoDI 5000.02 (Encl. 8, para 3.2a(6)) allows the DoD Components to determine the portfolios used in their affordability analysis. Currently, the portfolios used by the three Military Departments serve as the basis for illustrating how a program will fit in the DoD Component’s long-range plans. The PM uses this information to provide the analysis from the DoD Component at major program reviews.

**CH 1–4.2.15.1.3 Configuration Steering Boards – Requirements Management**

During program execution, fact-of-life events (e.g., unforeseen technical difficulties, threat evolution, industrial-base issues, and budgetary reductions) may cause the PM to conclude that, despite efforts to control costs and reduce engineering requirements, an affordability constraint may be exceeded unless external help is obtained. In that case, the PM can seek KPP or KSA requirements relief to stay within the constraints. The Configuration Steering Board (CSB) is used for discussing changes in major requirements and significant technical configuration changes to optimize cost, schedule or performance. In either case, the CSB allows a discussion that may involve requirements relief from KPPs or quantity adjustments. Any decision affecting user requirements still requires a subsequent discussion with the operational requirement decision authority.

**CH 1–4.2.15.2 Component-Level Affordability Analysis**

While PMs do not conduct the affordability analysis, the PM reaches out to the DoD Component Resource Manager contact who is responsible for conducting the analysis. After the analysis is completed, the PM provides the results of that analysis as part of the information at program decision points (except for the CDD Validation decision point).
**CH 1–4.2.15.2.1 Data Analysis**

For major milestone reviews, the PM is responsible for providing a summary of the portfolio analysis and the DoD Component’s constraint recommendations for MDA approval. A supporting spreadsheet is also provided by the PM listing the allocations by year for each program and portfolio in the DoD Component’s analysis—including all programs in all of the DoD Component’s portfolios—against the future total budget projection.

**CH 1–4.2.15.3 Program Manager Responsibilities for Affordability Management**

The 2015 release of [DoDI 5000.02](http://example.com) (Encl. 8) clarifies affordability through two specific overarching processes that ensure affordability (see Figure 31). Affordability analysis, which is briefly discussed in CH 1–4.2.1.1 is not the responsibility of the PM.

![Figure 31: Elements of Affordability and Responsible Parties](image)

However, executing the program to stay within the affordability constraints (i.e., goals or caps) is a major responsibility of the PM. These constraints are assigned to the program by the Milestone Decision Authority (MDA) and are based on the DoD Component’s affordability analysis. As with KPPs, PMs view affordability constraints as givens that must be met. Moreover, past the Development RFP Release Decision Point, affordability constraints must be met—even if that involves obtaining relief from KPPs.

Assigned affordability constraints, therefore, affect broadly the major elements of program management. The PM reflects the effects and implications of those constraints in the program’s Acquisition Strategy. Like technical requirements, they need to be managed through tradeoffs and engineering decisions to ensure that they are met or beaten.
Of note, the affordability constraints are not defined by cost estimates, but rather by what the DoD Component determines it can afford. Thus, cost estimates impose fiscal reality on the program and require a strategy for meeting those affordability constraints.

**CH 1–4.2.15.3.1 Strategizing How to Stay within Affordability Constraints**

The PM considers whether the affordability constraints approved and assigned by the MDA require an explicit strategy that is described in the Acquisition Strategy document. For example, if the cost estimate (usually the 50 percent probability point) equals the constraint, then by definition there is a 50 percent probability that the program is unaffordable as currently structured. Thus, the PM needs a strategy for dealing with this likely event. This undesirable situation puts the program at risk and leaves no reserve for the PM to deal with unforeseen problems. It also imposes a very different strategic concern that should be addressed in the Acquisition Strategy than if the cost estimate is well below the constraint at the start of the program.

While the PM cannot change the constraints, it is important to make sure the DoD Component knows during its affordability analysis of the practical implications of tight constraints on the viability of the program, as configured, and the risks to meeting the requirements. Of course, if the cost estimate is above the constraint, then the program is not viable as configured from the beginning.

**CH 1–4.2.15.3.2 Managing Requirements to Stay Affordable**

Given assigned constraints, the PM needs to reduce requirements to stay within the constraints—either through the Configuration Steering Board (for major requirements) or engineering trades (for lower level requirements and specifications, see CH 3–4.3.2).

**CH 1–4.2.15.4 Operations and Support Affordability**

The objective of the affordability process is to control total life-cycle costs. Thus, in addition to a constraint on unit procurement, programs are given a constraint on sustainment costs. This requires special consideration and management given that such costs are only estimates during the acquisition phase and early sustainment phase. Meanwhile, external factors outside the PM’s control (e.g., Operations and Support [O&S] labor rates, healthcare costs, and fuel prices) may affect total O&S costs. While this introduces additional challenges, PMs have some insights into these costs (e.g., through historical data on analog systems (CH 1–5.4), modeling, and early testing) and can affect system reliability, maintainability, and efficiency. CH 2–2.1, Life-cycle Cost Estimating and CH 5–3.1, Manpower Planning, respectively, provide details on how to estimate and manage life-cycle costs. But note here, however, that the intent of the sustainment constraint is to drive early PM decisions to lower sustainment costs where major technology and design decisions have their largest effects.

**CH 1–4.2.16 Earned Value Management**

The PM obtains integrated cost, schedule, performance, and risk information at an appropriate level of summarization to monitor program execution. The PM requires contractors and government organizations to use internal performance management processes that allow for the following:

- Plan and assign all work scope to the applicable areas in the product-oriented Work Breakdown Structure (WBS).
- Objectively assess accomplishment where work is being performed.
- Assess variances, implement corrective actions, and provide forecasts of cost and schedule.
- Use performance information for decision-making and Joint situational awareness.

Cost-control and cost-reduction approaches are central to maximizing the buying power of the Department and are considered in all phases and aspects of program management as ways to meet or beat affordability constraints. Cost need never be addressed in isolation. It is always viewed within the context of schedule, technical performance, and risk.
The PM uses Earned Value Management (EVM) as an integrated program management tool to provide joint situational awareness of contract status and to assess the cost, schedule, and technical performance of contracts for proactive decision-making. EVM is an integrated program management technique for measuring contract performance and progress in an objective manner. To be useful as a program management tool, PMs incorporate EVM into their acquisition decision-making processes, with actionable data provided by EVM.

The underlying management control systems used to plan and control contract performance complies with Electronic Industries Alliance Standard 748, Earned Value Management Systems (EIA-748) also see DoDI 5000.02, (Encl. 2 para 6.c). The PM does not impose a specific system or method of management control or require a contractor to change its system, provided it complies with EIA-748.

EIA-748 provides guidelines for an acceptable Earned Value Management System (EVMS) and certification authorities. The essence of that guidance is that the government expects contractors to:

- Plan all work scope.
- Assign all work scope.
- Integrate scope, schedule, and cost for measuring performance.
- Record actual costs incurred.
- Objectively assess accomplishment where work is being performed.
- Assess variances, implement corrective actions, and periodically forecast.
- Use performance information for decision-making.

But this is not unique to EVM. While EVM demands a high level of discipline associated with these activities, the list reflects best program management practice for development and delivery of both products and services. This means the government PMO receives performance information that:

- Is exactly the same as what the contractor uses.
- Is timely, accurate, reliable, and auditable.
- Relates time-phased budget to scope of work.
- Measures progress as objectively as practicable.
- Enables independent government predictions of future cost and schedule conditions.
- Contributes to Acquisition Program Baseline (APB) trade-space decisions.

The characteristics of EVM are the foundation of disciplined program management and performance measurement. For DoD, the Performance Assessments and Root Cause Analyses (PARCA) Office in AT&L is the policy owner for EVM. For more information on EVM, refer to the OSD PARCA EVM website or the EVM Community of Practice website on the Defense Acquisition University’s Acquisition Community Connection knowledge sharing system.

**CH 1–4.2.16.1 Earned Value Management System**

An Earned Value Management System (EVMS) is the management control system that integrates the contract’s work scope, schedule, risk, and cost parameters via highly disciplined program planning and control processes. All contracts under that system are expected to operate in a manner consistent with those processes, and helps ensure that contract performance data generated are consistently timely, accurate, reliable, and verifiable.

PARCA developed and maintains the EVMS Interpretation Guide (EVMSIG) as the DoD's official interpretation of the application of the 32 Guidelines to DoD contracts. The EVMSIG is used as the basis for EVMS compliance reviews by the Defense Contract Management Agency (DCMA), the organization responsible for determining EVMS compliance when DoD is the cognizant federal agency.

Government PMs determine the applicability of EVM to their respective programs and whether or not a waiver is required in accordance with DoDI 5000.02 (Encl. 1, Table 8). Program Managers require EVM,
in cost- and/or incentive-type contracts and subcontracts valued at or above $20 million, unless its use is waived by the DoD CAE.

Regardless of whether or not EVM is required, PMs require disciplined scheduling practice that enable accurate status reporting, including reasonable and actionable forecasting. To ensure such practices are demonstrated by contractors, the Integrated Program Management Report (IPMR) Data Item Description (DID) DI-MGMT-81861A ought to be applied to such contracts, tailored such that the IPMR “format 6” is the only section of the DID that is applied.

CH 1–4.2.16.1.1 DoD Organization Roles

The following organizations can provide the program management team with significant insights into specific areas the team needs to consider as they develop plans, consider contract strategies, and execute their approved plan.

Department of Defense (DoD). Performance Assessment and Root Cause Analyses (PARCA): The Office of PARCA is the single voice accountable for EVM policy, oversight, and governance across the DoD. The EVM division of PARCA is responsible for the EVM Central Repository and EVM Interpretation and Communication to facilitate timely, accurate, and equitable EVM implementation across the DoD.

Services and Agencies. The DoD Services and Agencies have the following EVM focal points:

- Assistant Secretary of the Army for Acquisition, Logistics, and Technology develops, acquires, fields, and sustains Army equipment and services through efficient leveraging of technologies and capabilities to meet current and future needs.
- Assistant Secretary of the Navy for Research, Development, and Acquisition has authority, responsibility, and accountability for all acquisition functions and programs, and for enforcement of Under Secretary of Defense for Acquisition, Technology and Logistics procedures.
- Assistant Secretary of the Air Force for Acquisition is responsible for research, development, and non-space acquisition activities.
- Missile Defense Agency’s (MDA) mission is to develop, test, and field an integrated, layered Ballistic Missile Defense System (BMDS).

Intelligence Community (IC). The IC Agencies also have EVM focal points, including the following organizations.

- National Reconnaissance Office (NRO): NRO is in charge of designing, building, launching, and maintaining America’s intelligence satellites.
- National Geospatial-Intelligence Agency (NGA): NGA provides timely, relevant, and accurate geospatial intelligence in support of national security.
- National Security Agency (NSA): NSA leads the U.S. Government in cryptology and enables Computer Network Operations (CNO) in order to gain a decision advantage.

Compliance Agencies. The Compliance Agencies have the following focal points:

- Defense Contract Management Agency (DCMA): As a DoD Combat Support Agency, DCMA helps to ensure the integrity of the contracting process, and provides a broad range of contract-procurement management services. DCMA works directly with the defense contractors to help ensure that DoD, federal, and allied government supplies and services are delivered on time, at projected cost, and meet all performance requirements.
- Defense Contract Audit Agency (DCAA): DCAA provides audit and financial advisory services to DoD and other federal entities responsible for acquisition and contract administration.
CH 1–4.2.16.1.2 Earned Value Management Applicability

EVM is required to be applied to cost-reimbursable or incentive contracts, inclusive of options, where the nature of the work scope lends itself to the use of EVM (as prescribed in DoDI 5000.02 and Defense Federal Acquisition Regulation Supplement (DFARS) Subpart 234.2).

The EVM time and dollar application thresholds for EVMS compliance (total contract value, including planned options in then-year dollars) are summarized below:

- With 18 months or greater period of performance.
- $20 million, but less than $100 million—EVM implementation compliant with EIA-748 is required. The government reserves the right to review a contractor's EVMS to verify compliance.
- $100 million or greater—the contractor is required to have an EVMS that has been approved by the Contracting Officer.

EVM applies to discrete work scope, which is defined as tasks related to the completion of specific end products or services that can be directly planned and measured. PARCA reviews and approves EVM applicability for ACAT I programs in coordination with the applicable Service/Agency EVM focal point. For all other ACAT levels, the Service/Agency EVM focal point will determine EVM applicability. This determination of application of EVM is provided to the PM.

The DoD PM uses DFARS clauses 252.234-7001 and 252.234-7002 to place the EVMS requirement in solicitations (7001) and contracts (7002). The program's Acquisition Strategy reflects the PM's approach to satisfying the EVM requirement for applicable contracts. The contract language and Contract Data Requirements Lists (CDRLs) provided to the contractor for a given contract then also mirror and describe the approach.

A contract does not, either at the time of award or in subsequent modifications, specify requirements in special contract requirements and/or statements of work that are not consistent with the EVM policy and EVMS guidelines (required by DFARS 252.234-7002), or which may conflict with offerors' or contractors' approved EVM system descriptions. Consult DCMA for guidance on EVMS contractor compliance.

CH 1–4.2.16.1.3 Earned Value Management Applicability Determination

EVM applies to discrete work scope defined as tasks related to the completion of specific end products or services, and can be directly planned and measured. Program Managers employ EVM, when applicable, unless waived by the CAE. The PM utilizes the determination of EVM applicability provided by PARCA or the EVM focal point for their Service or Agency.

When considering EVM applicability, the dollar threshold for the purpose of applicability is the final anticipated dollar value of the action, including the dollar value of all options. If the action establishes a maximum quantity of supplies or services to be acquired or establishes a ceiling price or establishes the final price to be based on future events, the final anticipated dollar value is the highest final priced alternative to the government. Note that the final anticipated dollar value includes the dollar value of all options. This means that if the value of a contract is expected to grow to $20 million or more, the PM can impose an EVM requirement at contract award in anticipation of meeting the threshold. In some cases, a contract modification not known at time of award can cause a contract value to cross the thresholds for EVM requirements. The application of EVM in those cases is required, and the PM works with the contractor to implement EVM in a manner that best meets the need for decision-making and Joint situational awareness. In no case should there be an attempt to circumvent EVM policy by excluding known work from contract award and including it later as a contract modification.

The decision to implement EVM on contracts outside the criteria prescribed in DoDI 5000.02 (Encl. 2 para 6e – page 77) and DFARS Subpart 234.2) is a risk-based decision at the discretion of the PM. The PM conducts a cost-benefit analysis before deciding to implement EVM on these contracts and then receives
MDA approval. The purpose of the cost-benefit analysis is to explain the rationale for the decision to require cost/schedule visibility into the contract and to substantiate that the benefits to the government outweigh the associated costs. Factors to consider when making a risk-based decision to apply EVM are as follows:

- Type of work and level of reporting—for example, developmental or integration work is inherently more risky to the government, and reporting reflects how programs are managing that risk basis.
- Schedule criticality of the contracted effort to a program’s mission—items required to support another program or schedule event may warrant EVM requirements.

The application of EVM to contracts that may be categorized as non-schedule-based, i.e., those that do not ordinarily contain work efforts that are discrete in nature, are considered on a case-by-case basis. Non-schedule-based contracts may include:

- Contracts compensated on the basis of “time and materials” used, such as in Time and Material (T&M) contracts.
- “Services” contracts, including those for maintenance, repair, sustainment, and other services that are provided on an as needed basis.
- Any contracts composed primarily of Level of Effort (LOE) activity, such as program management support contracts.

Non-schedule-based contracts might not permit objective work measurement due to the nature of the work, most of which cannot be divided into segments that produce tangible, measurable product(s). The nature of the work associated with the contract is the key factor in determining whether there is any appreciable value in obtaining EVM information. Every effort is made to identify, separate, and measure any discrete work from any work that is typically identified as LOE in nature. In cases where the nature of the work does not lend itself to meaningful EVM information, it may be appropriate to not apply the EVM requirement. If the EVM requirement is not placed on a contract due to the nature of the work, the PM implements an alternative method of management control to provide advanced warning of potential performance problems.

The EVM requirements are placed on the base Indefinite Delivery/Indefinite Quantity (ID/IQ) contract (i.e., definite quantity contract, requirements contract, or indefinite quantity contract) and applied to the task/deliver orders, or group(s) of related task/delivery orders. “Related” refers to dependent efforts that can be measured and scheduled across task/delivery orders. In some cases, a contract modification not known at the time of award can cause a contract value to cross the thresholds for EVM requirements. The application of EVM in those cases is required, and the PM works with the contractor to implement EVM in a manner that best meets the needs for decision-making and Joint situational awareness. In no case should there be an attempt to circumvent EVM policy by excluding known work from contract award and including it later as a contract modification.

Due to the nature of Foreign Military Sales (FMS) contracts, special considerations are given to ensure EVM can be effectively implemented. A case-by-case analysis of the contractual structure, expectations, as well as the EVM application requirements described above—all factor into the determination to apply EVM.

**CH 1–4.2.16.1.4 Earned Value Management Reporting**

Although the PM uses EVM reporting to collect data for decision-making and Joint situational awareness, the benefits of EVM and EVM analysis are not limited to reporting. The PM and the PMO staff develop relationships with their contractor counterparts to facilitate discussions regarding performance towards completion of the contractual scope of work. EVM reporting encourages dialogue with actionable, trustworthy data and generally does not contain “surprises.”
The Contract Data Requirements List (CDRL) is used by the PM to document the data needs of the contract utilizing the appropriate Data Item Descriptions (DIDs). The CDRL provides contractual direction for preparation and submission of reports, including reporting frequency, distribution, and tailoring instructions. DD Form 1423-1 is used to specify the data item requirements and contains any tailoring requirements. Guidance on tailoring the IPMR is found in the Integrated Program Management Report (IPMR) Implementation Guide.

- **Integrated Program Management Report (IPMR).** Data Item Description (DID) DI-MGMT-81861A: The IPMR contains the instructions for a contractor to provide cost and schedule performance on DoD acquisition contracts. Seven formats comprise the structure of the IPMR, which contain the content and relationships required for electronic submission of cost and schedule performance data from the performing contractors. Program Managers use the IPMR whenever they choose to receive cost or schedule performance information, even when EVM is not required on contract. The IPMR provides performance data, which are used to identify problems early in the contract and forecast future contract performance. Requirements for the IPMR follow:
  - For contracts, task orders, and delivery orders between $20 million and $50 million, the IPMR is required to be delivered monthly; Formats 2, 3, and 4 may be excluded from the CDRL at the PM’s discretion based on risk.
  - For contracts, task orders, and delivery orders greater than $50 million, the IPMR is required monthly; all Formats are included in the CDRL.
  - For contracts, task orders, and delivery orders less than $20 million, the IPMR is not required; however, it can be used if cost and/or schedule reporting is wanted by the PMO.
  - For subcontracts, flow-down of the IPMR DID is determined by the prime contractor; the prime contractor obtains the information and data necessary to meet the contractual requirements to the government.

- **The Contract Funds Status Report (CFSR).** The CFSR supplies funding data about defense contracts to PMs for updating and forecasting contract funding requirements, planning and decision-making on funding changes to contracts, and developing funding requirements and budget estimates in support of approved programs. CFSR funding data also inform PMs on determining funds in excess of contract needs and available for de-obligation, and obtaining rough estimates of termination costs. The CFSR is required for contracts over 6 months in duration. No specific application thresholds are established, but application to contracts of less than $1,000,000 is evaluated carefully to ensure only the minimum information necessary for effective management control.

It is important that government program offices know how to compare CFSR and IPMR information. Both reports reflect current and predicted performance and estimates. The IPMR reflects program execution dollars without fee, whereas the CFSR reflects price information, including fee. Hence the two documents show consistent, though not identical, values when reflecting the same contractual scope of work.

A product-oriented Work Breakdown Structure (WBS) is required for EVM systems and reporting. Suggested structures for EVM are found in the DoD Work Breakdown Structure Standard (MIL-STD-881C) (current version at time of award). Note that the 881C structures are required for the Contractor Cost Data Report (CCDR). For EVM reporting purposes, the WBS reflects 881C unless the contractor can demonstrate the need to use a different product-oriented structure to manage the contract. Similarly, the government PM ensures that the Program Work Breakdown Structure (PWBS) is likewise aligned to how the program is managed.

In situations when EVM does not apply, such as in Firm Fixed Price (FFP) contracts, PMs can require disciplined scheduling practice that enable accurate status reporting, including reasonable and reliable forecasting. To ensure such practices are demonstrated by contractors, the Integrated Program Management Report (IPMR) Data Item Description (DID) DI-MGMT-81861A is to be applied to such contracts, tailored such that the IPMR Formats 5 and 6 are the only sections of the DID applied.
Earned Value Management for Program Performance Measurement

During the planning phase of a contract, an integrated baseline (refer to Figure 32) is developed by time-phasing resources for the defined contractual scope of work. As work is performed, completion is measured against the baseline, and the corresponding budget value is “earned.” From this earned value metric, cost and schedule variances can be determined and analyzed. Using these basic variance measurements, the PM can identify significant drivers, forecast future cost and schedule performance, and construct corrective action plans to get the program back on track. If significant deviation occurs, then updated risk assessment activities may need to be performed, resulting in new/changed risk handling activities. Usually, cost or schedule deviations are indications of a technical problem so it is essential that any analysis determines the root cause of the cost or schedule deviation. EVM encompasses both performance measurement (i.e., What is the program status?) and performance management (i.e., What we can do about it?). Additionally, and most critically, EVM deals in forecasting of future conditions.

**Figure 32: Earned Value Management Baseline and Metrics Graph**

CH 1–4.2.16.2.1 Integrated Baseline Reviews

An IBR is a Joint assessment of the Performance Measurement Baseline (PMB) conducted by the government PM and the contractor. The IBR allows the PM to assess the risk to execution in the contractor’s plan for completing the contractual scope of work. The IBR is not a one-time event, but is a process culminating in a review event. It is not a compliance review. The PMB is continually evaluated as changes to the baseline are made (modifications, restructuring, etc.) and is not limited to review during the IBR process.
IBRs are required with the clause in [DFARS 252.234-7002](https://www.acq.osd.mil/dpap/dtic/dtic.html) and [DoDI 5000.02](https://www.acq.osd.mil/dpap/dtic/dtic.html) on all contracts that require the implementation of EVM. The IBR is not dependent on the contractor's EVMS being formally validated as complying with the guidelines in [EIA-748](https://www.acq.osd.mil/dpap/dtic/dtic.html). As a best practice, IBRs are recommended for subcontracts, intra-government work agreements, and other agreements. The scope of the IBRs can be tailored to the nature of the work effort.

IBRs are scheduled as early as practicable, and the timing of the IBRs takes into consideration the contract period of performance. The process is conducted not later than 180 calendar days (6 months) after a significant program event or contract change including, but not limited to: (1) contract award, (2) the exercise of large contract options, and (3) the incorporation of major modifications. IBRs are also performed at the discretion of the PM at any time, even without the occurrence of a major event in the life of a program.

Events that may trigger an IBR include completion of the Preliminary Design Review, completion of the Critical Design Review, a significant shift in the content and/or time phasing of the PMB, or when a major milestone such as the start of the production option of a development contract is reached. Continuous assessment of the PMB helps identify when a new IBR should be conducted.

In situations where the entire work scope is not known within the 180 days, the IBR can be conducted in stages, such as with an undefinitized contract action. A review of the known work scope can be conducted within the 180-day window, with follow-up IBRs scheduled at a later time for the work not yet completed in the context of the entire PMB. As a rule of thumb, this initial IBR runs through the first major milestone for the program. Any IBR event increment is not to be driven by definitization, but should represent the best time to hold the IBR to assess the plan for the work and risks to execution. An IBR is always conducted within 180 days after award, even if it does not cover the entire scope of an unpriced contract action. A letter from the Contracting Officer to the contractor may be needed to clarify initial IBR requirements.

Policy allows for the use of IBRs prior to contract award in situations where they may be appropriate and beneficial. If a PM elects to conduct a pre-award IBR on a DoD contract, that requirement can be included in the Statement of Work.

**CH 1–4.2.16.2.2 Over-Target Baseline or Over-Target Schedule**

When performance measurement against available budgets and/or contractual milestones becomes unrealistic, the contractor may want to initiate an Over-Target Baseline or Over-Target Schedule (OTB/OTS). To implement an OTB or OTS, the contractor submits a request for approval to the government. At a minimum, the request includes a top-level projection of cost and/or schedule growth, a determination of whether or not a single point adjustment to remove performance variances occurs, and a schedule of implementation for the process. The ensuing actions can only be implemented after government PM formal approval and conducted in accordance with the contractor's EVMS processes. Additionally, the government can direct initiation of an OTB/OTS.

**CH 1–4.2.16.2.3 Earned Value Management Concepts**

It is important for the PM to keep in mind that measurement and forecasting of EVM data are of little value unless the contractor can perform the fundamental tasks (reflective of [EIA-748](https://www.acq.osd.mil/dpap/dtic/dtic.html)). The basic premise of EVM is that the value of a piece of work is equal to the amount of funds budgeted to complete it. As part of EVM, program management uses the following information to assess schedule and cost performance throughout the life of a contract.

**Contract Work Breakdown Structure (CWBS).** It is important that the contractor can clearly articulate in a product-oriented structure the contractual scope for which it is responsible in a manner that reflects the way the efforts are planned to be completed. The CWBS is the outline that forms the basis for contractor program management and EVM reporting. The CWBS also supports correct financial accounting treatments required to support the [Chief Financial Officers Act of 1990](https://www.acq.osd.mil/dpap/dtic/dtic.html).
Budgeted Cost for Work Scheduled (BCWS). The EVM guidelines require the contractor to plan work into resourced and time-phased control accounts, which may be further subdivided into work packages. Activities are scheduled within the work packages and form the basis for the Integrated Master Schedule. Resources are then time-phased against the work packages, forming the BCWS, also known as “Planned Value.” All work packages sum to control account level and all control accounts sum to the PMB, against which performance is measured. At the close of each reporting period, the contractor reports the BCWS planned during each reporting period and the cumulative total to date.

Another way of thinking about BCWS is that it is a dollarized interpretation of planned work. The derivation of BCWS is no trivial manner, because the work progress ought to be measured in a way that makes sense and supports leadership decision-making. It is in the development of BCWS that government PMs see some of the first reflections of contractor discipline in program planning, as they translate the assigned CWBS scope into a time-phased view of accomplishment.

Performance Measurement Baseline (PMB). All work packages sum to control account level and all control accounts sum to the PMB. The PMB is the time-phased budget plan against which performance is measured. Therefore, it is critical that PMB changes are made in a disciplined fashion. In gauging the reasonableness of a baseline, a pictorial view often provides a useful input for PMs. More often than not, a PMB forms an “S” type curve, and PMs ought to pay attention to the slope of that curve at every point, especially where there is a significant change.

Budget at Completion (BAC). The cumulative sum of all BCWS at completion is known as BAC. Note that the value of BAC can be stated at any level, e.g., work package, control account, and higher levels; however, the term usually refers to the value of cumulative BCWS at completion for the PMB. Note that since the BCWS is a translation of work into dollars or hours, the BAC is likewise a translation.

Management Reserve (MR). MR is dollarized work (e.g., BCWS) set-aside in anticipation of unplanned, but in-scope work that usually arises in normal execution of a contract. Thus, MR is a reflection of anticipated risk-handling actions, mitigation in particular. Program Managers ought to inquire as to how contractor MR was created and from which parts of the program. There ought to be some discernible relationship between the amount set aside for MR and the relative risk of the program. However, MR is owned and managed by the contractor and is not a government-controlled item. During the life of the contract, PMs are cognizant of the rate at which MR is being “burned” because high rates of MR burn typically indicate a lack of discipline in program planning. Above all, it is important to recognize that the amount and allocation of MR on a contract is entirely the province of the contractor PM, not the government.

Budgeted Cost for Work Performed (BCWP). In addition to the BCWS, the EVM guidelines require the contractor to report the budgeted dollar value of work completed during each reporting period and the cumulative total. This is the BCWP, also known as Earned Value. This value represents the budgeted value of work completed, not the actual cost. Similar to the BCWS, BCWP is a translation of work into a dollarized figure. The BCWP can be based on an objective assessment of work actually performed. This objective method is established during the baseline process. Here it is very important to pay attention to how work progress is measured, as the rate at which BCWP is credited significantly impacts an evaluation of program performance and possible forecasted end states. Program Managers are encouraged to take a second look at BCWP that significantly outstrips the BCWS.

Level of Effort (LOE). When BCWP consistently equals BCWS in successive reporting periods, it may mean the work is measured using a technique called “level of effort” or LOE. LOE has a very specific meaning in EVM, and is not applied to any type of work that warrants precise, discrete measurement. Program Managers can ask contractors to measure the amount of LOE measurement technique planned as a percentage of the PMB in dollars. As the percentage of LOE measurement in the PMB climbs beyond 10 percent, PMs need to query how work is being measured. When LOE exceeds 15 percent, PMs may be justifiably concerned as the result tends to distort measurements of progress.
Actual Cost of Work Performed (ACWP). The EVM guidelines require the contractor to accumulate the ACWP, which flows directly from the general books of accounting during each reporting period. These are the actual costs (ACWP) for work performed (BCWP) in that reporting period. These include all contract direct and indirect costs. Unlike BCWS, BCWP, and BAC, ACWP reflects actual expenditures. Note that there might be some instances where estimated actuals are utilized due to various timing issues with materials and/or subcontractors.

Schedule Variance (SV). The difference between the BCWP and BCWS is the dollar value of work the contractor is ahead of or behind schedule, called schedule variance (SV). Significant variances are analyzed to determine the cause, impact, and corrective action required. It is important to note that SV is not a reflection of the performance against the Integrated Master Schedule; it is a measurement of performance against the PMB. Although there is a time-phased aspect of SV (because BCWS is a component), actual schedule performance is contained in the IMS. All explanations relative to SV ought to include specific references to the schedule. As an example, a task that has an unfavorable SV may have enough float/slack in the IMS to complete within the plan. If the contractor cannot convincingly align SV discussions with IMS discussions, then the EVM performance information is suspect.

Cost Variance (CV). The difference between the BCWP and ACWP is the CV. Again, significant variances are analyzed to determine the cause, impact, and corrective action required. Negative cost variance almost always appears in the months following a recovery in schedule variance.

Estimate at Completion (EAC). The contractor has a means for estimating costs at completion of the contract. EACs are generated at control account (lowest level of integrated management control) and then integrated upwards into a program-level EAC. It is important to verify that a contractor EAC reasonably reflects known and anticipated risks and opportunities. Thus contractors ought to derive realistic “best” and “worst” case EACs that reasonably reflect the nature of risk on the contract. For an EAC to equal the BAC, it suggests the contract has to integrate all conceivable risks into the baseline. All programs contain known and unknown risks; consequently, there is always some variation between work scope budgeted and downstream estimate of cost at completion. Similarly, the government program management office EAC varies from that of the contractor’s because each is an estimate derived from different assumptions.

Variance at Completion (VAC). The difference between the BAC and EAC is the VAC. This represents the projected amount of overrun or underrun against a contractual scope of work. Significant variances are analyzed to determine the cause, impact, and corrective action required. The government, through the CDRL, determines the significant variance thresholds for reporting.

Cost Performance Index (CPI). CPI is a measurement of cost efficiency in the management of the program. While a CPI of at least 1.0 is desirable, a PM incorporates trends in the measurements rather than single “snapshots.” It is important to note that PMBs containing significant levels of LOE measurement will, more often than not, have artificially high CPIs, including CPIs measured above 1.0. Also, as a summarized measurement at the program level, CPIs include “bad actors” as well as “good actors,” and it is possible that the “trouble spots” in the program will be “washed out” by the areas with exceptionally positive performance. Program Managers need to ask the contractor for CPI based exclusively on discretely measured (e.g., non-LOE) tasks in the program to gauge actual performance and help ensure reasonably predictive forecasting.

Schedule Performance Index (SPI). SPI is a measurement of work accomplishment efficiency in the management of the program. While an SPI of at least 1.0 is favorable, a PM can review the trend of SPI and be able to forecast future performance. Also, similar to SV, SPI is reviewed in conjunction with the IMS to assess actual schedule performance. As noted with CPI, a summarized top-level WBS SPI measurement can mask trouble areas in lower level WBS elements due to the inclusion of WBSs with positive performance. While an SPI of at least 1.0 is desirable, a PM can incorporate trends in the measurements rather than single “snapshots.” It is important to note that PMBs containing significant levels of LOE measurement will, more often than not, have artificially high SPIs near or at 1.0. Also, as a summarized measurement at the program level, SPIs include “bad actors” as well as “good actors,” and it
is possible that the “trouble spots” in the program will be “washed out” by the areas with exceptionally positive performance. Program Managers can ask the contractor for SPI based exclusively on discretely measured (e.g., non-LOE) tasks at or near the program critical path to gauge actual performance and help ensure reasonably predictive forecasting.

**To-Complete Performance Index (TCPI).** Sometimes termed “run-out efficiency,” TCPI is a calculated value that depicts the CPI required from a given point forward in order to theoretically reach the contractor’s reported BAC or EAC. Thus, TCPI is best used as a comparative index to CPI. If for any given reporting period the TCPI (measured with respect to achieving the EAC) is 5 percent greater than the cumulative CPI, a PM ought to investigate the reasonableness of the EAC. If the TCPI exceeds the CPI by 10 percent or greater, it is reasonable to assume that the reported EAC is not achievable.

**Integrated Master Plan (IMP).** The IMP is a direct reflection of leadership decision-making approaches and as such offers key insights into true EVM performance and simultaneously serves as the foundation of the IMS. The IMP is an event-driven plan for executing the program. The IMP defines all the events, accomplishments, and completion criteria necessary to successfully execute the program and is contractually binding. The IMS correlates directly to the events, accomplishments, and criteria contained in the IMP and is traceable to the Contractor WBS, Statement of Work, and other contractual documentation to ensure an accurate and consistent status of program execution. Refer to CH 1–3.4.2 for detailed information.

There are three fundamental components to an IMP:

- **Program Events (PE)**—PEs are the key decision points in a program. Typical examples might be major milestone reviews (such as a Milestone B), technical reviews (SRR, PDR, CDR, etc.), and program reviews (such as an IBR).
- **Significant Accomplishments (SA)**—SAs are what need to happen to realize success/completion of a given decision point. For example, requirements in order to claim credit for a successful PDR.
- **Accomplishment Criteria (AC)**. AC are those conditions that explain how a given SA can be achieved.

**Integrated Master Schedule (IMS).** The IMS is an integrated schedule developed by logically networking detailed program activities. In its simplest form, a schedule is a listing of activities and events, organized by time. In its more complex form, the IMS defines all program activities and their relationships to one another in terms of realistic constraints of time, funding, and people (e.g., resources). The IMS is a planning, control, and communications tool that, when properly executed, supports time and cost estimates, opens communications among personnel involved in program activities, and establishes a commitment to program activities by all interested parties. The desired and/or required traits of the contractor IMS are typically represented by the IPMR Format 6 and relate to the CWBS. If the government PM uses an internal IMS, it ought to relate to, and utilize the contractor-provided IMS for status and planning.

The IMS reflects the tasks required to realize the desired conditions as outlined in the IMP—if an IMP is not used, then the IMS traces to the planning documentation the contractor uses to turn the contractual scope into actionable tasks. The IMS is the set of networked tasks required to meet the AC, which, in turn, contributes to the SA and then to the PE.

**CH 1–4.2.16.3 Earned Value Management Special Topics**

The following four topics are areas of frequent concern to the program management teams in the area of Earned Value Management.
CH 1–4.2.16.3.1 Harvesting Underruns

The DoD Earned Value Management System Interpretation Guide (EVMSIG) offers flexibility for a variety of program execution and development methodologies. An important principle of EVMS outlined in the EVMSIG is a disciplined approach to maintaining EVM baselines. “To ensure the ongoing integrity of the Contract Budget Base (CBB), budget traceability throughout the life cycle of a program must be maintained. Current budgets are reconciled to prior budgets in terms of changes to work scope, resources, schedule, and rates so that the contract changes and internal re-planning on overall program growth is visible to all stakeholders.”

Situations occur where contractors are asked to move budget from control accounts that have cost underruns and apply the remaining budget to new work—an activity sometimes known as “harvesting underruns.” However, to maintain EVM and EVMS integrity, EVM budget amounts ought to remain with the scope for which they were budgeted, even where that scope is completed with favorable cost performance. In no cases should underrunning budget in the baseline serve as a means to develop new baseline activities.

An underrun to the budget in the CBB does not automatically mean excess funds have become available. Practitioners may erroneously treat EVM budget and contract funding in the same ways. The application of budgets and funding are distinct and follow separate rules; budget follows EVM rules, while use of funding follows contracting and fiscal rules:

- The term “budget” has a very specific meaning for EVM and refers to the resources estimated to be required to complete the contracted scope of work.
- “Funding” refers to the actual government dollars obligated on the contract and available for payment for work being accomplished on the contract.
- The amount of obligated funding does not always equal the contract price. There is no rule that requires the CBB to equal either the amount of obligated funding or the contract price.

When the contract scope has been completed for less than the amount funded, there may exist an opportunity for using that funding for new scope. The ability to use any underrun for new scope becomes a contracting action, not an EVM action, and follows prescribed contracting, and fiscal laws and regulations. When funds are available due to an underrun, and are then used to acquire new work scope using proper contracting policies and procedures, budget for the new scope is added to the CBB.

CH 1–4.2.16.3.2 Level of Detail in Earned Value Management

The level of detail in the EVM reporting, which is placed on contract through a CDRL referencing the IPMR, is based on scope, complexity, and risk. The IPMR’s primary value to the government is its utility in reflecting current contract status and projecting future contract performance. It is used by the DoD Component staff, including PMs, engineers, cost estimators, and financial management personnel as a basis for communicating performance status with the contractor. The IPMR DID states that the reporting level is defined through tailoring the WBS from the applicable MIL-STD-881 appendix and does not prescribe a required level of detail. In their oversight role, PMOs should require EVM data to a level that matches the risks on the program. EVM data can be reported at different levels on different WBSs based on the risk and management needs. The level of reporting discussed at the IBRs can and should be adjusted if necessary for effective management.

In particular, collection of data for cost analysis purposes ought not drive the level of detail for EVM reporting. EVM data are for management of project execution, not cost estimating for which the government has other dedicated means to obtain data.

CH 1–4.2.16.3.3 Metrics in Award Fee

EVM information is used for program management, Joint situational awareness, and decision-making. Award fee criteria reflect the quality and utility of the EVM data for those purposes. EVM and the
associated metrics can be used to underpin the understanding of technical accomplishment, but the metrics themselves are not directly used as award fee criteria.

**CH 1–4.2.16.3.4 Agile and Earned Value Management**

Agile philosophies promote rapid incremental product deliveries, provide flexibility to respond to changing requirements, and advocate close customer collaboration. A major aspect of Agile is that changes to requirements, design details, or functional capabilities can be incorporated based on customer value, at any stage of the development cycle. While Agile is primarily used on software development projects, Agile methods are being used for complex system and hardware developments as well.

Agile for software development in the DoD is still an emerging product development approach. To be effective, the adoption of Agile methodologies is integrated with existing DoD program management and systems engineering processes. EVM is not tied to any specific development methodology. While there may be additional metrics and data sources in the implementation of Agile, the government PMO still receives performance information that:

- Is accurate and is drawn from the contractor’s Agile and EVM systems.
- Is timely, accurate, reliable, and auditable.
- Relates time-phased budget to scope of work.
- Measures progress as objectively as practicable.
- Enables independent government predictions of future cost and schedule conditions.
- Contributes to APB trade-space decisions.

Agile and EVM are complementary when properly implemented together, and help enable a robust overall management process. In order to be effective, Agile is always evaluated for its applicability on a program-specific basis and tailored to best align with programmatic and contractual requirements. See the PARCA-maintained Agile and Earned Value Management: A Program Manager’s Desk Guide for more information.

**CH 1–4.2.16.4 Earned Value Management Information and Resources**

The following references provide additional information and resources on Cost Control (Earned Value Management [EVM] and Should Cost Management [SCM]):

- OSD Performance Assessment and Root Cause Analysis, Earned Value Management
- Department of Defense Earned Value Management System Interpretation Guide
- Earned Value Management Policies and Guidance
- DFARS Subpart 234.2 — Earned Value Management System
- DAU EVM Gold Card
- GAO Schedule Assessment Guide: Best Practice for Project Schedules
- DI-MGMT-81861 — Integrated Program Management Report (IPMR)
- GAO Cost Estimating and Assessment Guide: Best Practice for Developing and Managing Capital Program Costs
- EIA-748-C Earned Value Management Systems ANSI/EIA-748-C Intent Guide

**CH 1–4.2.17 Improving Cost Performance – Should Cost Management**

As a matter of opportunity management, PMs are expected to proactively seek out and eliminate low-value-added or unnecessary elements of program cost; to motivate better cost performance wherever possible; and to reward those that succeed in achieving those goals. *Should Cost* is a powerful opportunity management construct PMs can use to actively target cost reduction and drive productivity improvement into programs. Should Cost Management challenges PMs to identify and achieve savings below budgeted most-likely costs. Should Cost analysis can be used during contract negotiations (particularly for sole-source procurements), and throughout program execution, including sustainment.
Program management can develop, own, track, and report against Should Cost targets. Estimates and results are provided at milestone reviews and at specified decision points. For MDAPs and MAIS programs, PMs report progress against Should Cost goals at Defense Acquisition Executive Summary (DAES) reviews. Subject to the approval of the MDA via the Acquisition Strategy, the PM may recommend that the Contracting Officer consider contractual incentives that can be used to incentivize disciplined cost control by contractors.

**CH 1–4.2.17.1 Should Cost Management**

Should Cost Management (SCM) is fundamental to proactive cost control throughout the acquisition life cycle. *Will Cost* estimates (Cost Assessment and Program Evaluation [CAPE] Independent Cost Estimates for ACAT I programs or the Service Cost Position, whichever is directed in the Acquisition Decision Memorandum) remain the basis for President’s Budget positions; however, program management need not accept these estimates as the only reality. The goal is to identify opportunities to do better than Will Cost and to manage toward that goal. Managers scrutinize each element of cost under their control and assess how it can be reduced without unacceptable reductions in value received.

Should Cost encourages programs to actively manage costs through the careful assessment of the contributing drivers of cost across a program, identification of goals for cost reduction (Should Cost Goals), and implementation of specific efforts designed to achieve those cost reductions.

Should Cost applies to all acquisition activities, and includes both product and services acquisition. The PM needs to understand “how” products and services are being acquired to ensure that the appropriate guidance for Should Cost is considered or applied.

There are differences between the levels of rigor for Should Cost depending on whether the acquisition is under DoDI 5000.02, Operation of the Defense Acquisition System, or DoDI 5000.74, Acquisition of Services. Additionally CH 1–4.2.17.1 to CH 1–4.2.17.3 provide Should Cost guidance for ACAT I, IA, II, and III programs. For services being acquired, refer to CH 10–3.3.2.2.1 for Should Cost-related guidance.

The key to Should Cost is to seek out and eliminate, through discrete actions, low-value-added ingredients of program cost and to appropriately reward those who succeed in doing this, both in government and in industry. For government managers, this could mean additional resources to enhance their programs (for example, by freeing up funds to buy more warfighting capability) and professional recognition (raters of acquisition managers ought to consider effective cost control when evaluating performance). For each DoD Component, this could free up funds for other pressing needs. For industry, it is a matter of tying financial incentives to overall cost reduction.

**CH 1–4.2.17.2 Developing Should Cost Management Targets**

Should Cost Management (SCM) applies to programs in all ACATs, in all phases of the product’s life cycle, and to all elements of program cost. A program’s MDA (Defense Acquisition Executive [DAE], Component Acquisition Executives [CAE], or Program Executive Officer [PEO]) reviews and approves Should Cost targets, monitors progress, and directs or recommends allocation of realized cost savings, as appropriate.

Program Managers routinely analyze all cost elements and consider reasonable measures to reduce them, with prudent, cost-benefit-based considerations of associated risks. Program Managers determine specific, discrete, and measurable items or initiatives that can achieve savings against the Will Cost estimate. These actionable items are to be tracked and managed as part of Should Cost estimate progress reporting. Arbitrary reductions and unsubstantiated high-risk goals against the Will Cost estimate are not acceptable. Should Cost estimates need to be consistent with the defined program of record and have actionable content. Immediate short-term savings ought not come at the expense of long-term degradation of effectiveness or suitability; investments that result in long-term returns in production or sustainment efficiency ought to be, and are appropriate uses of Should Cost-related
Managers also apprise their leadership of opportunities for life-cycle cost savings that are outside their span of control.

**CH 1–4.2.17.3 Ingredients of Should Cost Management**

The following Should Cost Management (SCM) aspects can be used to identify potential cost reductions, develop cost targets, and manage investment costs throughout the acquisition life cycle:

- Scrutinize each contributing ingredient of program cost and justify it. Why is it as reported or negotiated? What reasonable measures might reduce it?
- Particularly challenge the basis for indirect costs in contractor proposals.
- Track recent program cost, schedule, and performance trends and identify ways to reverse negative trend(s).
- Benchmark against similar DoD programs and commercial analogues (where possible), and against other programs performed by the same contractor or in the same facilities.
- Promote Supply Chain Management to encourage competition and incentivize cost performance at lower tiers.
- Reconstruct the program (government and contractor) team to be more streamlined and efficient.
- Identify opportunities to break out components as Government-Furnished versus Prime Contractor-provided items.
- Identify items or services contracted through a second or third party vehicle. Eliminate unnecessary pass-through costs by considering other contracting options.
- In the area of test:
  - Take full advantage of integrated Developmental Testing/Operational Testing (DT/OT) to reduce overall cost of testing.
  - Integrate Modeling and Simulation into the test construct to reduce overall costs and ensure optimal use of national test facilities and ranges.
- Identify an alternative technology/material that can potentially reduce development or life-cycle costs for a program. Ensure the prime product contract includes the development of this technology/material at the right time.
- Consider value engineering change proposals to incentivize the contractor to reduce contract costs (refer to **CH 3–2.4.4** for Value Engineering-related guidance).
- Consider government value engineering proposals to reduce program cost.
- Focus areas:
  - System specifications
  - Design for affordability
  - Build strategy
  - Contracting strategy
  - Schedule reduction
  - Facility/production enhancements
  - Reduction of contractor scrap rates
  - Reduction of contractor rework
  - Changing to lower cost material options (e.g., composite to steel)
- Programs operating under Firm-Fixed Price (FFP) contracts use common sense in adopting Should Cost initiatives—only reopen FFPs if there is a clear benefit.
- Consider international acquisition-related affordability impacts.

**CH 1–4.2.17.4 How Should Cost Management and Affordability Differ**

Should Cost Management (SCM) establishes Should Cost Initiatives (SCIs), which are stretch goals that identify discrete and measurable initiatives to achieve savings against a Will Cost estimate (WCE). SCM is one method to meet affordability constraints; however, it is not relevant to setting those constraints.
The USD(AT&L) defines affordability as “conducting a program at a cost constrained by the maximum resources the Department can allocate for that capability […],” per a Better Buying Power: Mandate for Restoring Affordability and Productivity in Defense Spending memorandum, June 28, 2010. Affordability trades are budget-constrained, and program scope may be altered or removed.

**CH 1–4.2.17.5 Use of Should Cost Management Savings**

DoD Components continue to baseline acquisition budgets using Will Cost estimates and CAPE Independent Cost Estimates, when available, or DoD Component Cost Positions. However, successful Should Cost Management (SCM) initiatives can drive down future program budgets once the savings have been demonstrated and realized. DoD Components have the latitude to apply savings to their most pressing unfunded requirements, or may reinvest this funding within the same programs to accelerate the acquisition, fund cost-reduction initiatives, or cover critical unfunded requirements.

**CH 1–4.2.17.6 Should Cost Management Reporting**

Component Acquisition Executives determine their own Should Cost Management (SCM) reporting requirements for effective SCM oversight. PMs and PEOs of Major Defense Acquisition Programs and Major Automated Information System programs, however, report Should Cost targets, and progress in achieving them at Defense Acquisition Executive Summary (DAES) and Defense Acquisition Board (DAB) reviews. Program Manager presentations include Plans of Action and Milestones (POA&M) for major Should Cost initiatives, along with annual savings projected and realized. PEOs provide—via the DAES briefings—quantitative metrics addressing how Should Cost has been implemented within their portfolios, incentive and recognition mechanisms that are in place, and lessons learned. Should Cost Templates may be found embedded in the DAB and DAES Slide Templates (User Registration and CAC required). In addition, Should Cost implementation and performance are reviewed by the DAE and Better Buying Power Senior Integration Group on a quarterly basis.

**CH 1–4.2.17.7 Should Cost Management Assistance and Lessons Learned**

The Defense Contract Management Agency (DCMA) Cost and Pricing Center is available to assist program offices and PEO organizations with developing Should Cost Management (SCM) targets for indirect contract costs in particular. DCMA solicits information from the Component Acquisition Executives on an annual basis to identify specific contractor divisions where overhead Should Cost analyses would be beneficial. Integrated Cost Analysis Teams (ICATs), presently co-located with at least 12 major defense contractor sites, focus on all elements of proposal pricing engagement. Such focus includes performing continuous evaluation of a contractor’s entire pricing system, including cost models, cost estimating relationships, labor hour estimating, contractor and supplier proposal analysis, historical data maintenance and analysis, profit analysis and weighted guidelines, and interaction with Divisional Administrative Contracting Officer teams.

The Defense Acquisition University (DAU) works with the DAE and CAEs to collect successful Should Cost case studies and lessons learned to make available to the broader Defense Acquisition Workforce. They can be found in the Should Cost Repository for best practice as well as Rapid Deployment Training for the acquisition workforce. The Should Cost Repository is a restricted-access site—restricted to government Defense Acquisition Workforce members. The Should Cost Repository requires a Common Access Card (CAC) or login-password sign-on to access. See also the AT&L Implementation Directive for BBP 3.0 and the Defense Acquisition Research Journal (April 2014) article, Applications of Should Cost to Achieve Cost Reductions.

**CH 1–4.2.18 Intellectual Property, Technical Data, Computer Software Documentation, and Computer Software**

Intellectual Property (IP) is an expression of a useful concept that is legally protected such that the originator (e.g., inventor, author) is granted certain exclusive rights. The most commonly known forms of IP protection are patents, copyrights, trade secrets, and trademarks. Any or all of these may arise in DoD programs. DoD programs use the term “data rights” as a short-hand way to refer to the license rights that
DoD acquires in copyrights and trade secrets relating to data deliverables—usually technical data and computer software. This approach allows DoD to use a single set of license rights to address what would otherwise be two separate forms of IP protection.

**CH 1–4.2.18.1 Intellectual Property (IP) Strategy**

The Program Manager establishes and maintains an IP Strategy to identify and manage the full spectrum of IP and related issues including technical data, computer software deliverables, patented technologies, and appropriate license rights associated with these forms of IP, from the inception of a program through the complete life cycle.

The IP Strategy is the PM’s approach to managing the IP needs that will affect the program’s cost, schedule, and performance. The strategy needs to be captured as part of the program documentation. There are at least five questions PMs ought to consider regarding development of an IP Strategy:

- What data do I need to support my short- and long-term production, and the operations and sustainment strategy?
- What data do I already have (and what rights/licenses do I have to such data)?
- When do I need the data?
- What are the risks and opportunities associated with the lack of, or availability of, data?
- What will it cost (on the existing contract and to the total life-cycle cost)?

Specific contracting mechanisms (e.g., evaluation during source selection, priced options, or delivery requirements) are available to PMs to implement the IP Strategy and achieve the business objectives of the program. There are two key considerations for PMs regarding “data rights”:

- Data rights clauses do not specify the type, quantity, or quality of data that is to be delivered, but only the respective rights of the government and the contractor regarding the use, disclosure, or reproduction of the data. Accordingly, the contract shall specify the data to be delivered (including computer software). ([DFARS 227.7103-1(b)(1), DFARS 227.72203-1(b)(1)](https://www.acq.osd.mil/dpap/directives/dfars/part-227.html))
- The government cannot exercise its rights in data that have not been contracted. Mere access to data is not delivery and does not allow the government to exercise its data rights. Listing data as items in a Contract Data Requirements List (CDRL) makes those data required deliverables. Alternatively, rights in data may be established as a future option for some or all data. Only data to be delivered under the contract are subject to the DFARS Part 227 clauses requiring assertions as well as formal and justified markings. Therefore, DoD cannot assume it has any useable rights in data that are informally provided unless such rights are explicitly granted by the contractor. PMs work with contracting and legal staff to ensure that any data requirements in the contract are structured so as to ensure they are flowed down to subcontractors, who often generate large amounts of data that the government may require.

The PM, working with the Contracting Officer, establishes IP and Acquisition Strategies (or acquisition plan, as appropriate) that provide for the technical data deliverables and associated license rights needed to sustain program systems and subsystems over their life cycles. The IP Strategy will describe how program management will assess program needs for the IP deliverables and associated license rights needed for competitive and affordable acquisition and sustainment over the entire product life cycle. It is recommended that the PM and Contracting Officer coordinate with an attorney advisor, particularly one well versed in IP issues to better understand IP.

Starting at Milestone A, the IP Strategy applies to all program types covered by DoDI 5000.02 (Encl. 1, Table 2), including MDAPs, MAIS, and all other acquisition categories. Further information can be found
in the Milestone Document Identification (MDID) tool as well as in the Intellectual Property (IP) Strategy guidance. However, the IP Strategy is best considered and developed well before Milestone A as Figure 33 indicates. It is subsequently updated, as appropriate, throughout the remainder of the entire program life cycle.

**Figure 33: IP Strategy**

Initially, the IP Strategy is summarized in the Acquisition Strategy. During the Operations and Sustainment phase, it is presented with the Life Cycle Sustainment Plan.

There are 5 basic levels of rights that can be applied to non-commercial items or other negotiable IP:

- **Unlimited Rights.** The government may “use, modify, reproduce, perform, display, release, or disclose” the data to anyone and for any purpose.
- **Government Purpose Rights.** The government may “use, modify, reproduce, perform, display, release, or disclose” the data within the government or may release or disclose such data to another outside the government so long as the recipient uses the data for government purposes.
- **Limited Rights.** The government may “use, modify, reproduce, perform, display, release, or disclose” the data only within the government except that the government may release to another if “necessary for emergency repair and overhaul.”
- **Restricted Rights.** The government may use the software on one computer/CPU/terminal at a time within the government and make the minimum number of archival copies needed, but cannot reverse engineer the software or release the software outside the government except unless the release is “necessary for emergency repair and overhaul”; or the release is to a service contractor for the purpose of diagnosing and correcting deficiencies in the software or combining, adapting, or merging the software with other computer programs, or when needed to respond to urgent tactical situations.
- **Specifically Negotiated Rights.** The government and the contractor may modify these predetermined levels of rights so long as the government receives no less than limited rights in technical data related to noncommercial items and restricted rights in noncommercial computer software.

Some IP, like commercial items, comes with pre-existing rights approaches, which cannot be or are not normally negotiable:

- **License Rights in Technical Data Related to Commercial Items.** DoD may use, modify, reproduce, release, perform, display, or disclose technical data only within the government. The data may not be used to manufacture additional quantities of the commercial items and, except for emergency repair or overhaul and for covered government support contractors,
may not be released or disclosed to, or used by, third parties without the contractor's written permission.

- **Commercial Computer Software License** (Applicable to the acquisition of commercial computer software and its documentation). DoD may use the software and documentation only in accordance with the terms of the license customarily provided to the public. If that license is inconsistent with Federal procurement law or does not otherwise satisfy user needs, the government negotiates with the contractor to determine if acceptable terms can be reached. The terms of any license for commercial computer software are enumerated in the contract or in an addendum to the contract.

- **SBIR/STTR Data Rights** For a limited period (the Small Business Innovative Research/Small Business Technology Transfer [SBIR/STTR] Data Rights Period), the government acquires Limited Rights in technical data related to noncommercial items generated under an SBIR/STTR award; and Restricted Rights in noncommercial computer software generated under an SBIR/STTR award. Unless extended by delivery of the technical data/computer software under a subsequent SBIR/STTR award, the SBIR/STTR Data Rights Period extends five (5) years after completion of the program from which the data were generated. After the expiration of the SBIR/STTR Data Rights Period, the government acquires Unlimited Rights. All questions regarding whether SBIR/STTR Data Rights have expired should be referred to an attorney well-versed in IP issues.

*Note:* The definitions in FAR and the DFARS differ from one another, and the DoD is to follow the DFARS implementation. The definitions above are derived from the definitions in the DFARS, which are more detailed.

IP associated with items of foreign sale or international development are subject to additional considerations. During contract award and contract administration, the Contracting Officer takes certain actions to maintain the government's rights on behalf of DoD, International Cooperative Program (ICP) partner nations, and Foreign Military Sales (FMS) customer nations, as applicable, based on signed ICP International Agreements and FMS Letters of Offer and Acceptance (LOAs). International Trade and Arms Regulations (ITAR) considerations must also be taken into account.

During the contract award process for a non-commercial acquisition, the contractor (IAW the RFP) develops and provides the Contracting Officer with a data assertions list identifying any data where the government will not receive unlimited rights. Upon contract award, the data list identifies any noncommercial computer software or technical data related to a noncommercial item for which the government has less than Unlimited Rights (e.g., Government Purpose Rights, Limited Rights, SBIR/STTR Data Rights, and Specifically Negotiated Rights). **The basic rule (barring any other information) is that the government will have Unlimited Rights to any technical data related to noncommercial items or noncommercial computer software not on that list. One notable exception is that an SBIR contract does not need to include assertions for SBIR data rights in technical data or computer software developed under that contract.**

During contract management and administration, due to change proposals, the contractor may propose bringing more data onto the program. If the contractor desires to provide the government less than Unlimited Rights, it would need to propose that. If the government agrees with any restrictions, the Contracting Officer would add the data to the data accession list contained in the contract.

During contract performance, contractors often must provide proprietary data to the government. When the contractor does this, it must mark each piece of data with any restrictions by a marking or legend indicating the level of rights it believes the government has in the data. This is a required action for a contractor to maintain its rights to the data.

If the Contracting Officer notifies the contractor that restrictive markings are not in the format authorized by the contract, e.g., use language not authorized by the data rights clauses, the contractor has sixty (60)
days to remove or correct the markings. Other format inconsistencies noted by the Contracting Officer may include:

- Data restrictive markings that do not conform to the marking instructions of the data rights clauses.
- Data restrictive markings that are applied to technical data related to a noncommercial item, a noncommercial computer software, or its documentation.
- Restrictive markings that are inconsistent with the contractor’s data rights assertions.

If the contractor fails to act, the government can ignore, remove, or correct the marking.

Restrictive markings that are in the appropriate format, but are not justified (i.e., restrictive markings that purport to provide lesser rights than the government is entitled to under the contract), must be challenged in order to protect the government’s rights. There is a specific process that the Contracting Officer must follow to protect government rights. Any contract that entails delivery of technical data or computer software will include the “Validation of Restrictive Markings on Technical Data” clause. Under this clause:

- If the Contracting Officer disagrees with a restrictive marking, a written notice is provided to the contractor challenging the marking.
- If the contractor fails to respond within 60 days or responds, but does not justify the asserted marking, the Contracting Officer issues a final decision indicating whether the marking is justified.
- The government must abide by the marking for ninety (90) days after final decision, or one year after the final decision if, within the ninety (90) days, the contractor provides notice that it will appeal the final decision to the Armed Services Board of Contract Appeals (ASBCA) or file suit in an appropriate court. If an appeal or suit is filed in an appropriate court, the government must still abide by the marking until final disposition by the ASBCA or the court. [Note: The timeline for the Court of Federal Claims is twelve (12) months.]

The PM and Contracting Officer work together to ensure that the government’s rights are protected. This is a methodical process that is carefully followed. If it is not followed, the government may lose its rights to vital intellectual property. Again, the PM and Contracting Officer are diligent in protecting the government’s rights to needed data.

The following IP Strategy references provide additional information, guiding principles, and resources:

- Intellectual Property Strategy
- Understanding and Leveraging Data Rights in DoD Acquisitions

CH 1–4.2.19 Encouraging a Quality Focus

Applying best practice as described throughout this Chapter may not be sufficient to manage and mitigate process-based risks that may start a chain of events leading to undesirable outcomes. PMOs can stress the importance of effective quality management to industry. By encouraging a quality focus, PMOs can help avoid mismatches among value, beliefs, and behaviors. Delivery of systems that prevent or avoid problems are the goal. PMOs can also use advanced quality management systems (such as ISO 9000, Quality Management; AS 9100, Quality Systems – Aerospace: Model for Quality Assurance in Design, Development, Production, Installation and Servicing; and the Malcolm Baldrich Quality Award criteria) to develop their quality strategy and approach. PMOs can also conduct quality control using acceptance sampling procedures, MIL-STD-1916, DoD Preferred Methods for Acceptance of Product, provides standardized acceptance sampling systems, which are consistent with the contract requirements for submission of all conforming products or services. These sampling systems allow PMs to influence continuous improvement through corrective action while still allowing a maximum degree of flexibility to contractors.

**CH 1–4.2.19.1 Quality Implementation**

Other effective practice for program management to consider in order to achieve a Quality Focus throughout each of the acquisition life-cycle phases are listed in Table 7.

**Table 7: Acquisition Management Effective Quality Focus Practice**

<table>
<thead>
<tr>
<th>Where quality responsibility is placed in the program:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Role in the general risk identification, classification, and mitigation process;</td>
</tr>
<tr>
<td>- Involvement in the design change control and release process;</td>
</tr>
<tr>
<td>- Role in processing waivers, deviations, and engineering change proposals;</td>
</tr>
<tr>
<td>- Representation on Integrated Process Teams and boards (e.g., change control board, risk) for all product and process development activities;</td>
</tr>
<tr>
<td>- Involvement in test plans, material reviews, design reviews, build/buy/support to packages;</td>
</tr>
<tr>
<td>- Participation in the integration of inspection points into processing and test documentation; and</td>
</tr>
<tr>
<td>- Role in the supplier management, development, incentivization, and control process.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How quality skills have been assigned to the project:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- The process to identify the need for quality management, quality engineering (hardware and software), quality planning, supplier quality, and product verification skills across the life cycle;</td>
</tr>
<tr>
<td>- The process to identify quality skills and any associated certifications and qualifications; and</td>
</tr>
<tr>
<td>- The process for addressing quality staffing ratios and skill shortfalls.</td>
</tr>
</tbody>
</table>

**CH 1–4.2.19.2 Contractor Performance Appraisal System**

A Contractor Performance Appraisal System (CPARS) report is an annual requirement on contracts valued over the simplified acquisition threshold for most acquisition. CPARS is an objective report of the contractor’s performance against the contract cost, schedule, and performance standards during a given period of time. The CPARS report goes into the Past Performance Information Retrieval System (PPIRS) database, which collects Past Performance Information (PPI). PPI is one of the tools used to communicate contractor strengths and weaknesses to source selection officials and Contracting Officers. Communication between the government and contractor during the performance period is essential. The contractor performance evaluation contained in the PPIRS is a method of recording contractor performance and does not represent the sole method for reporting it to the contractor.

Regular performance reviews with contractors ensure there are no surprises at the end of the performance period about the rating a contractor will receive. These ratings are very important to a contractor; they can affect future business opportunities.
The acquisition of systems, subsystems, and/or major components often involves a series of dependencies and interdependencies. For the purpose of this discussion, in DoD acquisition and project planning dependencies generally refer to the vertical and horizontal integration of the system, subsystems, or components with other systems. This integration is either as part of a larger system/system-of-systems, or as a predecessor or successor in the sequence of system development, production, operations, and/or maintenance and support. Interdependencies generally refer to resources, technology, funding, requirements, or other factors that apply to more than one program. However, these terms are frequently used in an interchangeable manner.

Program Managers can identify and address risk of external dependencies in order to ensure timely design, development, deployment, and sustainment of the system. They document interface requirements and interface products to track interdependent program touch points.

In compliance with DoDI 5000.02 (Encl. 3, para 2.a), PMs will document program dependencies and interdependencies in the Systems Engineering Plan (SEP) to ensure timely design, development, deployment, and sustainment of the system. Refer to CH 3–2.2 and CH 3–4.3.13 for guidance related to the SEP; and Interoperability and Dependencies, respectively.

Finally, program risks associated with dependencies and interdependencies are identified and managed as part of the program risk assessment.

**CH 1–4.2.20.1 System-Level Dependencies**

In preparation for the Analysis of Alternatives (AoA), DoD Components conduct early analysis and assessments of how the proposed candidate materiel solution approaches have the potential to effectively address capability gaps, desired operational attributes, and associated external dependencies. Analysis of dependencies includes the impact to or from other systems, as well as the interoperability dependencies with Joint and potential foreign systems. The following examples illustrate this principle:

- Analysis of ship dimensions, infrastructure, and support capabilities for a new aircraft design planned to land and take off from U.S. and allied ships.
- Analysis of a new weapon designed to be aircraft-launched on the dimensions, aerodynamic limitations, and interfaces (mechanical, electrical, hydraulic) of current and future aircraft planning to use it.
- Analysis of a new vehicle design to determine its ability to be transported by current and planned vehicles (i.e., rail, ship, or aircraft).

**CH 1–4.2.20.2 Interdependencies**

Acquisition PMs specify programmatic interdependencies with other programs and discuss the relationship of the interdependencies with other program activity personnel on the critical path. If any Memorandums of Agreement are required to formalize these relationships, the following actions are beneficial:

- Identify the interface (i.e., the system this product interfaces with).
- Identify the agency that owns the other system.
- Identify the authority (e.g., CAE, PEO, delegated PM) responsible for controlling the interface (i.e., the individual who can set the requirements).
- Direct the solution to the interface issue and direct who provides the funding for the solution.
- Identify the “required by” date.
- Identify the impact if not completed.
The following examples illustrate this principle:

- Analysis of a new weapon or weapon system design requiring the use of global positioning system data in order to properly function.
- Analysis of an unmanned air vehicle design that leverages advanced development in low observable technology in order to achieve required survivability and mission effectiveness objectives.
- Analysis of a cargo transport aircraft design that requires use of an advanced detection and countermeasures system developed as a separate Joint program.

More information is available on the Defense Acquisition University Acquisition Community Connection “Interoperability and Dependencies” website.

**CH 1–4.2.21 Program Information Protection**

Program Managers are responsible for ensuring adequate protection of DoD information. This includes information about the system, such as the key technologies, applications, processes, capabilities, suppliers, and end items, as well as information processed by, or transiting through, a system. In addition to classified information, this also includes information that, alone, may not be damaging and may be unclassified, but in combination with other information, could allow an adversary to compromise, counter, clone, or defeat warfighting capability. Protection of information is achieved through the implementation of a number of activities and analyses across a system’s life cycle. One set of activities focuses on identifying, classifying, and marking program information to ensure properly controlled dissemination and adequate protection are applied. Other sets of activities aim to ensure the confidentiality, integrity, and availability of information to preserve the assurance of the system being acquired.

Program information protection includes implementation of some of the activities discussed in CH 1–4.2.21.3, Data Protection, including:

- Safeguarding controlled unclassified technical information resident on, or transiting through, contractor unclassified information systems in accordance with DFARS Subpart 204.73.

Program Information Protection is a key element of program protection—the Department’s integrating process for mitigating and managing risks of advanced technology and mission-critical system functionality from foreign collection, design vulnerability, supply chain exploitation/insertion, battlefield loss, and unauthorized or inadvertent disclosure throughout the acquisition life cycle.

**DAG Chapter 9** discusses in detail the requirements, processes, and resulting artifacts employed to protect program information. **CH 9–3.1.1.1, Foundational Activities**, contains further information on the activities related to classification, marking, and protecting program information as part of Program Information Protection.

Per DoDI 5000.02 (Encl. 2, para 9), PMs will ensure that all program documents and records, regardless of media or security classification, are created, maintained, used, and disposed of or preserved effectively and efficiently in accordance with statutory and regulatory requirements discussed in the following paragraphs.

**CH 1–4.2.21.1 Program Documents and Records**

Program Managers ensure that prior to acquisition and implementation, a records retention schedule is identified in contracts and Service-Level Agreements (SLAs) that includes, but is not limited to, secure storage, retrievability, and proper disposition of all federal records. Proper storage, retrievability, and
disposition of all federal records is prescribed in the Federal Records Act, National Archives and Records Administration (NARA) Bulletin 2010-05, and DoD 5015.02, DoD Records Management Program. DoD 5015.02-STD, Electronic Records Management Software Applications Design Criteria Standard, establishes the functional requirements for records management software.

CH 1–4.2.21.2 Personally Identifiable Information

Personally Identifiable Identification (PII) is information about an individual that identifies, links, relates, or is unique to, or describes him or her (e.g., a social security number; age; military rank; civilian grade; marital status; race; salary; home or office phone numbers; other demographic, biometric, personnel, medical, and financial information). Such information also is known as personally identifiable information (e.g., information that can be used to distinguish or trace an individual's identity, such as his or her name; social security number; date and place of birth; mother's maiden name; and biometric records, including any other personal information which is linked or linkable to a specified individual).

Program Managers of systems that collect, maintain, use, or disseminate PII comply with the policies and instructions established in DoDD 5400.11, DoD Privacy Program, and DoDI 5400.16, DoD Privacy Impact Assessment (PIA) Guidance. Program Managers also prepare a Privacy Impact Assessment (PIA) using DD Form 2930 and coordinate with the DoD Component Privacy Officer.

CH 1–4.2.21.3 Data Protection

Program Managers of DoD IT systems (including those supported through contracts with external sources) that collect, maintain, use, or disseminate data are to protect against disclosure to non-approved sources. Program Managers ensure that DoD data:

- Conform to the standards established to protect DoD personal health information (PHI) in DoD 8580.02-R, Security of Individually Identifiable Health Information in DoD Health Care Programs.
- Adhere to 22 CFR 120-130, International Traffic in Arms Regulations (ITAR).
- Are protected in accordance with DoDI 3200.12, DoD Scientific and Technical Information Program (STIP), e.g., scientific and technical information that is managed to make scientific knowledge and technological innovations fully accessible to the research community, industry, the military operational community, and the general public within the boundaries of law, regulation, other directives, and executive requirements.
- Are safeguarded by adequate security measures that will be implemented to safeguard controlled unclassified technical information resident on, or transiting through, contractor unclassified information systems in accordance with DFARS Subpart 204.73 and DoDI 8582.01, Security of Unclassified DoD Information on Non-DoD Information Systems.
- Adhere to DoD 5015.02-STD Electronic Records Management Software Application Design Criteria Standards.
- Are subject to enduring, holistic, global forensic capability that supports the full range of military operations according to DoDD 5205.15E, DoD Forensic Enterprise (DFE).
- Are made available for legal discovery by allowing all data to be located, preserved, collected, processed, reviewed, and produced (e-discovery) as required by Federal Rules of Civil Procedure.
- Adhere to the policies and procedures listed in DoDI 8410.01, Internet Domain Name and Internet Protocol Address Space Use and Approval, to ensure correct approval and use of internet domain names.
- Adhere to the Freedom of Information Act (FOIA) program policies and procedures listed in DoDD 5400.07, DoD Freedom of Information Act (FOIA) Program, to ensure that all DoD data and information stored in an external service provider’s environment will be available for
appropriate handling. Implementing guidelines are available in the DoD Freedom of Information Act Program.

- Implement the appropriate FAR Subpart 27.4, Rights in Data and Copyrights, and applicable DFARS clauses in contracts, as appropriate.

**CH 1–4.21.4 Enterprise Infrastructure**

Increasingly, DoD mission success depends on the ability of military commanders and civilian leaders to act quickly and effectively based on the most accurate and timely data available. In today’s national security environment, it is imperative that DoD resolve barriers to trusted information sharing and collaboration, within the Department and with DoD’s mission partners, to provide better access to information and to enhance the nation’s effectiveness to defend against cyber threats and vulnerabilities. DoD can achieve this in a fiscal environment that demands reduced Information Technology (IT) infrastructure costs.

DoD, through the Chief Information Officer (CIO)’s The Department of Defense Strategy for Implementing the Joint Information Environment or JIE, is transitioning to a single, Joint, secure, reliable, and agile Command, Control, Communications, and Computers (C4) enterprise information environment.

The JIE is a construct that facilitates the convergence of the DoD’s multiple networks into one common and shared global network. Primary objectives behind this transition are increased operational efficiency, enhanced network security, and cost savings through reduced infrastructure and manpower. CH 6–3.9.1, Joint Information Environment, provides detailed information regarding Enterprise infrastructure considerations for program planning and execution.

**CH 1–4.2.22 Cybersecurity in Program Acquisition**

The nature of today’s globalized and interconnected world combined with the extensive reliance on technology, computer systems, and internet connectivity means that non-state actors, whether individuals or groups of some kind, or actors sanctioned by a state, can have a significant impact through cyber activity. DoD program and system information and systems are continually at risk of being attacked by these actors.

Program Managers play a key role in assessing all aspects of their programs, with particular attention on the elements that these malicious actors are likely to target.

- **Government Program Office.** Untrained personnel, malicious insiders, insufficient classification and handling of information, inadequate network security.
- **Contractor organizations and environments.** Design, development, and production environments, networks, supply chains, and personnel.
- **Software and hardware.** Components that are deliberately compromised while in the supply chain or inherently vulnerable to attack.
- **System interfaces.** Interfaces to networks, other systems, and operators.
- **Enabling and support equipment, systems, and facilities.** Test, certification, maintenance, design, development, manufacturing, training systems, equipment, and facilities.
- **Fielded systems.** Systems in operation exposed to changing threat environments.

Program Managers rely on program protection processes, techniques, and methodologies to help prioritize and address cybersecurity risks. Program protection also helps the PM to identify those technologies, components, and information worth protecting, and to determine the most appropriate mix of measures to protect them (given cost, schedule, performance, and all other constraints). Protection measures may include information security, Operations Security (OPSEC), personnel security, physical security, industrial security, designed-in system protections, Supply Chain Risk Management (SCRM), software assurance, hardware assurance, anti-counterfeit practice, and Anti-Tamper (AT). These
protections may impact the development of the system being acquired, the operations of the program office, and the means by which the items are acquired.

Systems engineering trade-off analyses can inform the PM’s tough choices among competing system requirements within cost, schedule, and performance constraints. Sufficiently mitigating cybersecurity risks is more successful and cost-effective if security is a thoughtful consideration early and throughout the design process. Program Managers can consider the size and complexity of the program as these can impact the time it takes to conduct protection analyses and the cost to mitigate vulnerabilities.

It is the responsibility of the PM to ensure that program protection efforts are initiated early in the program, are conducted throughout all phases of the acquisition life cycle, and are continued throughout sustainment of the system as attacks may occur at any time. Within each phase of the life cycle, program protection analyses are iteratively updated to reflect the maturity of the system. CH 9–3.4.2 details the activities in the Acquisition Life Cycle Phases.

The PM can use the Program Protection Plan (PPP) to guide and focus program efforts for managing the cybersecurity risks. This milestone acquisition document captures and helps the program to communicate what in the program and what systems associated with the program will be protected, and how they are or will be protected. The PPP captures the risk decisions and activities that inform future contracts. After deployment, the responsibilities of the PPP transition to the appropriate life-cycle manager.

**CH 1–4.2.22.1 Key Challenges for Program Managers**

The following factors represent some key challenges to consider and actions PMs can take when planning cybersecurity and program security:

- **Integrating the Risk Management Framework (RMF) for DoD IT into acquisition.** Strive to meet the objectives of the RMF for DoD IT within the performance, cost, and schedule constraints of their programs. This includes development of a shared understanding for cybersecurity implementation among the program office, RMF for DoD IT Authorizing Official, and the operational user, in accordance with the DoD Component implementing guidance. Ensure effective reuse of information to meet RMF for DoD IT documentation requirements in accordance with their DoD Component implementing instructions and guidance.

- **Cloud implementation.** Understand their program’s need for cloud implementation and use the [DoD Cloud Computing Security Requirements Guide](https://www.ietf.org/rfc/rfc5280.txt) (SRG) and/or appropriate Defense Federal Acquisition Regulation Supplement (DFARS) contracting clauses.

- **Technical dependencies on other systems.** Understand all system interfaces, and associated risks and vulnerabilities, including those to information networks and support equipment (e.g., training or maintenance systems).

- **Dependences on other organizations.** Understand organizational dependencies, including the program offices using the same or similar equipment and information, intelligence/CI organizations providing information to enable program security decisions, and organizations with responsibilities related to certain aspects of cybersecurity (e.g., National Security Agency [NSA], DoD Component Offices of Primary Responsibility for Anti-Tamper, RMF for DoD IT Authorizing Official).

- **Exportability and Sales.** Understand the impacts of international acquisition and exportability on program and system protections, and consider these early in the protection planning process. Program Managers can consider historical sales of their capability to facilitate assessment of future foreign sales. Platform PMs can also consider contacting the Government Furnished Equipment providers to understand if the capability is exportable for the platform.

- **Test and Evaluation.** Ensure the cybersecurity measures identified in the Test and Evaluation Master Plan (TEMP) are measurable and testable.

- **Rapid Fielding and Urgent Operational Needs.** For PMs of programs fulfilling urgent operational needs and other quick reaction capabilities, understand the impact of protection
decisions on the system being deployed, as well as on other DoD systems providing similar capabilities.

**CH 1–4.2.23 Property**

“Government Property” means all property owned or leased by the government. Government property includes both government-furnished property and contractor-acquired property. Government property includes material, equipment, special tooling, special test equipment, and real property. Government property does not include intellectual property and software (FAR 45.101). An area not covered by the FAR is software, especially Internal Use Software (IUS). IUS is addressed through intellectual property and information technology. IUS has management rules similar to those placed upon other types of government property.

**DoDI 4161.02**, Accountability and Management of Government Contract Property provides instructions and guidance, assigns responsibilities, and prescribes procedures in accordance with FAR Part 45, DFARS Part 245, and DFARS Procedures, Guidance, and Information (PGI) for the accountability and management of government contract property in the custody of defense contractors. The PGI directs the performance of the business case analysis that covers the circumstances of when to provide government property. DoDI 5000.64, Accountability and Management of DoD Equipment and Other Accountable Property, outlines requirements that reflect the accountability perspective of property management, which supports the life-cycle management of items, including the documentation of life-cycle events and transactions.

In the normal course of doing business, contractors are expected to provide all property necessary for performing government contracts. The government only provides property to contractors under certain circumstances (i.e., when it is clearly demonstrated in the government’s best interest; the overall benefit to the acquisition significantly outweighs the increased cost of administration, including ultimate property disposal; providing the property does not substantially increase the government’s assumption of risk; and government requirements cannot otherwise be met). Providing property is not done just because a contractor is unable or unwilling to provide the property itself, or because property “has always been furnished.” Program Managers and Contracting Officers prevent the unnecessary furnishing of government property, including reviewing the program and contracts periodically to validate property is still required.

The PM assigns management authority within the program office and identifies needed actions, reviews, and reports. This may be accomplished by assigning an Accountable Property Officer (defined in DoDI 5000.64) or other knowledgeable personnel. Decisions about acquisition, retention, disposition, and delivery requirements are well informed and timely. The Contracting Officer may appoint a Property Administrator as an authorized representative of the Contracting Officer to administer the contract requirements and obligations relating to Government Contract Property (defined in DoDI 4161.02).

Program Managers and their staffs need to determine how property will be considered and utilized throughout the acquisition life cycle. Three areas of property include: Government Property in the Possession of a Contractor (GPPC); Contractor-Acquired Property; and Government Furnished Property. Each of these areas has its own advantages and disadvantages that PMs factor into how they will manage their programs, including how these areas will be considered in source selections conducted under competitive negotiations.

**CH 1–4.2.23.1 Government Property in the Possession of a Contractor**

All PMs and Contracting Officers need to prevent the unnecessary furnishing of Government Contract Property. The PM assigns property management authority within the program office and identifies needed actions, reviews, and reports. Decisions about acquisition, retention, disposition, and delivery requirements need to be well informed and timely. Government Contract Property no longer needed for current contract performance or future needs is promptly disposed of or reutilized in accordance with applicable laws and regulations; or stored under a funded storage agreement. The PM and Contracting Officer then document decisions regarding Government Contract Property in the contract file.
Government Contract Property is not “owned” by the PM, but is “used” on the program, with the PM having accountability responsibilities. Government property may only be furnished to contractors under the criteria, restrictions, and documentation requirements addressed in FAR 45.102 and FAR 45.105, as supplemented in the DFARS and the DFARS Procedures, Guidance, and Information (PGI). Government contract property is divided into two categories: Government-Furnished Property and Contractor-Acquired Property.

**CH 1–4.2.23.2 Government Furnished Property**

“Government Furnished Property” means property in the possession of, or directly acquired by, the government and subsequently furnished to the contractor for performance of a contract. Government-Furnished Property includes, but is not limited to, spares and property furnished for repair, maintenance, overhaul, or modification. Government-Furnished Property also includes Contractor-Acquired Property if the Contractor-Acquired Property is a deliverable under a cost contract when accepted by the government for continued use under the contract (FAR 45.101).

Although the DoD may not have physical custody of property furnished to a contractor, to maintain effective property accountability and control and for financial reporting purposes, DoD Components establish accountable property records (defined in DoDI 5000.64) and maintain accountability for property furnished to contractors as Government Furnished Property. Accountable property records are maintained in an Accountable Property System of Record (APSR). The APSR is approved by the DoD Component sponsoring the program; Joint programs can use the lead DoD Component’s system.

**CH 1–4.2.23.3 Contractor-Acquired Property**

Contractor-Acquired Property (CAP) means property acquired, fabricated, or otherwise provided by the contractor for performing a contract and property to which the government has title (FAR 45.101).

DoD policies, processes, and practices are structured on delivery, receipt, and acceptance of property. This aligns and is consistent with other DoD processes and practices (e.g., Wide-Area Work Flow and Unique Item identification). [Note: The Wide-Area Flow site access is conditional based on registration and identification of user roles.] Although the DoD may have title to CAP, such property has not yet been delivered.

Upon delivery to the government, CAP is recorded in the appropriate Accountable Property System of Record (APSR). If this property is subsequently provided to a contractor for use on contracts, it will be managed as Government Furnished Property. Consistent with DoDI 5000.64, there is no requirement for property accountability by DoD Components for such property prior to delivery to the government. Contractors have stewardship responsibility, including creating and maintaining records of all government property accountable to the contract, consistent with the terms and conditions of the contract, for the government property in their care.

**CH 1–4.2.23.4 Government Property**

During the life of the program, property items may be developed as Contractor-Acquired Property (CAP) that support the deliverable item. This property may be test equipment, ground support equipment, or other equipment items. The PM and Contracting Officer remain aware of any CAP that meets or exceeds the DoD Component capitalization threshold (see DoD 7000.14-R, Financial Management Regulation). Per the guidance in PGI 245.402-70, the Contracting Officer enables delivery of these capital items so accountable property records can be established in the Accountable Property System of Record (APSR). This allows the DoD Component to correctly report the property on the financial statement. The delivered CAP is then managed as Government Furnished Property while used on the contract.

**CH 1–4.2.23.5 Accountable Property System of Record**

The PM knows which Accountable Property Systems of Record (APSRs) will be used within the program. An APSR is approved by the DoD Component, and there may be multiple APSRs depending on the types
of property (e.g., equipment, real property, operating materials and supplies, inventory, internal use software) and the complexity of the program. The APSR is also part of the Life Cycle Sustainment Plan. The assigned property manager within the program uses the APSRs to perform the required management tasks and keep the PM informed. A contractor’s property system is not an APSR and cannot be used instead of a DoD Component’s system.

**CH 1–4.2.23.6 Item Unique Identification**

Item Unique Identification (IUID) requires budgeting and planning early in the acquisition process. The PM identifies components and subcomponents that will need item-level traceability. IUID is applied within the structure of DoDI 8320.04, Item Unique Identification Standards for Tangible Personal Property, and contracts contain the required clause (DFARS).

**CH 1–4.2.24 Acquisition Program Transition Workshops**

A best practice in recent years for PMs of all Acquisition Category (ACAT) ID, ACAT IAM, and special interest programs is to conduct an Acquisition Program Transition Workshop (APTW) with their industry PM counterparts within the first few weeks following contract award or significant program redirection. These workshops are focused on aligning government/contractor teams with the contract for contract execution success.

An APTW is a significant risk mitigation tool for both the government and contractor PMs and PMOs as they jumpstart a program to go in a new direction. In a contract award situation, the executing teams have either been focused on source selection or contract proposal activities. Setting the stage for the first area of success is careful planning for government program management in the RFP. Baselining contract execution processes early is essential. [Note: Workshop preparation and conduct are tailored to each program event to make the best use of the approximate 3 days of the workshop.] The following lessons learned/re-learned become important when contract requirements and/or people change:

- Responsibility Assignment Matrix—Thorough knowledge of counterpart organization/ individuals and individual contract roles.
- Joint team charters—Purpose, responsibilities, authority, accountability, leadership, membership, interfaces and interdependencies, team risks, issue resolution process.
- Common understanding of IMP and IMS and a proactive understanding of team contract execution responsibilities, usually weekly for high-performing teams to understand what the real workload is.
- Common understanding of contract requirements, interpretations, and assumptions.
- Team plans for 60/90/120 days, including communications and metrics.

Program Managers are encouraged to contact the Defense Acquisition University in a timely manner to facilitate the following acquisition planning and execution activities in Table 8. Supplemental information regarding APTWs may be obtained by e-mailing MissionAssistance@dau.mil for more information on WSM 011 (Acquisition Program Transition Workshop).

**Table 8: Acquisition Events and Activities**

<table>
<thead>
<tr>
<th>Acquisition Events</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Draft Request for Proposal (RFP)</strong></td>
<td>Include an Acquisition Program Transition Workshop (APTW) requirement in the RFP and Statement of Work and address in Draft RFP briefings to possible respondents.</td>
</tr>
<tr>
<td><strong>Pre-Contract Award</strong></td>
<td>Engage in APTW government team training and/or process development for contract execution.</td>
</tr>
</tbody>
</table>
CH 1–4.3 Milestone Decision Authority Decision Reviews

Milestone Decision Authority Decision Reviews are applicable to all ACAT I, II, III, or IV programs. Program Managers are encouraged to consider the following key elements as part of any discussion with the Milestone Decision Authority, or for consideration as the decision-maker. Other focus areas contain a rundown of best practice and lessons learned regarding milestone decisions at every level.

- **Ensure the audience understands program context.** Key considerations for the decision being requested are first, then present appropriate program information so advisors and the MDA understand the program. Some examples include:
  - Mission and key requirements—usually KPPs, KSAs, and APAs.
  - Context regarding how the system fits into its mission area, and perhaps an operational architecture view (OV-1)—how this new capability compares with legacy systems being replaced (if applicable).
  - Results of market research (especially if relevant to a competition strategy).
  - Expected sustainment environment (likelihood of changes, enhancements, and expected obsolescence).
  - Any critical dependencies—internal or external to the program.

- **Refine the message.** Following are additional considerations for structuring a decision brief:
  - Leverage critical thinking to outline/develop answers to questions relevant to the program, and especially to topics in the brief. Review current Acquisition Decision Memorandum (ADM); review the status of requirements, budget/funding, and contractor performance; review how the system fits into the Joint and Service visions.
  - Outline key focus areas for the decision brief, including a summary of how prior work supports exit from current phase and satisfaction of entry criteria into next phase. Use exit and entry criteria from prior ADM as a guide.
  - Decide on your key messages. Some examples: What was learned from the completed phase and readiness for next phase? Tradeoffs user made in terms of changes to Additional Performance Attributes (APAs), Key System Attributes (KSAs), or Key Performance Parameters (KPPs) based on insights gained during critical design, software coding/manufacturing design for the hardware, and/or developmental/operational testing. Risks and opportunities that remain and why they are manageable.
  - Use data to support the message.
  - Establish a logical flow in the briefing to help the MDA. Consider presenting the requested decision and recommendations up front along with prior work, including previous ADM direction to underpin arguments and rationale for proceeding that are in the remainder of the brief.

The bottom line is to clearly articulate the decision(s) requested; present rationale/data that support the decision(s) being requested in a logical sequence; be prepared to answer questions relevant to the decision and/or any aspect of the program.

CH 1–4.3.1 General Considerations for All Milestone Decision Briefs

The following paragraphs provide recommendations in preparation for any milestone or acquisition decision meeting.

CH 1–4.3.1.1 Considerations for All Milestone Decision Meetings

- What is the purpose of the program and its fit in the larger portfolio (background)?
What are key outcomes and lessons the program team learned in the phase?
What insight was gleaned from the phase just completed that influences the Acquisition Strategy?
Was exit criteria for the phase met?
Were any criteria/goals added based on how the work unfolded, and were the criteria/goals met?
Is expected system performance responsive to the latest threat provided by the intelligence community?
What are the key risks and opportunities in the program up to this point? (Show risks retired/opportunities captured.)
If one or more of the phase exit criteria was not achieved, or only partially achieved, why is it still appropriate to seek approval to enter the next phase?
If implementing an incremental strategy, is there reason to shift requirements to a later stage? If so, is user in agreement, and if so, why (e.g., why will a less capable first increment still be worth operational testing and release into the field)?
How does the competition approach address risks and pursue opportunities?
Were there any issues surfaced, but not resolved during discussion or staffing of phase-relevant documentation?

Note. For ACAT I/IAs, sometimes the open issues are briefed by the Overarching Integrated Product Team (OIPT) lead before the PM briefing starts at a Defense Acquisition Board (DAB)—be sure to synchronize this.

Review the MDID tool to scope/tailor documentation effort.
What is the scope of the work to be done in the coming phase?
What questions are addressed through this phase? What data will be acquired to address these questions?
What are the knowledge points to gain insight during the phase? What data will be acquired to address those knowledge points—either metrics data or other Contract Data Requirements List (CDRL) items?
How do predicted product support needs drive architecture? The Acquisition Strategy, including IP strategy? The Systems Engineering approach?
Did user requirements evolve in the prior phase, and what are the key requirements for the coming phase? What is the plan to address any requirements challenges that are unresolved at the start of this coming phase?
What are the program risks? How have they been reduced in the prior phase? What is the plan to continue to manage/mitigate risks in the coming phase?
What opportunities have been captured? What opportunities are planned for pursuit/capture in the coming phase? Should Cost versus Will Cost progress?
What are the latest time-phased cost estimates (Service Cost Position [SCP] and Cost Assessment and Program Evaluation [CAPE]'s Independent Cost Estimate [ICE]), and what are the key assumptions or techniques leading to differences between them? What are the major cost drivers? [Perhaps in back-up: How/why has the estimate changed since the prior phase?]
How does the “recommended” estimate (CAPE, ICE, or SCP) compare with the current Future Years Defense Program (FYDP) budget? What is the Service’s/Agency’s plan to close on any deltas?
What are the user’s affordability goals/caps for acquisition cost and Life Cycle Cost?
Develop desired Acquisition Decision Memorandum draft key points. If the program is an MDAP or MAIS, then share it with the OIPT Lead for use in the OIPT portion of the brief. Otherwise, include it in the PM portion of the brief. The key points include, but are not limited to:
  - Approval to proceed with or without caveats/restrictions/comebacks, if appropriate.
  - Exit criteria for next phase.
  - Funding issues to be resolved, if present.
CH 1–4.3.1.2 Specific Consideration by Milestone Decision and Phase

The following paragraphs, briefly summarized and paraphrased from DoDI 5000.02 (para 5d), are included to provide program management with a view toward developing decision briefs that address expectations for the milestone meeting. There is additional information in paragraph 5d that program management can use to frame that brief.

CH 1–4.3.1.2.1 Materiel Development Decision/Materiel Solution Analysis Phase

- **Decision.** The Materiel Development Decision is based on a validated initial requirements document (an ICD or equivalent requirements document) and the completion of the Analysis of Alternatives (AoA) Study Guidance and the AoA Study Plan. This decision directs execution of the AoA and authorizes the DoD Component to conduct the Materiel Solution Analysis Phase.

- **Purpose of the MSA Phase.** Conduct the analysis and other activities needed to choose the concept for the product that will be acquired, to begin translating validated capability gaps into system-specific requirements, including the Key Performance Parameters (KPPs) and Key System Attributes (KSAs). Also conduct planning to support a decision on the Acquisition Strategy for the product. AoA solutions; key trades among cost, schedule, and performance; affordability analysis; risk analysis; and planning for risk mitigation are key activities in this phase.

CH 1–4.3.1.2.2 Milestone A Decision/Technology Maturation and Risk Reduction Phase

- **Decision.** The Milestone A decision approves program entry into the Technology Maturation and Risk Reduction (TMRR) phase and release of final RFPs for TMRR activities. The responsible DoD Component may decide to perform TMRR work in-house and/or award contracts associated with the conduct of this phase. Competitive prototypes are part of this phase unless specifically waived by the MDA. Key considerations are:
  - The justification for the preferred materiel solution.
  - The affordability and feasibility of the planned materiel solution.
  - The scope of the capability requirements’ trade space and understanding of the priorities within that trade space.
  - The understanding of the technical, cost, and schedule risks of acquiring the materiel solution, and the adequacy of the plans and programmed funding to mitigate those risks prior to Milestone B.

- **Purpose of the TMRR Phase.** Reduce technology, engineering, integration, and life-cycle cost risk to the point that a decision to contract for Engineering and Manufacturing Development (EMD) can be made with confidence in successful program execution for development, production, and sustainment.

CH 1–4.3.1.2.3 Development RFP Release Decision Point

- **Decision.** This decision point authorizes the release of RFPs for EMD and often for Low-Rate Initial Production (LRIP) or Limited Deployment options. This review is the critical decision point in an acquisition program. The program will either successfully lead to a fielded capability or fail, based on the soundness of the capability requirements, the affordability of the program, and the executability of the Acquisition Strategy. The Acquisition Strategy is put into execution at this decision point by asking industry for bids that comply with the strategy. Release of the RFP for EMD sets in motion all that will follow. This is the last point at which significant changes can be made without a major disruption.

- **Purpose of the Development RFP Release Decision.** Ensure, prior to the release of the solicitation for EMD, that an executable and affordable program has been planned using a sound business and technical approach. One goal at this point is to avoid any major program delays at Milestone B, when source selection is already complete and award is
imminent. Therefore, prior to release of final RFPs, there needs to be confidence that the program requirements to be bid against are firm and clearly stated; the risk of committing to development and presumably production has been or will be adequately reduced prior to contract award and/or option exercise; the program structure, content, schedule, and funding are executable; and the business approach and incentives are structured to both provide maximum value to the government and treat industry fairly and reasonably.

CH 1–4.3.1.2.4 Milestone B Decision/Engineering and Manufacturing Development Phase

- **Decision.** This milestone provides authorization to enter into the EMD Phase and for the DoD Components to award contracts for EMD. It also commits the required investment resources to the program. Most requirements for this milestone can be satisfied at the Development RFP Release Decision Point; however, if any significant changes have occurred, or additional information not available at the Development RFP Release Decision Point could impact this decision, its provision is required at Milestone B. Milestone B requires final demonstration that all sources of risk have been adequately mitigated to support a commitment to design for production. This includes technology, engineering, integration, manufacturing, sustainment, and cost risks. Validated capability requirements, full funding in the Future Years Defense Program (FYDP), and compliance with affordability goals for production and sustainment, as demonstrated through an Independent Cost Estimate (ICE), are required. The framing assumptions central to shaping the program’s cost, schedule, and performance expectations are also required. Milestone B is normally the formal initiation of an acquisition program with the MDA’s approval of the Acquisition Program Baseline (APB).

- **Purpose of the EMD Phase.** To develop, build, and test a product to verify that all operational and derived requirements have been met, and to support production or deployment decisions.

CH 1–4.3.1.2.5 Milestone C/Limited Deployment Decision

- **Decision.** The point at which a program or increment of capability is reviewed for entrance into the Production and Deployment (P&D) Phase or for Limited Deployment. Approval depends in part on specific criteria defined at Milestone B and included in the Milestone B ADM. The following general criteria will normally be applied: demonstration that the production/deployment design is stable and will meet stated and derived requirements based on acceptable performance in developmental test events; an operational assessment; mature software capability consistent with the software development schedule; no significant manufacturing risks; a validated Capability Production Document (CPD) or equivalent requirements document; demonstrated interoperability; demonstrated operational supportability; costs within affordability caps; full funding in the FYDP; properly phased production ramp-up; and deployment support. *[Note: For a MAIS program, the two most important items to discuss are (1) whether the system is secure, and (2) what is the fallback plan should problems occur?]*

- **Purpose.** Produce and deliver requirements-compliant products to receiving military organizations.

CH 1–4.3.1.2.6 Post-Milestone C Decision/Full-Rate Production Decision or Full Deployment Decision

- **Decision.** This decision assesses the results of initial Operational Test and Evaluation (OT&E), initial manufacturing and limited deployment, and determines whether or not to approve proceeding to Full-Rate Production (FRP) or Full Deployment (FD).

- **Purpose.** Confirm control of the manufacturing process, acceptable performance and reliability, and the establishment of adequate sustainment and support systems. Consider any new validated threat environments that might affect operational effectiveness, and consult with the requirements validation authority as part of the decision-making process to
ensure that capability requirements are current. Critical deficiencies identified in testing will
be resolved prior to proceeding beyond Low-Rate Initial Production (LRIP) or limited
deployment. Remedial action will be verified in follow-on test and evaluation. Normally the
FRP/FD review and decision completes the Post-Implementation Review (PIR), which verifies
the Measures of Effectiveness (MOEs) of the ICD or the benefits of a business plan. A PIR
answers the question, “Did the Service/Agency get what it needed, per the ICD/Business
Plan, and if not, what should be done? A PIR is required for all acquisition program
increments at the Full-Rate Decision Review (FRDR).

CH 1–4.3.1.2.7 Post-Milestone C Decision/Operations and Support Phase

- **Decision.** Execute the product support strategy, satisfy materiel readiness and operational
  support performance requirements, and sustain the system over its life cycle (including
  disposal). The Operations and Support (O&S) Phase begins after the production or
  deployment decision and is based on an MDA-approved LCSP.
- **Purpose:** Over the system life cycle, operational needs, technology advances, evolving
  threats, process improvements, fiscal constraints, plans for follow-on systems, or a
  combination of these influences and others may warrant revisions to the product support
  strategies. The PM revalidates the supportability analyses and reviews the most current
  product support requirements, senior leader guidance, and fiscal assumptions to evaluate
  product support changes or alternatives, and determines best-value acquisition strategies.

CH 1–5. Business Practice/Additional Management Considerations

This Section provides descriptions of document and data repositories (e.g., AIR [Acquisition Information
Repository], DAMIR [Defense Acquisition Management Information Retrieval]) of which program
management ought to be aware, as discussed in Section 4.2.2.1. Also included is an explanation of the
Defense Acquisition Executive Summary (DAES) and where it applies (Major Defense Acquisition
Program [MDAP], Major Automated Information System [MAIS]). DAES, with tailoring, also lends itself to
Milestone Decision Authority (MDA) review of other than MDAP and MAIS programs. An overview of the
Milestone Document Identification (MDID) Tool is also provided as a resource for program management.

CH 1–5.1 Reporting Requirements

DoDI 5000.02 (Encl. 1), identifies the specific Information Requirements (Statutory and Regulatory) for
each milestone and decision point by Program Type, as well as Recurring Program Reports (Encl. 1,
Table 5); Exceptions, Waivers, and Alternative Management and Reporting Requirements (Encl. 1, Table
6). Information requirements unique to the Urgent Needs Rapid Acquisition Process (Encl. 13, Table 10)
are also identified.

Information listed in the three Tables linked in the above paragraph and required by statute is addressed
as dictated by law and cannot be waived unless the statute specifically provides for waiver of the stated
requirement. These Information Requirements (Statutory and Regulatory) may also be tailored at the
MDA’s discretion.

In addition to reporting requirements in DoDI 5000.02 (Encl. 1), Service reviews and reporting
requirements are detailed in each Service’s Acquisition Instructions.

The DAES Assessment process that follows is mandatory for MDAPs quarterly, only after the initial
Selected Acquisition Report (SAR) is submitted. Likewise, the process is mandatory for MAIS quarterly,
only after the program is baselined. The DAES process, however, is potentially useful for the Program
Manager (PM) and Program Executive Officer (PEO) review of any program, regardless of Acquisition
Category (ACAT), Model, or Type.
CH 1–5.1.1 Program Assessments (Defense Acquisition Executive Summary)

The Defense Acquisition Executive Summary (DAES) process provides senior leadership with current situational awareness of the execution status of Major Defense Acquisition Programs (MDAPs), Major Automated Information Systems (MAIS), and designated “special interest” programs. The DAES Assessment serves as a common reference to achieve shared stakeholder insight regarding a program’s current status and planned approach. It provides a documented understanding of how the program will accommodate cost, schedule, performance, and sustainment trades, and how these products will contribute to program decision-making. The purpose of the assessments is twofold:

- Provide awareness of the execution status of all reporting programs, including those that are performing well, by evaluating them at regular intervals.
- Enable identification of emerging execution issues that warrant the attention of senior leadership.

Program Managers provide assessments on their respective programs via the quarterly DAES submission. The assessments are conducted on 11 categories. Eight working days after a DAES report is submitted, Office of the Secretary of Defense (OSD) staff specialists will also assess program performance. The categories evaluated by OSD are identical to the categories evaluated by the PMs. The OSD assessments provide an independent assessment of program execution status and are used when selecting programs to be briefed at the monthly DAES Review meeting. Additionally, the OSD ratings support various Significant Acquisition Watchlist (SAW) displays within the Defense Acquisition Management Information Retrieval (DAMIR).

CH 1–5.1.1.1 Quick View of Overall Acquisition Status

A color code rating system for DAES assessments is used as a subjective means of evaluating a program’s status in a given assessment category. The color ratings provide a quick view of overall acquisition status and are used to screen programs during the program selection process. Assessors will provide the status color that best reflects their concerns with the program.

On-Track (GREEN). The program is progressing satisfactorily in the given assessment area. Some minor problems may exist, but appropriate solutions to those problems are available; none of the problems are expected to affect overall program cost, schedule, interdependency risk, and performance requirements; and none are expected to require managerial attention or action.

Potential or Actual Problem (YELLOW). Some event, action, or delay has occurred that may impair progress against major objectives in one or more segments of the program, and may affect the program’s ability to meet overall cost schedule and performance requirements or other major program objective, or may eventually result in a breach of Nunn-McCurdy unit cost targets.

Critical (RED). An event, action, or delay has occurred that, if not corrected, poses a serious risk to the program’s ability to meet overall cost, schedule, and performance requirements, or other major program objective; would require significant funding changes; or may result in a breach of Nunn-McCurdy unit cost thresholds or a Chapter 144A Significant or Critical Change.

CH 1–5.1.1.2 Assessment Area and Criteria

The following paragraphs amplify the topic of overall program status with further discussion of key program attributes.

Program Cost. Assess the program’s progress toward meeting its overall program cost objectives and measure performance against the unit costs and total costs found in the current Acquisition Program Baseline (APB). Such assessment incorporates all sources of program acquisition cost, such as large active contracts, small contracts, government costs, future contracts, completed contracts, and management reserve. This assessment may incorporate analyses of individual contracts, such as those
performed in the Contract Performance assessment, but take a broader, more cumulative view of
program costs. Also, various cost estimates such as Service Cost Positions or the Cost Assessment and
Program Evaluation Independent Cost Estimate (CAPE ICE) are considered, when possible. Specific
assessment methods vary by program, but may include examining the realism of projected unit costs
given trends in actual costs, comparisons of spending profiles to previous plans, or a determination of
whether outlined in the Better Buying Power initiatives are also evaluated, including updates on the
progress of initiatives that would drive costs to should-cost levels. For programs that are early in the
acquisition life cycle, and that therefore do not have data to support cost evaluations, the assessment
considers the program's key assumptions, or Framing Assumptions.

**Program Schedule.** Assess how the program is progressing towards meeting schedule objectives,
including meeting the schedule requirements of interdependent programs. The primary standards for
measuring schedule performance are the APB’s milestone dates. More detailed information is required to
evaluate progress toward these milestones, including the contract schedule analysis. Tools that can be
applied to a schedule assessment include traditional analysis of variances and critical path for a program-
level Integrated Master Schedule (IMS) or equivalent, as well as a review of the program's history.

**System Performance.** Assess whether the program is on track to meet the required system performance
objectives, thresholds, and other important performance requirements. This includes evaluation of current
performance estimates and trends against program Key Performance Parameters (KPPs), Key System
Attributes (KSA$s), and the requirements allocated from these standards. Select critical elements that are
most important to program success, that contain the largest elements of perceived risk, or have
historically been problematic on other programs and evaluate progress against plans and requirements.
The evaluation includes progress toward design goals as well as developmental and operational test
results as they become available. The analysis evaluates reported performance regarding the planned
Reliability Growth Curve and compares assessment and/or performance results to reliability growth
expectations.

**Contract Performance.** Assess the cost and schedule performance of the program’s individual contracts.
Include analysis of the government’s exposure to cost, schedule, and technical risk in each contract.
Earned value tools and Integrated Master Schedule (IMS) analyses are the primary tools for evaluating
contract performance, but are supplemented by other data and analyses. Evaluate a contract’s current
cost and schedule performance, effort remaining, and estimates to complete, while also observing trends
that may imply changes in future performance. Key metrics used to determine current contract health
include Cost Performance Index (CPI), Schedule Performance Index (SPI), variances, Baseline Execution
Index (BEI), and Critical Path Length Index (CPLI). Assessments evaluate the realism of various
Estimates at Completion (EAC) based on To Complete Performance Index (TCPI) analysis and
conclusions reached through the performance and trend analyses. Monitor non-Earned Value
Management (EVM) data such as staffing levels, labor rates, achievement of milestones and technical
goals, and other project-specific metrics, as appropriate. Where contract costs exceed ceiling prices,
estimate the overruns and their implications for future contract costs.

**Management.** Assess the extent to which the program has adequate management structure and
resources, appropriate contractual mechanisms and progress, appropriate processes, and current data
documentation.

**Funding.** Evaluate the extent to which the program is funded in the Future Years Defense Program
(FYDP) to meet the funding requirements of the entire program, including all contracts, procurement of
Government Furnished Equipment, and program office staffing and agreements with other government
agencies for support, given current efficiencies and funding priorities.

**Test and Evaluation.** Assess the planning, execution, and results of developmental and operational Test
and Evaluation (T&E) activities, and describe the implications of T&E outcomes on overall program
performance.
**Sustainment.** Assess the adequacy of the logistics and personnel systems to support the program throughout its life cycle. Sustainment assessments include evaluation of system characteristics such as availability and reliability, as well as manpower, personnel, and training.

**Interoperability/Information Security (IS).** Assess issues that may affect the program’s ability to integrate functions and capabilities with other interdependent systems, or affect its ability to maintain appropriate information security.

**Threat.** Assess changes in the current operation threat based on the most recent intelligence community information.

**Production.** Assess the extent to which the program is capable of meeting the required production goals, taking into account demonstrated performance, emerging issues, and the health of the industrial base.

**International Program Aspects.** The international aspects of a program are a key consideration in the Defense Acquisition Management Framework and may be present at any point in time (pre-systems acquisition, systems acquisition, and sustainment) and include capability determination, technology development, system development, production, and operations and support. The assessor derives and employs relevant information from literature and enabling government, commercial, and academic services, and determines its influence on DoD budgets and programs. The assessor also analyzes and evaluates the impacts of policies on managing international programs.

For additional information, see the DAES Assessment Guidance and accompanying DAES Desk Book, which are available for download from the DAMIR website, under the Guidance link/DAES Guidance/Assessment Guidance.

**CH 1–5.2 Compliance Considerations**

*DoDI 5000.02* and its enclosures contain programmatic expectations established by statute, regulation, and acquisition policy that are to guide program management planning in functional areas across the life cycle of the acquired system.

**CH 1–5.3 Acquisition Documentation Development Tools**

The following subsections provide resources for PMs and acquisition leadership in the development and use of documentation, including content required and timing.

**CH 1–5.3.1 Milestone Document Identification Tool**

To assist program management and acquisition professionals in filtering through statutory and regulatory information requirements, DoD maintains the *Milestone Document Identification* (MDID) tool that allows for a collection of information requirement results based on user-selected filtering of program acquisition category (and subcategory type, if applicable), life-cycle event, and the source of the information requirement (Statutory or Regulatory). Each resulting information requirement is linked to an information card containing pertinent content and linked sources (Description/Definition, Notes, Approval Authority, and DAG Topic Discussions). A capability is provided for ad-hoc filtering by keyword. *DoDI 5000.02* policy takes precedence over the MDID tool.

The MDID tool allows the filtering of Statutory and Regulatory information requirements, at specific milestones or decision points, and for specific ACAT levels or subcategory type (i.e., Defense Business System [DBS], Urgent Operational Needs Statement [UONS]) for the information requirements identified in *DoDI 5000.02* (Encl. 1, Tables 2, 5, 6; Encl. 13, Table 10). When this source Instruction is updated or re-issued, or an applicable Directive-Type Memorandum (DTM) or policy memorandum is issued, the MDID tool is updated. The MDID capability is a content evolving tool and is critiqued by the Acquisition Community through a built-in feedback function.
The filtered results of the MDID tool indicate the potential Statutory and Regulatory information requirements that are considered "as probable information requirements" for the program. After this initial determination of Statutory and Regulatory requirements, a determination needs to be made by the Acquisition chain of command on the applicability of the statutory requirements, and if applicable, how they would be addressed or documented.

**CH 1–5.4 Defense Acquisition Documentation and Data Repositories**

The following subsections describe repositories of information and data, as well as analysis capabilities for awareness of, and use by, the PM and acquisition leadership.

**CH 1–5.4.1 Defense Acquisition Visibility Environment**

The Defense Acquisition Visibility Environment (DAVE) is the DoD’s authoritative source of enterprise-wide acquisition data and capabilities for program oversight, analysis, and decision-making, as well as data integration and longitudinal analysis across and among programs.

The key capabilities DAVE currently provides are listed in the following sections. Access for authorized users is available at DAVE [CAC Required, Restricted Access]. Contact osd.dave@mail.mil for access information.

**CH 1–5.4.1.1 Acquisition Data Management**

The following paragraphs present acquisition data sets and how they can be used.

**CH 1–5.4.1.1.1 Acquisition Visibility Data Framework**

As DoD moves more and more to a data-focused approach to acquisition decision-making, program offices and analysts throughout the Department need a reference to clarify and explain the authoritative data used in that process. The Acquisition Visibility Data Framework (AVDF) is that resource.

The AVDF enables the Department to understand the data and how it should be used, which is the foundation for reporting, analysis, and decision-making. The AVDF provides the foundation for DAVE and establishes the data standard for DoD, integrating and providing context for all existing AV data components. The AVDF has two sections: the Acquisition Visibility Data Matrix (AVDM) and Use Cases, which are described below. The AVDF is accessible to authorized DAVE users.

**CH 1–5.4.1.1.2 Acquisition Visibility Data Matrix**

The Acquisition Visibility Data Matrix (AVDM) is the core of acquisition data management for the Department. It answers questions such as, "What data is available?" and "How is the data defined?" It documents data definitions; data owners; and associated laws, regulations, policies, guidance, and other information that enables PMO personnel and acquisition analysts to understand the 500+ data elements under the Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics (OUSD(AT&L)) governance. Additional data may be added, as needed, through the Acquisition Visibility Steering Group (AVSG). The governed data support Defense acquisition decision-making on major programs. The AVDM is accessible to authorized DAVE users.

**CH 1–5.4.1.1.3 Acquisition Visibility Data Framework Use Cases**

In the AVDF, Use Cases are closely tied to the AVDM information. They answer the question, "Where is the AVDM data used?"—documenting the context within which the data are provided or used. The AVDF includes the following Use Cases. Additional Use Cases may be added as needed.

- Acquisition Program Baseline (APB)
- Budget Estimate Submission (BES)
- Defense Acquisition Board (DAB)
The Use Cases [CAC Required, Restricted Access] are accessible to authorized DAVE users.

**CH 1–5.4.1.1.4 Data Opportunities Visualization Capability**

Acquisition Visibility Data Opportunities Visualization capability provides information about data used in the Defense Acquisition process. The searchable table view lists 80+ data sources that can answer questions about acquisition data for the Department. Additional acquisition data sources may be added as identified. It provides details about each data source, including the capability it offers, where to access it, the data it offers, who owns it, who can access it, and who is the point of contact for access. For a subset of the data sources, additional information is provided, including issues associated with accessing the information, whether it is an authoritative source, and the composition of users. AV Data Opportunities Visualization also offers a tree view, which allows for a more visual exploration of acquisition data sources. Data Opportunities Visualization [CAC Required, Restricted Access] is accessible to authorized DAVE users.

**CH 1–5.4.2 Defense Acquisition Reporting Capabilities**

The Department provides capabilities to support PMOs in reporting program status and plans to the DoD Components and OSD, and to support the USD(AT&L) in reporting program status to Congress.

**CH 1–5.4.2.1 Defense Acquisition Management Information Retrieval**

Defense Acquisition Management Information Retrieval (DAMIR) is the reporting mechanism and authoritative source for data associated with the following reports: the Defense Acquisition Executive Summary (DAES) and associated Program Office and OSD assessments, Selected Acquisition Reports (SAR), SAR Baseline, Acquisition Program Baselines (APBs), MAIS Annual Reports (MAR), and MAIS Original Estimates. DAMIR [CAC Required, Restricted Access] is only accessible to authorized users.

To request an account, please contact the Organizational Point of Contact. If the organization POC is unknown, e-mail DAMIR Support at osd.pentagon.ousd-atl.mbx.damir-support@mail.mil and provide name and organization. For technical issues, send questions to osd.damir@mail.mil, or call 703-679-5345.

**CH 1–5.4.2.2 Affordability Capability**

The Affordability capability is the authoritative source for Program Current Estimates, which PMs report based on Program Objectives Memorandum (POM) or President’s Budget (PB) reports in the Defense Acquisition Management Information Retrieval (DAMIR). In addition, it is also the repository for Acquisition and Sustainment Goals or CAPS, which are initially recorded in Acquisition Decision Memoranda. Affordability is accessible to authorized DAMIR users at AFFORDABILITY [CAC Required, Restricted Access]. For questions about access, contact osd.damir@mail.mil, or call 703-679-5345.

**CH 1–5.4.2.3 Earned Value Management Central Repository**

The Integrated Program Management Reports (IPMRs) for all Acquisition Category (ACAT) I programs are submitted directly to the Earned Value Management Central Repository (EVM-CR) by the reporting contractors. The EVM-CR, which is managed by the PARCA Deputy Director for EVM, is the sole addressee on the Contract Data Requirements Lists for these reports.
The EVM-CR provides:

- Centralized reporting, collection, and distribution of Key Acquisition EVM data for ACAT IC & ID (MDAP) and ACAT IAM (MAIS) programs.
- A reliable source of authoritative EVM data and access for OSD, the Services, and the DoD Components.
- Housing for the IPMR and Contract Funds Status Report (CFSR) as well as the Contract Performance Reports (CPRS) and the Integrated Master Schedules (IMS) for legacy contracts. Contractor-submitted reports are reviewed and approved by Program Management Offices prior to publication.
- Approximately 110 active ACAT IA, IC, and ID programs comprised of close to 700 contracts/efforts are currently reporting. The EVM-CR also houses over 40 historical programs with approximately 500 contracts/efforts.

EVM-CR [CAC Required, Restricted Access] is accessible to authorized users.

For questions about access, contact the Cost Assessment Data Enterprise (CADE) help desk at CADESupport@Tecolote.com or 253-564-1979 Ext. 1.

**CH 1–5.4.2.4 Defense Acquisition Information Repository (AIR)**

Acquisition Information Repository (AIR) is the Department of Defense authoritative repository for final, approved milestone information and other decision documents for pre-Major Defense Acquisition Programs, un-baselined Major Automated Information Systems, Acquisition Category (ACAT) ID, ACAT IAM, and Special Interest Programs. AIR also supports document storage and retrieval for ACAT IC and IAC, ACAT II, and ACAT III programs. AIR is available on both the Non-Secure Internet Protocol Router Network (NIPRnet) and Secret Internet Protocol Router Network (SIPRNet). AIR facilitates timely access to accurate, authoritative, and reliable information, and supports acquisition oversight, accountability, and decision-making throughout the DoD for effective and efficient delivery of warfighter capabilities.

The implementation of AIR requires that milestone documents be uploaded to the system within 5 business days of their approval. Offices of Primary Responsibility (OPRs) are responsible for loading documents, appropriately marking documents, setting document permissions, and managing access to their documents. It is important that OPRs load documents in a timely fashion and with appropriate accessibility.

All AIR users are able to view the entire list of documents uploaded to AIR for all programs through the AIR Structured Metadata Search function. Access to view/download specific documents is dependent on the view permissions set by the document uploader. The system provides the capability for every user to request access to a document that has been uploaded with restricted view permissions.

AIR is available to registered users. AIR registration is available to DoD and DoD Contractors.

**CH 1–5.4.3 Analytical Capabilities**

This Section provides an overview of information and data analytics.

**CH 1–5.4.3.1 Affordability Capability**

The Affordability capability supports both reporting and analysis, and contains the following data:

- Acquisition and Sustainment Goals or Caps, which are initially recorded in Acquisition Decision Memoranda.
- Current estimates recorded in Affordability by the PMs for Major Defense Acquisition Programs (MDAPs) and Major Automated Information System (MAIS) programs.
Affordability information can help Milestone Decision Authorities (MDAs) and their staffs compare program current estimates with their caps or goals, and assist DoD Components and OSD in planning and budgeting. Refer to CH 1–5.4.2.3., Earned Value Management Central Repository (EVM-CR), for current information on MDAP and MAIS programs with earned value reporting.

**CH 1–5.4.3.2 Standard Data Queries**

DAMIR provides 80+ Standard Data Queries—views of the data reported in DAMIR. These queries are grouped in the following categories and provide support for cross-program analysis:

- Constant Year
- Strategic Planning
- Contracts
- Data Quality
- DAES Reports
- Funding and Appropriations
- Breaches
- Program Information
- MAIS Unique Reports
- Affordability

Standard Data Queries are available to authorized DAMIR users from the home page of DAMIR. All users have access to queries related to SARs. For questions about access, please contact osd.damir@mail.mil, or call 703-679-5345.

Users may request a one-time report or a query of the DAMIR database by sending the request to osd.damir@mail.mil. Results from queries are delivered in an Excel spreadsheet.

**CH 1–5.4.3.3 Portfolio Views**

The Portfolio View section of DAMIR provides dashboards, which are graphical representations of the Selected Acquisition Report (SAR) and Defense Acquisition Executive Summary (DAES) data for a selected portfolio of programs. Users can select from standard portfolios or create their own.

Portfolio Views are accessible to authorized DAMIR users from the home page of DAMIR [CAC Required, Restricted Access].

**CH 1–5.4.4 Dashboards**

The following Sections describe the available dashboards:

**CH 1–5.4.4.1 Significant Acquisition Watchlist (SAW) Dashboards**

The Significant Acquisition Watchlist (SAW) dashboards present views of Defense Acquisition Executive Summary (DAES) data for Major Defense Acquisition Programs (MDAPs), Major Automated Information System (MAIS) programs, and Special Interest programs to support acquisition analysis and decision-making. The SAW provides information regarding DAES Assessment ratings, Earned Value (EV) data, and performance against Acquisition Program Baseline (APB) thresholds to better facilitate analysis. Additionally, the SAW provides the capability to click through to supporting program data in DAMIR.

SAW provides the following data views:
• **Program Assessments.** Program office, DoD Component personnel, and DAB members and advisors who participate in the DAES have a consolidated view of Program Management Office and OSD assessment ratings, contract information, and milestone information, which provides a helpful starting point for discussion of program status.

• **Contractor Performance.** Program Management Office, DoD Component personnel, and DAB members and advisors who participate in the DAES can see a quick snapshot of earned value information, by contract.

• **Assessment Change Indicator and Status.** Program Management Office, DoD Component personnel, and DAB members and advisors who participate in the DAES can see an overview of the status of the programs in the portfolio, including differences and changes that may be indicators that deeper analysis and explanation are needed.

**CH 1–5.4.4.2 Contract Dashboard**

The Contract Dashboard has three views:

• **Contract Location.** OSD and DoD Component analysts can understand what state economies are supported by programs and contracts, which may be useful in communicating with Congress.

• **Contract Performance.** OSD and DoD Component analysts can understand the performance of high-priority contracts, which may provide insight useful in managing vendors.

• **Contractors.** OSD and DoD Component analysts can understand what contractors support what programs, and what DoD Component owns each contract, which may help identify potential economies of scale or partnership opportunities.

The top-level Contract Dashboard provides all three individual dashboards in one screen.

**CH 1–5.4.4.3 Cost Dashboard**

The Cost Dashboard provides the following:

• **Cost Variance Total Current Change.** OSD and DoD Component analysts can see a graphical representation of Cost Variance changes for their portfolios, by category, which may highlight issues that need to be addressed or factors that need to be considered in management and planning.

• **Current Estimate Analysis.** OSD and DoD Component analysts can understand programs’ portion of total estimated costs, by appropriation category, which may provide insight for planning.

• **Unit Cost by % Change.** OSD and DoD Component analysts can understand the extent to which programs’ unit cost has changed in comparison to their baselines, which may highlight issues that need to be addressed or factors that need to be considered in management and planning.

**CH 1–5.4.4.4 Funding Dashboard**

The Funding Dashboard provides the following:

• **Acquisition Funding Projection.** OSD and DoD Component analysts can see how funding for programs is expected to change over time, which may provide insight about programs’ life cycles and OSD priorities.

• **Sunk Funding.** OSD and DoD Component analysts can see what funding has been used and what funding remains on programs, which provides insight for planning.

**CH 1–5.4.4.5 Schedule Dashboard**

The Schedule Dashboard provides:
Major Schedule Milestones. OSD and DoD Components have a quick reference and graphic depiction of major milestones for a portfolio, which provides a high-level understanding of program history and plans.

**CH 1–5.4.5 Earned Value Analysis**

Earned Value Analysis (EVA) is a suite of earned value charts and graphs designed to visually illustrate a contract's cost and schedule performance. It also serves as a decision support tool that displays Earned Value trends and highlights ranges of Estimates at Completion (EACs) used to inform leadership of the contract's overall health and risk. [EVA] [CAC Required, Restricted Access] is accessible to authorized DAMIR users.

**CH 1–5.4.6 Minimum/Maximum/Economical Production Rate**

The Minimum/Maximum/ Economical Production Rate (MME) capability provides analysts quick production efficiency assessments of equipment procurements projected in the President's Budget. [MME] [CAC Required, Restricted Access] is accessible to authorized DAVE users.

**CH 1–5.4.7 Obligations and Expenditures**

The Obligations and Expenditures (O&E) capability provides analysts with insight into financial execution performance of Major Defense Acquisition Programs (MDAPs) and Major Automated Information System (MAIS) programs. The capability also offers the ability to analyze by budget line item. [O&E] [CAC Required, Restricted Access] is accessible to authorized DAVE users.

**CH 1–5.4.8 Cost and Software Data Reporting System**

The Cost Assessment Data Enterprise (CADE) is a secure web-based information management system that hosts Contractor Cost Data Reporting (CCDR) and Software Resources Data Reporting (SRDR) repositories for all acquisition programs with Cost and Software Data Reporting System (CSDR) contract requirements. The CSDR-Submit Review (SR) provides a collaborative data requirements planning feature, centralized reporting, collection, and distribution of key CSDR data, and supporting CSDR materials for current MDAP and MAIS programs.

CAPE’s Defense Cost and Resource Center (DCARC) is the team that plans, validates, and manages the CSDR requirements for the DoD while working with many different stakeholders, including the Service Cost Centers, Program Management Offices (PMOs) and Systems Commands (SYSCOMs). The CAPE Deputy Director of Cost Analysis is the approval authority for CSDRs.

DACIMS (Defense Automated Cost Information Management System) is an application within CADE that hosts scanned images of historical contractor cost data reports for legacy MDAPs and MAIS, dating back to 1966. DACIMS also contains supporting CSDR materials such as CWBS (Contractor Work Breakdown Structure) dictionaries and CSDR validation memos. DACIMS can be accessed via the [CADE Portal](#).

**CH 1–5.4.8.1 Cost Assessment Data Enterprise**

The Cost Assessment Data Enterprise (CADE) is an OSD CAPE initiative with the goal of increasing analyst productivity and effectiveness by collecting, organizing, and displaying data in an integrated single web-based application. CADE provides government analysts with a command and control website housing seamless integration of authoritative source data, which are easily searchable and retrievable. CADE increases analyst productivity and effectiveness while improving data quality, reporting compliance, and source data transparency.

Another CADE goal is to provide common data visualization methods to help depict each program’s unique story; a task which previously took months to create. CADE offers the analyst a reduction in the time spent on ad hoc data collection and validation, allowing more time for in-depth, meaningful analysis in support of the DoD’s mission.
Full access is available for government analysts. Support contractors may access those data for which they have a valid Non-Disclosure Agreement (NDA) with the weapons contractor. Further information may be found at the CADE Portal.

CH 1–5.4.9 DoD Resources Data Warehouse

The DoD Resources Data Warehouse (DRDW) is OSD CAPE’s authoritative web-based solution for accessing and analyzing reports and data associated with the DoD Future Years Defense Program (FYDP), DoD Budget, Selected Acquisition Reports (SAR), and Defense Acquisition Executive Summary (DAES) reports from the 1960s to the present.

Using the Business Intelligence tools available at the DRDW, DoD analysts can conduct ad hoc analyses regarding Program/Budget dollar, manpower, and forces data across a variety of areas, including major headquarters' activities, space, intelligence, and the IT budget. Besides researching Comptroller’s Procurement dollars and quantities, analysts can also conduct ad hoc analysis on MDAP data, including Funding, Baseline, and Unit Cost.

OSD CAPE conducts a 1-day course regarding the use of the Business Intelligence tools needed to build queries, tables, pivots, charts, and reports from DRDW data. The course includes a detailed explanation of the DoD resource data structure and the processes used to develop a variety of Title X resource documents. This is an 8-hour block of instruction, accredited in the DoD Financial Management Certification Program.

DRDW can be accessed via the Secret Internet Protocol Router Network (SIPRnet) at OSD CAPE’s portal. Once there, as part of creating an OSD CAPE EXPRESSO account, request DRDW access.

Chapter 1 Supplement—International Acquisition and Exportability
CH 1-S–1. Purpose

The purpose of this Supplement is to provide detailed information regarding the International Acquisition & Exportability (IA&E) concepts summarized in the Defense Acquisition Guidebook (DAG) Chapter 1 – Program Management. The term “IA&E” in DoDI 5000.02 is used to encompass all of the elements of international involvement in a Department of Defense (DoD) program – exploring foreign solutions, international cooperative programs (ICPs), foreign sales or transfers, defense exportability design and development, and Technology Security and Foreign Disclosure (TSFD).

CH 1-S–2. Background

Program management should strive to identify and address IA&E considerations during each phase of the acquisition life cycle. Program management decisions on the extent of potential allied and friendly nation participation in systems development—as well as efforts to incorporate Defense Exportability Features (DEF) in DoD systems to facilitate future sales and transfers—should be addressed as early as possible. Given the wide array of U.S. laws, regulations, and policies governing these IA&E areas, and the multiple DoD and U.S. Government organizations that oversee them, achieving successful IA&E outcomes requires a comprehensive, integrated approach to international acquisition activities by program management during each phase of the Defense Acquisition System.

Within this Supplement, program management can find further information on the following key aspects of IA&E:

- Types of international acquisition involvement.
- Tools available to identify and develop international acquisition programs.
- Incorporation of international acquisition considerations into program acquisition strategies.
- Procedures used to establish international agreements.
- Details on Security Assistance/Foreign Military Sales policies
International logistics agreements and related cooperative logistics activities
Technology Security and Foreign Disclosure processes.
Program protection documentation requirements.

CH 1-S–2.1 International Acquisition Involvement

International involvement in a DoD acquisition program include various forms of international acquisition activity such as exploring foreign solutions (often through international contracting activities); ICPs; and Foreign Sales or Transfers, as outlined in CH 1–4.2.8.

Statutory requirements and DoD Guidance requires that program management consider international acquisition involvement across the acquisition life cycle, in order to meet U.S. national security objectives to enhance coalition interoperability, decrease costs to the DoD and taxpayer through greater economies of scale, and improve the international competitiveness of U.S. defense systems. In particular, DoDD 5000.01 (Encl. 1, para E1.1.18) and DoDI 5000.02 (Encl. 2, para 7.a. (1)) require acquisition managers to consider international cooperation and exportability, develop systems that are interoperable with coalition partners, and identify potential technologies from both domestic and foreign sources. DoDI 2010.06 (para 3.a), addresses design efforts to enhance coalition interoperability. Statutory requirements in 10 USC 2431a (para (c)(2)(G)) and 10 USC 2350a (para (e)), require an IA&E assessment of a program’s international involvement before the first milestone or decision point and at subsequent milestones.

A key goal of international acquisition is to reduce weapons system acquisition costs through cooperative development, production and support ICPs, Foreign Military Sales (FMS), and/or Direct Commercial Sales (DCS). Program managers should consider international acquisition involvement to the maximum extent feasible consistent with core business practices and with the overall political, economic, technological, and national security goals of the United States.

CH 1-S–2.2 Exploring Foreign Solutions

A potential viable alternative business approach to development of a U.S. item is the acquisition of foreign defense equipment to meet DoD capability requirements established through DoD’s Joint Capabilities Integration and Development System (JCIDS) process. Per DoDD 5000.01 (Encl. 1, para E1.1.18), program managers first consider the procurement or modification of commercially available products, services, and technologies from domestic or international sources, or the development of dual-use technologies, before proceeding with other acquisition options. Prior to the Materiel Development Decision (MDD), program management conducts an initial IA&E assessment to determine whether there are potential foreign solutions that would meet U.S. capability requirements:

- Are there allied or friendly nation systems that may potentially meet the U.S. requirements, either as-is or with modifications?
- Are there allied and friendly nations with similar operational requirements that either have or are actively considering initiation of a program with similar objectives, providing a basis for potential ICP participation?
- Are there leading-edge capabilities or technologies in other countries that should be evaluated for incorporation into the program through either ICP participation or international contracting? (See CH1-S-2.2 and CH1-S-5 for further details on ICPs.)

While individual acquisition program offices can conduct evaluations of potential foreign solutions with their own resources, the Office of the Secretary of Defense (OSD) Foreign Comparative Testing (FCT) program offers a structured and funded means for evaluating the suitability of purchasing foreign non-developmental items to fulfill DoD capability requirements, in lieu of developing a similar U.S. item. See the OSD Comparative Technology Office Portal for additional details on the FCT program.
CH 1-S–2.3 International Cooperative Programs

An ICP is any acquisition program or technology project that includes participation (e.g., cooperative development, cooperative production, coalition interoperability, and research and development) by the United States and one or more foreign nations through an international agreement during any phase of a system’s life cycle.

The key objectives of ICPs are to reduce weapon systems acquisition costs through cooperative development, production, product improvement and support, and to enhance interoperability with allied and friendly nations. Program management efforts to identify ICP opportunities before entering into a formal acquisition program may be challenging, but such activities can provide DoD with potentially high payoffs in future cost savings, increased interoperability, operational burden-sharing, and more affordable life-cycle costs.

Program management should assess the system’s ICP prospects based on known and projected allied/friendly nation capability requirements, plans for development of similar systems in the global defense market, previous foreign purchases of similar U.S. systems undergoing major upgrades, and other indicators of prospective foreign demand for the new system. If the system is not restricted as a U.S.-only system, the program manager must plan for export to safeguard critical program information (CPI) and any other controlled or classified information. DoDI 5000.02 (Encl. 2, para 7.b.) establishes overall ICP program management requirements.

In deciding whether to pursue an ICP, the program manager consults with their respective DoD Component International Programs Organization (IPO) (i.e., Deputy Assistant Secretary of the Army for Defense Exports and Cooperation, Navy International Programs Office, Deputy Under Secretary of the Air Force for International Affairs), and consider the following criteria:

- Ability of the partner nation(s) to participate in an ICP, taking into account TSFD considerations, where there are clear DoD benefits (e.g. interoperability, cost savings, operational burden-sharing, and political-military benefits);
- Ability to establish an ICP management structure in the international agreement where the designated program manager (U.S. or foreign) is fully responsible and accountable for the cost, schedule, and performance of the resulting system; and
- Demonstrated DoD Component and partner nation(s’) willingness to fully fund their share of the ICP.

Formulation of ICPs normally requires harmonization of U.S. and coalition requirements, cost and work sharing, intellectual property rights, and technology transfer (including TSFD and exportability design considerations), among others. Program managers, working closely with their DoD Component’s IPO, are encouraged to follow the procedures outlined in CH1-S-6.1 to establish international agreements for ICPs with allied and friendly nations, the procedures in CH1-S-9 for TSFD considerations, and the guidance in CH1-S-4 regarding designing in exportability as part of ICP program efforts. Once an ICP is established through a signed international agreement, the DoD Component remains responsible for preparation and approval of most statutory, regulatory, and contracting reports and milestone requirements, as listed in DoDI 5000.02 (Encl. 1, Table 2) for system-related ICP international agreements. Prior to terminating or substantially reducing U.S. participation in Major Defense Acquisition Program ICPs with signed International Agreements (IAs), DoDI 5000.02 (Encl. 2, para 7.b(2)) requires DoD Components to notify and obtain the approval of the Defense Acquisition Executive.

While most of the funding for cooperative Research, Development, Test and Evaluation (RDT&E) activities may need to be provided from program funding, program management should explore the availability of additional parallel funding for these efforts through the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics/International Cooperation Coalition Warfare Program (CWP) and/or the Military Department’s International Cooperative Research and Development (ICR&D) programs. See CH1-S-5.5 for details about the CWP.
Additional information on ICP planning and execution considerations may be found on Defense Acquisition University’s International Acquisition Management Community of Practice (ICoP) website.

CH 1-S–2.4 Foreign Sales and Transfers

Sales and transfers refer to the transfer of U.S.-origin defense articles and services to allies, friendly countries, and authorized international organizations under a variety of authorized programs. The following subsections provide guidance on pursuing the various activities.

Per 10 USC 2431a (c)(2)(G) and 10 USC 2350a(e), program managers should assess the system’s prospects for foreign sales and transfers of the system based on a worldwide inventory of similar systems, U.S. share of the market, previous foreign purchases of similar U.S. systems, and prospective foreign demand for the new system. If this assessment indicates that there is a reasonable potential for future foreign sales and transfers, program managers also assess whether to explore designing in exportability. Types of foreign sales that may be considered include FMS, DCS, Hybrid FMS/DCS/ICP programs, and Building Partner Capacity (BPC) programs. Decisions about designing in defense exportability made during the Materiel Solution Analysis (MSA) and Technology Maturation and Risk Reduction (TMRR) phases generally define the nature of the entire program. Once the program enters the Engineering and Manufacturing Development (EMD) phase, it is difficult to adopt major IA&E-related programmatic changes without significant schedule or cost adjustments.

DoD policy states that the U.S. Government should agree to sell through FMS or DCS only those major defense equipment systems that have satisfactorily completed U.S. Operational Test and Evaluation (OT&E) required prior to approval of full rate production. An exception to the policy requires a Yockey Waiver, described further in CH1-S.4 on Yockey Waivers.

CH 1-S–3. Documenting International Acquisition and Exportability in the Acquisition Strategy

As described in CH 1–4.2.8, program management should document their planned IA&E efforts in the International Involvement section of the program’s Acquisition Strategy as required by 10 USC 2431a(para (c)(2)(G)) and 10 USC 2350a (para (e)), as amended. As part of this process, program management should update the International Involvement section with an analysis of IA&E requirements and foreign sales potential at each respective Milestone. A summary of requirements for each Milestone is illustrated in DoDI 5000.02 (Encl. 1, Table 2). Table 1 shows the IA&E planning actions that occur during each acquisition phase and may be considered for incorporation into the program IMP/IMS.

Table S-1: IA&E Actions during the Acquisition Phases

<table>
<thead>
<tr>
<th>Acquisition Phase</th>
<th>IA&amp;E Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Materiel Solution Analysis</td>
<td>• Conduct an initial IA&amp;E assessment to identify potential existing foreign solutions, ICP opportunities, foreign technology, or potential for future foreign sales.</td>
</tr>
<tr>
<td></td>
<td>• Review Initial Capabilities Document (ICD) to identify potential coalition requirements, and potential foreign market to gain an understanding of coalition interoperability and exportability requirements.</td>
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<tr>
<td>Materiel Solution Analysis</td>
<td>• Assess procurement or modifications of existing U.S. or foreign solutions as part of the OSD CAPE Analysis of Alternatives prior to starting a new development program.</td>
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<tr>
<td></td>
<td>• Assess program’s potential for international cooperative research, development, production, logistics support, interoperability, and defense exportability.</td>
</tr>
<tr>
<td>Acquisition Phase</td>
<td>IA&amp;E Actions</td>
</tr>
<tr>
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<tr>
<td><strong>Update the program’s IA&amp;E assessment to identify specific existing or projected international agreements(s), Joint Requirements Oversight Council (JROC)-validated coalition interoperability requirements, international markets, and potential program protection issues and requirements.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Use the program’s Acquisition Strategy at Milestone A to advise the Milestone Decision Authority if the program should address international involvement (e.g., foreign solutions, coalition interoperability, ICP participation, future foreign sales, and design for exportability) during TMRR.</strong></td>
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<tr>
<td><strong>Consider establishing one or more mutually beneficial system development ICPs.</strong></td>
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<tr>
<td><strong>Consider establishing cooperative RDT&amp;E projects under the terms of existing RDT&amp;E MOUs with allied and friendly nations.</strong></td>
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<tr>
<td><strong>Continue TSFD planning and approval activities.</strong></td>
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<tr>
<td><strong>Conduct defense exportability feasibility study and design efforts.</strong></td>
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<tr>
<td><strong>Conduct initial FMS planning efforts.</strong></td>
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<tr>
<td><strong>Use the program’s Acquisition Strategy at Milestone B to advise the Milestone Decision Authority which international involvement efforts should be planned and implemented during EMD.</strong></td>
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<tr>
<td><strong>Continue TSFD and export control efforts in support of existing ICPs, as appropriate.</strong></td>
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<tr>
<td><strong>Complete defense exportability design efforts.</strong></td>
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<tr>
<td><strong>Establish initial FMS arrangements in the latter stages of EMD and Low Rate Initial Production (LRIP), as appropriate.</strong></td>
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<tr>
<td><strong>Use the program’s Acquisition Strategy at Milestone C to advise the Milestone Decision Authority which international involvement efforts should be planned and implemented during Production &amp; Deployment phase.</strong></td>
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<tr>
<td><strong>For programs with substantial international involvement, develop an initial International Business Plan (IBP).</strong></td>
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<tr>
<td><strong>Use the updated IBP to achieve synergies and economies of scale through a combination of DoD and foreign recurring production procurement requirements or non-recurring product improvement investment.</strong></td>
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<tr>
<td><strong>Pursue appropriate type(s) of ICPs and foreign sales/transfer arrangements throughout the program’s life-cycle.</strong></td>
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</tr>
<tr>
<td><strong>Use the updated IBP to achieve synergies and economies of scale affordability benefits through a combination or coordination of DoD and foreign Operations and Support (O&amp;S) non-recurring investment and recurring O&amp;S phase procurement requirements.</strong></td>
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<tr>
<td><strong>Enhance logistics support for foreign operators of U.S. systems through logistics support ICPs, FMS/DCS, or Acquisition and Cross-Servicing Agreements throughout the program’s lifecycle.</strong></td>
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**CH 1-S–3.1 Acquisition Strategy International Involvement**

The following information (at a minimum) is expected in the Acquisition Strategy International Involvement section:

- Any limitations on foreign contractors being allowed to participate at the prime contractor level.
- International Cooperation
  - Summary of any plans for cooperative programs.
Summary or listing of any existing and/or projected international agreements (e.g. Treaties, cooperative programs, MOUs, project arrangements, etc.).

Cooperative Opportunities Document required elements from 10 USC 2350a (para (e)), as amended:
- Identify whether there is a requirement for the system or subsystems to be interoperable with friendly nations, partners, or organizations.
- Summarize whether projects similar to the one under consideration by DoD are in development or production by one or more friendly nations, partners, or organizations.
- Advantages and disadvantages of seeking a cooperative development program with regard to program timing, developmental and life cycle costs, and technology sharing.
- Recommendation on whether DoD should pursue a cooperative development program for the system.

- Defense Exportability
  - Describe whether the program is planning or conducting an OUSD (AT&L)-funded or acquisition program-funded DEF feasibility study of the foreign market, technical feasibility, and costs associated with designing in defense exportability.
  - Summarize the interim or final results of any such study and plans to incorporate DEF into final designs.

- Sales and Transfers
  - Specify the potential or plans for foreign sales and transfers, the likelihood of these sales (High, Medium, or Low), and the countries involved.
  - Include whether previous generations of the system have been sold and to which countries they were sold.
  - For those programs with existing or potential foreign sales and transfers, specify the projected impact (risk and benefits) to the program's cost, schedule, and performance of these foreign sales.

To implement their Acquisition Strategy, DoD acquisition programs with substantial international involvement should also consider developing an International Business Plan (IBP) prior to Milestone C to ensure effective integration of domestic and international acquisition efforts throughout the program's life-cycle.

**CH 1-S–4. Defense Exportability Integration**

Defense Exportability Integration refers to DoD design and development activities pursued within the Defense Acquisition System to incorporate technology protection measures (also referred to as DEF) in initial designs—including the design and development of anti-tamper and differential capabilities—leading to production of one or more exportable system configurations for ICPs or foreign sales. Developing and incorporating defense exportability in initial designs facilitates timely and efficient implementation of future DoD cooperative programs or foreign sales and transfers. The primary objectives and benefits of designing and incorporating DEF in DoD systems include:

- Enhances interoperability with allied and friendly nations.
- Enables more timely and efficient ICPs and/or sales and transfers that leverage partner nations' defense investments to improve overall DoD system production and sustainment affordability through economies of scale savings.
- Provides flexibility for U.S. production and sustainment by extending active production and sustainment capability through ICPs and/or sales and transfers.
- Enables the capability to be available to allies and friendly countries earlier in production, thereby building partner capacity for operational burden-sharing sooner.

When considering whether to pursue defense exportability in a program, program managers may pursue DEF initiatives either under the sponsorship of the OUSD(AT&L) DEF Pilot Program, or outside of the
pilot program using other sources of budgeted and authorized funding (e.g., program funding, DSCA Special Defense Acquisition Fund [SDAF], or ICP/FMS/BPC funding). Consistent with Milestone Decision Authority decisions at each milestone, these DEF efforts may include investigating the feasibility (from potential international market, cost, engineering, and exportability perspectives) of designing and developing differential capability and program protection measures for exportable configurations. These efforts would be conducted in the early phases of the acquisition process and continue throughout the program’s life cycle. See the DEF Policy Implementation Memorandum and Guidelines (USD(AT&L)), April 9, 2015, for overarching DEF policy guidance and procedures.

**CH 1-S–4.1 Defense Exportability Features (DEF) Pilot Program**

Authorized by the Fiscal Year 2011 National Defense Authorization Act (Section 243, as amended), the DEF Pilot Program expanded the Department’s authority to conduct defense exportability efforts by enabling selected programs to develop and incorporate technology protection features into designated systems during their research and development phases.

The DEF Pilot Program is administered by the Director, International Cooperation (IC), OUSD(AT&L). On an annual basis, DoD Components nominate systems to participate in the pilot program, which are reviewed and selected by OUSD(AT&L)/IC in coordination with the Assistant Secretary of Defense for Acquisition. Once selected as a DEF Pilot project, Program Offices may request funding from OUSD (AT&L)/IC to support an agreed industry cost-sharing contract to conduct feasibility or design studies to determine: the potential international market; technical feasibility; non-recurring engineering (NRE) costs; and return on investment of designing and implementing DEF in one or more future export variant(s).

AT&L DEF policy guidance for the pilot program can be found in the USD (AT&L) DEF Policy Implementation Memorandum and Guidelines (April 9, 2015). Amplifying Guidance on adjusted industry cost-sharing requests can be found in Supplemental Guidance for Reviewing and Submitting Industry Requests for an Adjusted Cost-Sharing Portion (February 23, 2016).

AT&L’s Better Buying Power (BBP) 2.0 and 3.0 capitalized and expanded upon the DEF Pilot Program by including program consideration of “incorporation of DEF in initial designs” under its “Control Costs throughout the Product Life Cycle” section. Bringing greater attention to the benefits of considering exportability throughout the acquisition lifecycle, BBP 2.0 and 3.0 have helped to incentivize DoD program management to assess the feasibility of designing and developing technology protection features into systems early in their acquisition life cycle.

**CH 1-S–4.2 Defense Exportability Implementation**

The Milestone Decision Authority decision on whether to proceed with development of one or more exportable system versions may be influenced by the results of DEF feasibility studies and/or design efforts, and several factors that may include:

- Total NRE costs to design and develop exportability features.
- Availability of funding to pay the NRE costs (e.g., program funds, DSCA SDAF, ICP or foreign sales funding).
- A signed ICP international agreement.
- One or more signed FMS Letter(s) of Offer and Acceptance (LOA).

The Defense Acquisition University's International Community of Practice website provides best practice advice on planning and implementing Defense Exportability Integration efforts.

**CH 1-S–5. Developing an International Program**

As noted in CH 1–4.2.8.1, several mechanisms are available to program management to help identify potential ICP opportunities. The following subsections, as well as the International Cooperation in
Acquisition, Technology and Logistics (IC in AT&L) Handbook and the Defense Acquisition University’s International Community of Practice website, provide additional information on DoD International Armaments Cooperation activities.

CH 1-S–5.1 International Fora

There are many international fora dedicated to discussing mutual armaments needs and early technology cooperative projects available to program management to gain information about potential ICP partners. NATO has a number of fora that may be useful to program management in identifying support for cooperative programs. In particular, the subsidiary “Main Armaments Groups” to NATO’s Conference of National Armaments Directors are:

- NATO Army Armaments Group
- NATO Navy Armaments Group
- NATO Air Force Armaments Group

Program management may also explore cooperative opportunities through the NATO Science and Technology Organization, which conducts and promotes cooperative research and information exchange in NATO, and The Technical Cooperation Program with Australia, Canada, New Zealand, and the United Kingdom, which is dedicated to cooperation in conventional military technology development. In addition there are about 30 bilateral fora, such as the U.S.-Japan Systems and Technology Forum and the U.S./Canadian Armaments Cooperation Management Committee, that have a similar purpose. For the full list of international fora, see the IC in AT&L Handbook, Chapter 11.

Many Combatant Commands hold Science and Technology conferences to engage DoD, industry, and allied/friendly nations to discuss challenges and priorities in research and development. In addition, the MILDEP R&D offices (i.e. Office of Naval Research – Global; Army International Technology Centers; and Air Force Research Lab/Office of Scientific Research) also hold workshops with foreign partners to encourage science and technology information exchanges to assess potential cooperative programs.

CH 1-S–5.2 International Exchanges of Information and Personnel

Another useful source for identifying and formulating cooperative program opportunities that has proven useful to program management is the DoD RDT&E Information Exchange Program (IEP), which provides a standardized way of conducting bilateral science and technology information exchange (formerly called data exchange). The exchange of RDT&E information on a reciprocal basis with other countries is governed by DoDI 2015.4 (paras 4 - 5), “Defense RDT&E Information Exchange Program (IEP).”

Another source for identifying cooperative opportunities is the Defense Personnel Exchange Program, which includes the Engineer and Scientist Exchange Program (ESEP). Under the ESEP, an engineer or scientist is sent from the U.S. to a foreign lab or from a foreign defense organization or lab to a U.S. lab for a specific time period (typically 1-2 years) to be part of that national team.

Other exchanges that support ICPs are exchanges of personnel as Foreign Liaison Officers (FLOs). Under a FLO assignment, the military personnel continue to report to their nation while conducting information exchanges with the host nation to support understanding of common areas of interest and to support national defense planning.

CH 1-S–5.3 Exploratory Discussions

Before entering into an ICP, program management should pursue dialogue with potential partners. Such dialogue may be conducted through informal discussions; a forum (e.g., working group or steering committee) established under an existing international agreement; or as a stand-alone forum, all of which require appropriate disclosure guidance. In addition to disclosure guidance, these fora typically have a Terms of Reference. When the intent of a dialogue is to discuss the potential establishment of an international agreement, they are usually called “exploratory” or “technical” discussions. They are not
“negotiations,” since the provision or negotiation of international agreement text must first be formally authorized. See CH1-S-6 for further details regarding AT&L ICP international agreement procedures.

Exploratory discussions are characterized by the avoidance of any binding commitments and are focused on laying out details for a proposed project plan. Program management should seek and obtain any required TSFD release authority from their DoD Component Foreign Disclosure Office (FDO) prior to engaging in exploratory discussions involving sensitive or classified DoD information or technology. DoD contractors supporting program management in exploratory discussions should also ensure they seek and obtain any required U.S. Government export control approvals prior to participation (see CH1-S-9 and CH1-S-10 for further details regarding TSFD and export control).

CH 1-S–5.4 Science and Technology Cooperation

Typically, DoD programs and potential partner nations pursue Science and Technology (S&T) cooperative projects or conduct ICP feasibility studies before entering into an ICP systems acquisition.

- Program management may use S&T cooperative projects with allied and friendly nations in basic research or early technology development to develop, mature, or demonstrate defense technology. S&T cooperative projects typically focus on technology maturation or demonstration efforts that may or may not relate to a future acquisition program.
- ICP feasibility studies are used to explore the potential for future bilateral or multilateral ICPs. These studies provide nations considering participation in a future ICP with a programmatic and technical appraisal of the nations’ ability to successfully develop and produce equipment for their operational forces.

Both S&T cooperative projects and feasibility studies are established and implemented through international agreements. See CH1-S-6 for details on international agreements related to ICPs.

CH 1-S–5.5 Coalition Warfare Program

The Coalition Warfare Program (CWP) is an Office of the Under Secretary of Defense, Acquisition, Technology and Logistics/International Cooperation (OUSD (AT&L)/IC program that funds cooperative research and development projects between the DoD and foreign partners that meet strategic, Combatant Command, and "coalition warfighter" needs. The CWP pursues projects that enhance and increase U.S. and coalition defense capabilities in support of the following DoD technological or political objectives:

- Collaboratively addressing strategic technology gaps for current and future missions.
- Developing interoperability solutions for coalition operations.
- Strengthening current defense partnerships and developing new relationships.

CWP projects take new technology and mature it into the next stage of development or prepare it for transition to operational forces. These projects may also form the basis for future cooperation with our international partners.

CH 1-S–6. International Agreement Procedures

U.S. law requires an International Agreement (IA) for all ICPs. An IA is any agreement concluded with one or more foreign governments including their agencies, instrumentalities, or political subdivisions, or with an international organization. The IA delineates the respective responsibilities of the U.S. and partner nation(s) and is considered binding under international law. CH1-S-6 discusses “streamlined agreement procedures” and resources.

Per DoDI 5000.02, (Encl. 2, para 7.b.(1)), DoD Components are encouraged to use the OUSD(AT&L) “streamlined agreement procedures” for all AT&L-related IAs to comply with the more extensive IA documentation and coordination requirements described in DoDD 5530.3 (para 5.1), "International
Agreements.” MILDEPS and other DoD Components using these agreement procedures should obtain authority through this process from the Director, International Cooperation, OUSD (AT&L), prior to initiating negotiations on or concluding such IAs. Refer to the IC in AT&L Handbook for further guidance on International agreement procedures.

**CH 1-S–6.1 Preparation, Documentation, Coordination, and Approval**

The following procedures apply to DoD Components seeking to develop an IA:

Request for Authority to Develop and Negotiate (RAD) for all AT&L-related IAs:

- **Pre-RAD Actions.** As they plan and develop IAs, program staff members should consult with the cognizant DoD Component’s International Programs Organization (i.e., Deputy Assistant Secretary of the Army for Defense Exports and Cooperation, Navy International Programs Office, Deputy Under Secretary of the Air Force for International Affairs), as well as its foreign disclosure, legal, contracting, comptroller, and other relevant offices, and follow the provisions of the most recent version of DoD IA Generator (DoD IA Generator) products (i.e., document templates, formats, and guidance). The supporting IPO should consult with OUSD (AT&L)/IC prior to the development of an IA to ensure the latest DoD IAG template or guidance is being applied. Programs should contact their responsible IPO for specific details about how to obtain and use the DoD IAG.

- **RAD Initiation.** Prior to providing a proposed IA text to the foreign partner (i.e., initiating formal IA negotiations), the DoD Component should prepare and obtain OUSD (AT&L)/IC approval of a RAD package. This package will be comprised of a cover memo signed by senior-level management requesting such authority, a Summary Statement of Intent (SSOI) that describes the DoD Component’s “business case” for the proposed project, and the draft IA text.
  
  - All DoD Components should prepare a complete RAD package for Memoranda of Agreement/Understanding (MOAs/MOUs), including Master Information/Data Exchange Agreements/Arrangements (MIEAs/MDEAs), and forward the RAD package under a senior-level management cover memo to OUSD (AT&L)/IC for approval.
  
  - The three MILDEPS and the Missile Defense Agency have delegated authority, in accordance with strict guidelines from OUSD (AT&L)/IC, to develop and negotiate, but not conclude, Project Arrangements/Agreements (PAs) under a master/framework agreement/arrangement, Equipment and Material Transfer Arrangements/Agreements (E&MTAs), and 22 USC 2796d (Arms Export Control Act (AECA) Section 65) Loan Agreements (LAs). (Note: This delegated RAD approval process is further described in CH1–S–6.1.1). All other DoD Components are required to provide a RAD package to OUSD (AT&L)/IC for such approval.
  
  - The three MILDEPS have authority to develop, negotiate, and conclude Information/Data Exchange Annexes (IEAs/DEAs) under MIEAs/MDEAs after obtaining the concurrence of its own legal, foreign disclosure, and other relevant officials as part of its internal approval procedures. All other DoD Components should provide a RAD (and RFA) package to OUSD (AT&L)/IC for approval. In all cases, these IEAs/DEAs should be developed in accordance with DoDI 2015.4 (further guidance is detailed in the IC in AT&L Handbook, Chapter 13).

- **RAD Coordination/Approval.** OUSD (AT&L)/IC reviews the RAD package for completeness and quality, resolves any issues with the DoD Component, and then conducts
DoD/interagency coordination, as appropriate. The standard coordination period for MOAs/MOUs is 21 working days; for PAs, E&MTAs, and LAs it is 15 working days. This period may be expedited upon senior-level request at OUSD (AT&L)/IC's discretion. OUSD (AT&L)/IC then adjudicates any staffing comments prior to granting authority to develop and negotiate the IA via a formal memo.

- **IA Negotiation.** Typically, within 6-18 months of receipt of RAD authority, the DoD Component will complete negotiation of an IA in accordance with the provisions of the most recent version of the DoD IAG. OUSD (AT&L)/IC may also assist the DoD Components as needed, answering questions or providing guidance during negotiations, especially for any significant deviations to established procedures in the DoD IAG or other IA policy and guidance.

Request for Final Authority to Conclude (RFA) for all AT&L-related IAs:

- **RFA Initiation.** The DoD Component prepares the RFA package, which is comprised of a cover memo signed by senior-level leadership requesting such authority, an updated SSOI, and the negotiated IA text. For those IAs for which OUSD (AT&L)/IC provided RAD authority, the RFA package should also include a track change version of the IA text that clearly indicates the changes made to the RAD-approved text, as well as a brief comment indicating the reason for each change. Additional Congressional notification document requirements include:
  - RFA for an IA using 22 USC 2767 of the Arms Export Control Act (AECA Section 27) as the legal authority should also include a Project Certification for Congressional notification.
  - RFA for an IA using 10 USC 2350a as the legal authority with partners designated a “friendly foreign country” (i.e., countries that are not NATO members or major non-NATO allies) should also include a Project Report for Congressional notification.

- **RFA Coordination/Approval.** OUSD (AT&L)/IC next reviews the package for completeness and quality, resolves any issues with the DoD Component, and then conducts DoD/interagency coordination, as appropriate. The standard coordination period for MOAs/MOUs is 21 working days; for PAs, E&MTAs, and LAs it is 15 working days. This period may be expedited upon senior-level request at OUSD (AT&L)/IC's discretion. OUSD (AT&L)/IC then adjudicates any staffing comments prior to granting authority to conclude the IA via a formal memo. Note that the RFA coordination process regularly results in IA text changes that require re-engagement with the partner nation(s). Upon completion of RFA package staffing, but before OUSD (AT&L)/IC provides RFA approval, the following actions are applicable:
  - For IAs using 10 USC 2350a legal authority, OUSD (AT&L)/IC requests a determination from USD (AT&L), or designee, in accordance with 10 USC 2350a(b) that the project will improve, through the application of emerging technology, the conventional defense capabilities of NATO or common conventional defense capabilities of the United States and the partner nation.
  - For IAs using 10 US 2350a legal authority with those partners designated a “friendly foreign country,” OUSD (AT&L)/IC submits to Congress a Project Report for a required period of 30 calendar days.
  - For IAs using 22 USC 2767 legal authority, OUSD (AT&L)/IC requests coordination from the Department of State (DoS) within 21 working days and then submits to Congress a Project Certification for a required period of 30 calendar days.

**CH 1-S–6.1.1 Delegated RAD Approval Process**

An additional element of the “streamlined agreement procedures” referenced in DoDI 5000.02 is the IA delegated RAD approval process (also known as “Streamlining I” authority), which is an accredited IA coordination process applicable only to PAs, E&MTAs, and LAs. As stated earlier, all three MILDEPS and the Missile Defense Agency currently have this authority from OUSD (AT&L)/IC to develop and negotiate, but not conclude, these types of IAs. DoD Components interested in this delegated authority should...
formally apply to OUSD (AT&L)/IC to obtain it. A separate delegated authority, known as “Streamlining II” and authorized only for the Department of the Navy, is no longer in use and is not described here. The following procedures apply to DoD Components who have been delegated RAD approval authority:

- **RAD Initiation/Coordination/Approval.** The DoD Component prepares a RAD package, as described previously, and obtains the concurrence of its own legal, financial management, foreign disclosure, and other relevant officials as part of its internal, DoD Component RAD approval procedures. Upon completion of coordination, the RAD package should be approved at the DoD Component’s senior management level. The DoD Component should forward any coordination disputes to OUSD (AT&L)/IC for resolution.

- **RFA Initiation/Coordination/Approval.** Upon conclusion of IA negotiations, the DoD Component should follow the standard procedures in CH1-S-6 to obtain RFA approval.

**CH 1-S–6.1.2 Nuclear, Chemical, and Biological Fields Coordination**

OUSD (AT&L)/IC coordinates all IAs (including MOAs/MOUs, PAs, E&MTAs, and LAs) and IEAs/DEAs relating to nuclear, chemical, and biological (NCB) weapons technologies (including defenses against such technologies) with the Office of the Assistant Secretary of Defense for Nuclear, Chemical and Biological Defense Programs prior to approving the IA for negotiations or conclusion. DoD policy also requires such coordination as part of a DoD Component’s delegated RAD approval processes for NCB-related IAs.

**CH 1-S–6.2 AT&L IA Services and Responsibilities**

OUSD (AT&L)/IC oversees, develops and maintains the following policy, guidance, and tools in support of DoD Component IA development, negotiation, and conclusion:

- RAD/RFA package requirements and coordination processes
- SSOI format requirements and drafting guidance
- DoD IAG products, including MOA/MOU, MIEA/MDEA, PA, E&MTA, and LA templates, models, and guidance
- IEA/DEA format requirements and drafting guidance
- 22 USC 2767 Project Certification format requirements and drafting guidance
- 10 USC 2350a “Friendly Foreign Country” designation congressional notification format requirements and drafting guidance
- IC in AT&L Handbook (Chapter 12)
- End-User Certificate Waivers, when required
- Review and approval of DoD Component requests for DoD IAG text deviations or waivers in RAD/RFA package submissions or during negotiations

OUSD (AT&L)/IC supports fulfilment of statutory requirements as follows:

- Obtains USD (AT&L) determination under 10 USC 2350a(b) ("Cooperative research and development agreements: NATO organizations; allied and friendly foreign countries") that a project will improve, through the application of emerging technology, the conventional defense capabilities of NATO or common conventional defense capabilities of the United States and the partner nation.
- Notifies Congress of those IAs that use 22 USC 2767 (Authority of President to enter into cooperative projects with friendly foreign countries) as their legal authority prior to authorizing IA signature.
- Notifies Congress of DoD designation of certain IA partners as “friendly foreign countries” (i.e., countries that are not NATO members or major non-NATO allies) as required by 10 USC 2350a(a)(3).
- Conducts interagency coordination with the DoS and the Department of Commerce (DoC) (see 22 USC 2767 and DoDD 5530.3) during RFA process.
Defense Acquisition University’s International Acquisition Management Community of Practice (ICoP) website provides IA formulation and negotiation best practice advice. DAU also offers courses that provide specific training in this area that should be taken by defense acquisition workforce personnel who will be directly involved in ICP IA efforts.

CH 1-S–7. Security Assistance/Foreign Military Sales

The U.S. Government’s security cooperation efforts include planning and implementation of Security Assistance program transfers of military articles and services to friendly foreign governments and specified international organizations through sales, grants, or leases. The Secretary of State is responsible for continuous supervision and general direction of the Security Assistance program. Within the DoD, Security Assistance efforts are conducted under the oversight of the Under Secretary of Defense for Policy (USD (P)), and are administered by the Defense Security Cooperation Agency (DSCA). While Foreign Military Sales (FMS) is the primary mechanism used to implement Security Assistance efforts, it is not the only mechanism. The Security Assistance Management Manual (SAMM) issued by DSCA defines policies and procedures for FMS and other Security Assistance programs.

The purchasing government is responsible for all costs associated with Security Assistance program sales. There is a signed Government-to-Government agreement, normally documented in a FMS Letter of Offer and Acceptance (LOA) between the U.S. Government and a foreign government. Each LOA is commonly referred to as an FMS case and is assigned a unique case identifier for accounting purposes. Under FMS, military articles and services, including logistics support and training, may be provided from DoD stocks or from new procurement. If the source of supply is new procurement, on the basis of having an LOA that has been accepted by the foreign government, the U.S. Government agency or MILDEP assigned as the Implementing Agency for the case is authorized to enter into contractual arrangements with U.S. industry to provide the articles or services requested.

The SAMM provides that acquisition in support of FMS cases be conducted in the same manner as it is for U.S. requirements, thus affording the customer the same benefits and protections that apply to DoD procurements. Many FMS system sales involve modifications to existing DoD systems that can entail significant development or integration efforts. Program management should ensure these efforts are managed with the same rigor used on comparable efforts for the DoD.

Contracting for FMS mirrors the process DoD uses for its own contracting actions. There are a few peculiarities associated with FMS contracts that are addressed in “Acquisitions for Foreign Military Sales,” DFARS (Subpart 225.7300). FMS procurement requirements may be consolidated on a single contract with U.S. requirements or may be placed on a separate contract, whichever is most expedient and cost effective. DAU’s International Acquisition Management website also provides advice on planning and implementing program management FMS-Acquisition best practices.

CH 1-S–7.1 Direct Commercial Sales

A Direct Commercial Sale (DCS) involves the commercial export by U.S. defense industry directly to a foreign entity of defense articles, services, training, or dual use items. Unlike the procedures employed for ICPs and FMS, DCS transactions are not administered by DoD and do not involve a Government-to-Government agreement. Rather, the U.S. Government control procedure is accomplished through license approvals by either the DoS or the DoC. The license approval authority is based on whether an item or
technology is identified on the U.S. Munitions List (USML) and is governed by the International Traffic in Arms Regulations (ITAR) or is governed by the Export Administration Regulations (EAR) through the Commerce Control List (CCL). If the item or technology is governed by the USML, DoS is the licensing authority in accordance with the ITAR. If the item or technology is governed by the CCL, then DoC is the licensing authority in accordance with the EAR.

DoD’s role in the export license approval process is to review proposed defense-related commercial sales or transfers for national security concerns. DoD’s recommendation is provided by the Defense Technology Security Agency (DTSA) to the cognizant licensing agency during the U.S. Government interagency coordination process. DTSA, as DoD’s lead agency for export license reviews, conducts in-depth national security reviews of export license requests for transfers of defense-related items referred from both DoS and DoC. DTSA also works closely with industry and international counterparts before licenses are requested to identify potential technology security or foreign disclosure issues. DoS and DoC consider all U.S. Government interagency positions when determining whether to approve export license requests.

The U.S. Government is not a participant in the ensuing DCS contract between the U.S. company and the foreign entity. However, it is common that some DoD support may be required for the effort. FAR (Subpart 245.302) provides that a contractor may use U.S. Government property for work with foreign governments and international organizations when approved in writing by the DoD. DSCA’s SAMM CH 4 (para C4.3.6) provides additional guidance on DCS.

**CH 1-S–7.2 Hybrid Foreign Sales**

The most frequent forms of “hybrid” foreign sales programs are FMS/DCS programs. DCS efforts involving major systems will typically have companion FMS-only efforts for sensitive components or equipment in support of the DCS case, resulting in a hybrid program. Program management should work with their industry partner to maintain an awareness of U.S. industry marketing of their system to ensure timely initiation of any required companion FMS cases.

Hybrid programs can also be constructed using a variety of ICP, FMS, and DCS program forms. These include programs where foreign nations have purchased a U.S. system through either FMS or DCS with the development of system upgrades or logistics sustainment conducted as an ICP in partnership with the DoD under the terms of an MOU.

Another hybrid program model provides production articles to foreign nations that participated in the cooperative development of the system under the terms of an ICP MOU, while the system is sold via FMS to those nations that did not participate in the ICP. In structuring these cooperative/sales hybrid programs, program management should ensure that ICP activities and FMS activities are segregated as the pricing principles and OSD oversight responsibilities for these programs are different. This can be achieved by using different program forms for different phases or with different foreign nations. Defense Acquisition University’s International Acquisition Management Community of Practice (ICoP) website provides advice on FMS-Acquisition best practices in this area.

**CH 1-S–7.3 Building Partner Capacity Programs**

BPC programs resemble FMS but have significant differences that program management should understand. Since 2004 Congress has authorized and funded a variety of BPC programs, such as the Iraq Security Forces Fund the Afghanistan Security Forces Fund, and the Global Train and Equip program. Enacted in December 2014, 10 U.S.C § 2282 provides DoD permanent authority to build the capacity of foreign security forces. These BPC programs are funded with U.S. Government appropriations rather than foreign funding or the State Department’s Foreign Military Financing program. BPC programs may provide defense articles and/or services to other U.S. Government departments and agencies under the authority of the Economy Act or other transfer authorities for the purpose of building the capacity of partner nation security forces and enhancing their capability to conduct counterterrorism, counter drug,
and counterinsurgency operations, or to support U.S. military and stability operations, multilateral peace operations, and other programs. DSCA policies and procedures are specified in DSCA’s [SAMM CH 15](#).

While BPC programs may look like FMS programs, program management should ensure their contracting officers are aware of the key differences between BPC and FMS transactions. Unlike the funding for FMS programs, which does not have an obligation period, the U.S. Government funding used for BPC programs retains the period of obligation associated with the appropriation of the funds as indicated in the pseudo LOA. In addition, in awarding contracts pursuant to a pseudo LOA, the provisions of the Federal Acquisition Regulation (FAR) applicable to FMS procurements do not apply to BPC programs.

Additional information on program management FMS-Acquisition Planning and Execution Considerations, may be found in the Defense Security Cooperation Agency (DSCA) [SAMM (Chapter 4)](#) and on the Defense Acquisition University’s International Acquisition Management Community of Practice (ICoP) website.

### CH 1-S–7.4 Yockey Waivers

DoD policy states that the U.S. Government should agree to sell through FMS or DCS only those major defense equipment systems that have satisfactorily completed U.S. Operational Test and Evaluation (OT&E) required prior to approval of full rate production. Therefore before offering FMS Price and Availability (P&A) data or a Letter of Offer and Acceptance (LOA) -- or approving an export approval for a DoD system that has not yet completed OT&E, the Component IPO should forward a request to DSCA for an OUSD(AT&L) “Yockey Waiver.” The Yockey Waiver authorizes the release of P&A data and/or an LOA (or a DCS offer) to a foreign customer, and directs the IPO to include precautionary language identifying the risks to the foreign customer should problems be discovered in OT&E that may require retrofit or redesign of components, support equipment, and/or other hardware or software; or if the U.S. Government decides not to place the system into production after it completes OT&E. The Yockey Waiver highlights that a foreign customer risks the potential of higher costs, nonstandard support to sustain the system, or reduced interoperability with U.S. forces. If DSCA concurs with the request, they forward the package to OUSD (AT&L)/IC for review and final approval.

The reason for the Yockey Waiver policy is that, prior to a DoD full rate production decision at Milestone C, there is the risk that the United States may decide not to produce the system based on the results of OT&E. This would present an undesirable situation if the United States has provided unrepresentative P&A data or committed under an LOA to deliver a system to an FMS customer – or approved a DCS or hybrid U.S. Government export approval for sale and delivery of the system -- but decided not to deliver this same system to U.S. forces. The foreign customer would be faced with nonstandard support to sustain the system, potentially higher costs than the FMS, DCS or hybrid offer for sale reflected, and might not achieve the desired level of interoperability with U.S. forces.

Details of this requirement and the steps to follow in submitting a Yockey Waiver request are found in DoDI 5000.02 (Encl. 2, para 7.c.) and DSCA’s [SAMM (para C5.1.8.3)](#).

### CH 1-S–8. International Logistics Agreements

DoD cooperative logistics standardization activities in support of acquisition programs include:

- International Standardization Agreements developed in conjunction with member nations of the North Atlantic Treaty Organization and other allies and coalition partners, as described in DoDM 4120.24 (Encl. 7, para 1.a.). Defense Acquisition University’s International Acquisition Management Community of Practice (ICoP) website also provides best practice advice (including related websites) on international standardization activities.

Benefits of cooperative logistics support agreements may be tangible, such as the U.S. receiving support for its naval vessels when in a foreign port; or intangible, such as the foreign nation receiving the implied benefit of a visible U.S. naval presence in the region. DoD cooperative logistics support activities include:
• Acquisition and Cross-Servicing Agreements (ACSAs)
• Logistics Cooperation IAs, used to improve sharing of logistics support information and standards, and to monitor accomplishment of specific cooperative logistics programs
• Host Nation Support Agreements
• Cooperative Logistics Supply Support Arrangements
• Cooperative Military Airlift Agreements
• War Reserve Stocks for Allies
• Agreements for acceptance and use of real property or services

The following sections provide more detailed discussion on the two types of acquisition-related agreements.

CH 1-S–8.1 Acquisition and Cross-Servicing Agreements

10 USC 2342 (para (a)(1)), “Acquisition Cross-Servicing Agreements (ACSAs),” authorizes the DoD, upon consultation with the Secretary of State, to conclude reciprocal agreements with foreign countries and regional and international organizations for the provision of logistics, support, supplies and services (LSSS). In an ACSA, each party may acquire or transfer LSSS to the other party on a reimbursable basis. Beyond the obvious material benefits, such agreements can lead to opening dialogue and creating relationships between the parties, which may serve to strengthen political-military relationships. ACSA authority is exercised by the Unified Combatant Commands. See the International Cooperation in Acquisition, and Logistics Handbook, Chapter 5 and the Defense Acquisition University’s International Acquisition Management Community of Practice (ICoP) website for additional information on ACSAs.

ACSAs allow for the provision of cooperative logistics support under the authority granted in 10 USC 2341-2350 (10 USC 2341, 10 USC 2342, 10 USC 2343, 10 USC 2344, 10 USC 2345, 10 USC 2346, 10 USC 2347, 10 USC 2348, 10 USC 2349, 10 USC 2349a, and 10 USC 2350). They are governed by DoDD 2010.9 and implemented by CJCSI 2120.01B. These documents are intended to provide an alternative acquisition option for logistics support in support of exercises or exigencies.

A current listing of ACSAs and countries and organizations eligible to negotiate them is maintained by the Director for Logistics, the Joint Staff (J-4). DoDD 2010.9 (para 5.1.2) provides the official process for nominating countries for eligibility for such agreements as well as for concluding them.

• Permitted and Prohibited Uses. An ACSA is for the transfer of LSSS only. General purpose vehicles and other items of non-lethal military equipment not designated as Significant Military Equipment on the USML promulgated pursuant to 22 USC 2778 (Sections 38 and 47(7)), may be leased or loaned for temporary use. Specific questions on the applicability of certain items should be referred to the Combatant Command’s legal office for review and approval. Per DoDD 2010.9 (para 4.5.1), items that may not be acquired or transferred under ACSA authority include:
  o Weapon systems, specifically:
    ▪ Guided missiles; naval mines and torpedoes; nuclear ammunition, and included items such as warheads, warhead sections, projectiles, and demolition munitions;
    ▪ Guidance kits for bombs or other ammunition; and
    ▪ Chemical ammunition (other than riot control agents)
  o Initial quantities of replacement and spare parts for major end items of equipment covered by tables of organization and equipment, tables of allowances and distribution, or equivalent documents; and
  o Major end items of equipment.
• Repayment of Obligations. In addition to the use of cash and subject to the agreement of the parties, ACSA obligations may be reconciled by either Replacement-in-Kind (RIK) or Equal Value Exchange (EVE). ACSA obligations not repaid by RIK or EVE automatically convert to cash obligations after one year.
An RIK repayment allows the party receiving supplies or services under the ACSA to reconcile their obligation via the provision or supplies and services of an identical or substantially identical nature to the ones received. As an example, a country may provide extra water to the United States during a training exercise with the proviso that the United States will provide the same amount of water during a future exercise.

An EVE repayment enables the party receiving supplies or services under the ACSA to reconcile their obligation via the provision of supplies or services that are considered by both parties to be of an equal value to those received. As an example, a country may provide extra water to the United States during a training exercise in exchange for the United States providing extra ammunition.

**Implementation.** DoDD 2010.9 and CJCSI 2120.01B provide management guidance on initiating ACSA orders, receiving support, reconciling bills, and maintaining records. As this is a Combatant Command-managed program, organizations interested in acquiring logistics, support, supplies and services should work through the applicable logistics branch to receive further guidance on this topic.

### CH 1-S–8.2 Acquisition-Only Authority Agreements

10 USC 2341 authorizes elements of the U.S. Armed Forces, when deployed outside the United States, to acquire logistic support, supplies, and services from eligible foreign entities on a reimbursable basis. The authority is not reciprocal and does not require the existence of a cross-servicing agreement or implementing arrangement. The Acquisition-only authority is a very limited authority that has been mainly supplanted by the use of broader authorities in ACSAs. Acquisition-only authority may be used with the governments of NATO members, NATO and its subsidiary bodies, the United Nations Organization, any regional organization, and any other country that meets one or more of the following criteria:

- Has a defense alliance with the United States.
- Permits the stationing of members of the U.S. armed forces in such country or the home porting of naval vessels of the United States in such country.
- Has agreed to preposition materiel of the United States in such country.
- Serves as the host country to military exercises, which include elements of the U.S. armed forces, or permits other military operations by the U.S. armed forces in such country.

### CH 1-S–9. Technology Security and Foreign Disclosure Processes

Technology Security and Foreign Disclosure (TSFD) requires planning and implementation of several U.S. Government and DoD processes, both within and outside the span of control of the DoD acquisition process. The following paragraphs describe key TSFD processes that normally require program management integration efforts to ensure successful IA&E outcomes.

Before embarking on an international acquisition effort, program management consults appropriate TSFD authorities (e.g., a Principal Disclosure Authority or Designated Disclosure Authority) in order to determine whether the classified or controlled unclassified information can be disclosed to other governments or international organization participants. Foreign assurances to protect the information are normally in the form of bilateral security agreements or security requirements detailed in a program-specific agreement. Failure to consider security requirements prior to obtaining foreign commitments on involvement can result in program delays at critical stages of the program.

Program management should also consult with TSFD experts in their DoD Component or the Principal Staff Assistant, as appropriate, as early as possible to enhance their awareness of the TSFD processes and their linkage (or not) to the program’s security documentation. The DoD Components – especially the MILDEPS – typically rely on their IPOs, where the TSFD function is usually located. Figure 1 depicts the specific DoD TSFD processes (or “pipes”), DoD Leads, reference documents, and whether the processes are Primary or Specialized, and DoD only or Interagency. (Note: “Primary Process” refers to the processes for which there is documentation and multiple participants. “Specialized Process” refers to the
processes for which there is little or no documentation and a limited number of organizational participants).

![Figure S-1: Technology Security and Foreign Disclosure Processes](image)

The DoD Technology Security and Foreign Disclosure Office (TSFDO), located within the Defense Technology Security Administration (DTSA), was established to improve the processing of high-priority TSFD issues on a DoD-wide basis and to serve as the Executive Secretariat to the DoD Arms Transfer and Technology Release Senior Steering Group (ATTR SSG). The ATTR SSG, which is co-chaired by the Under Secretary of Defense for Acquisition, Technology and Logistics (USD (AT&L)) and the Under Secretary of Defense for Policy (USD (P)), is a senior DoD coordination body that provides guidance and direction to DoD TSFD processes involved in the transfer of defense articles and/or the release of classified or sensitive technology to international partners in support of U.S. policy and national security objectives (see DoDD 5111.21 (Encl. 2) for additional details about the ATTR SSG and TSFDO).
The TSFDO, in coordination with the Office of the Under Secretary of Defense for International Cooperation (USD(AT&L)/IC), supports the ATTR SSG by working in concert with DoD Components to facilitate high-level TSFD policy issues related to international programs. To do this, TSFDO screens, prepares, and tracks DoD Priority TSFD Reviews (PTRs) to ensure they are identified in a timely fashion and appropriately routed to, and addressed by, all relevant DoD TSFD processes and subject matter experts. A PTR is related to an offer for cooperation, sale, or other transfer that is deemed by a DoD Component or ATTR SSG member to have real or high potential for senior leader (e.g., Secretary, Deputy Secretary, Under Secretary, or 4-Star General Officer) direction, interest, and/or involvement. Program management can work with their DoD Component International Program Office (IPO) and TSFD organizations and, if necessary, the DoD TSFDO to help in identifying or processing PTRs related to the international aspects of their programs.

Program management should also consult with TSFD experts in their DoD Component or the appropriate Principal Staff Assistant, as appropriate, as early as possible to enhance their awareness of the TSFD processes and their linkage (or not) to the program’s security documentation. The DoD Components – especially the MILDEPS – typically rely on their IPOs, where the TSFD function is usually located. Figure 1 depicts the specific DoD TSFD processes (or “pipes”), DoD Leads, reference documents, and whether the processes are Primary or Specialized, and DoD only or Interagency. (Note: “Primary Process” refers to the processes for which there is documentation and multiple participants. “Specialized Process” refers to the processes for which there is little or no documentation and a limited number of organizational participants).

See the IC in AT&L Handbook, CH 7, and Defense Acquisition University’s International Acquisition Management Community of Practice (ICoP) website for additional guidance on TSFD policy and procedural guidance.

CH 1-S–10. Program Protection Documentation

In addition to the guidance provided in DAG Chapter 9 on Program Protection, the following subsections describe IA&E program protection documentation requirements that support Program Protection Plan (PPP) development and other international security program activities.

CH 1-S–10.1 Technology Assessment/Control Plan

Per DoDI 5530.03 (para 9.3.4), TA/CP information should be developed by defense acquisition workforce personnel involved in IA&E activities. Much of the information needed to develop TA/CP information for acquisition programs can be obtained from the AoA, Acquisition Strategy, and supporting documentation. If a program is required to draft a PPP, then program management should include TA/CP information in its acquisition program PPP. If the program’s PPP addresses all of the information required in the Technology Assessment/Control Plan (TA/CP), then the requirement for a separate TA/CP may be met by referencing to the completed PPP. When incorporating TA/CP information into an acquisition program PPP, program management should use the PPP Outline and Template (see CH 9–2.3).

If no PPP is required, then a stand-alone TA/CP should be prepared after completing the identification of CPI and development of a Security Classification Guide (SCG) that addresses applicable IA&E activities. See CH1-S-10.4 for additional details on the SCG. Preparation should commence concurrently with the decision that could lead to IA&E activity. Stand-alone TA/CPs should include the following four sections:

- Program Concept
- Nature and Scope of the Effort and Objectives
- Technology Assessment
- Control Plan

TA/CP information (in PPPs or stand-alone TA/CPs) should address the following (per DoDI 5530.03 (Encl. 7):
• Assessment of the feasibility of U.S. participation in joint programs from a foreign disclosure and technical security perspective.
• Preparation of guidance for negotiating the transfer of sensitive or classified DoD information and critical technologies involved in the envisioned IA&E activities.
• Identification of security arrangements for the envisioned IA&E activities.
• Preparation of a DDL that contains specific guidance on proposed disclosures.
• Support of the acquisition or cooperative S&T project decision review process.
• Support of decisions on foreign sales, co-production, or licensed production, commercial sales of the system, or international cooperative agreements involving U.S. technology or processes.
• Support of TSFD and export control decisions on the extent and timing of IA&E involvement and related access to DoD information by allied and friendly nations.

CH 1-S–10.2 Program Protection Plan (PPP)

DoDI 5000.02 (Encl. 1, Table 2 and Encl. 3, para 13) IA&E program protection requirements. Program protection efforts should assess and, where applicable, implement U.S. Government and DoD TSFD process decisions, as well as overall DoD program protection policy guidance. CH 9–2.3 provides additional program protection direction. Based on a number of U.S. Government and DoD policies, program managers can take measures to identify and protect program information, system information, CPI, as well as mission-critical functions and components from inadvertent disclosure and unauthorized entities, whether there are ongoing or projected IA&E activities or not. Additionally, programs with potential and actual international involvement can address foreign disclosure, foreign sales, co-production, import/export licenses, or other export authorization requirements in the PPP. For ICPs where non-U.S. entities are involved in co-development and/or co-production, program protection measures will be accordance with relevant international agreements and in compliance with national laws and regulations.

The following key foreign involvement requirements should be included in the PPP (see CH 9–2.2).

• Summary of any potential, plans for, or existing foreign cooperative development or foreign sales of the system.
• Identity of the subsystems, components, and/or information involving CPI and/or critical components that are not included or shared in any end item sale of the system.
• Whether previous generations of the system have been sold to foreign partners.
• How export requirements will be addressed if foreign customer is identified.
• Whether program is participating in the current OUSD (AT&L) DEF Pilot Program, is a viable future candidate for the DEF Pilot Program, and the results of any completed DEF studies.

If the program adds new foreign activity involving CPI, the PPP should be updated accordingly.

Program management can conduct an early review of anticipated TSFD and export approval requirements for the capability. As discussed in Section 9, the acronym “TSFD” refers to DoD and U.S. Government processes that review and approve proposed release, sale, or other transfers of defense articles and classified or sensitive technology/information to other nations. Early PM consideration of DoD/U.S. Government TSFD and U.S. Government export control requirements enables DoD acquisition programs to achieve maximum benefit from international participation while minimizing negative impacts on program cost, schedule, and performance (see CH1-S-9 for details on TSFD processes.)

CH 1-S–10.3 Technology Release Road Map

Program management should prepare an initial Technology Release Roadmap (TRR) during the MSA or TMRR phases if a substantial amount of IA&E activity is envisioned. The TRR should also be included in the program’s PPP. The TRR should describe when the critical milestones regarding TSFD planning and implementation should be addressed and provide a projection of when U.S. industry export approvals
(e.g., export licenses, Technology Assistance Agreements, ITAR exemptions, etc.) may be required to support initial IA&E efforts. The TRR should be consistent with the program's PPP or TA/CP, SCG, DDL, and any other TFSD guidance. Prior to the EMD phase of an acquisition program with substantial IA&E involvement by foreign industry, the program manager should update the TRR or (if not previously prepared) develop a TRR that addresses the U.S. industry export approvals needed to implement EMD program efforts.

The TRR should take the following actions to address the program's acquisition phase-specific IA&E activities:

1. Provide early DoD Component planning for the program management's proposed sensitive or classified information technology releases to foreign industry.
2. Establish a detailed export authorization approval planning process for U.S.-foreign industry cooperation arrangements to meet critical program and contract timelines.

The TRR should contain three sections:

1. A timeline mapping key projected export approvals against the program acquisition schedule;
2. A definition of the technologies involved in each export approval; and
3. A list of U.S. contractors (export) as well as foreign contractors (end users) for each export approval.

**CH 1-S–10.4 Security Classification Guide**

In addition to the PPP (or TA/CP if there is no PPP) required to support other DoD IA&E activities, DoDM 5200.01 (para 18.f.(2) – Page 31) requires international programs to develop a Security Classification Guide (SCG) for all programs containing classified information of the nations involved. The SCG, as prescribed in DoDD 5230.11 (Encl. 6), identifies the items or information to be protected in the program, and indicates the specific classification to be assigned to each item.

**CH 1-S–10.5 Delegation of Disclosure Authority Letter**

The authorization for release of classified or controlled unclassified information (developed or used during any part of the life cycle of the program) to any potential or actual foreign involvement in the IA&E activity should be in the form of a DDL, as prescribed in DoDD 5230.11 (Encl. 4), or other written authorization issued by the DoD Component FDO. In accordance with DoDI 5000.02 (Encl. 2, para 7.b.(1)), a written authorization to disclose any classified or controlled unclassified information must be obtained prior to engaging in IA&E activities with allied and friendly nations. The authorization for release of classified or controlled unclassified information must comply with DoD Component policies for release of such information.

**CH 1-S–10.6 Program Security Instruction**

A Program Security Instruction (PSI) details security arrangements for the program and harmonizes the requirements of the participants' national laws and regulations. Program management should consult with their DoD Component IPO on PSI requirements and should use the DoD IA Generator (described in CH1-S–6.1) to address whether a PSI needs to be developed. If all security arrangements to be used in an IA&E activity are in accordance with existing industrial security arrangements between the U.S. and the allied/friendly nations involved, a separate PSI may not be required. Additional information about the PSI is found in the IC in AT&L Handbook, Chapter 7, Section 7.6.

**Chapter 1 - Version and Revision History**

Use the table below to provide the version number, the date that the particular version was approved and a brief description of the reason for and content changes contained in the revised version.
<table>
<thead>
<tr>
<th>Version #</th>
<th>Revision Date</th>
<th>Reason</th>
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<tbody>
<tr>
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<td>02-02-17</td>
<td>Initial Launch</td>
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<tr>
<td>Rev. 1</td>
<td>06-07-17</td>
<td>Update of embedded links from DAU</td>
</tr>
</tbody>
</table>
This chapter addresses Analysis of Alternatives (AoAs) and cost estimation. It provides explanations of the Office of the Secretary of Defense’s Office of Cost Assessment and Program Evaluation’s (CAPE’s) policies and procedures found in DoDI 5000.73, Cost Analysis Guidance and Procedures and the Operating and Support Cost Estimating Guidebook as well as information required by DoDI 5000.02, Operation of the Defense Acquisition System.

**CH 2–2. Background**

**CH 2–2.1 Life-Cycle Cost Estimating**

Independent and sound cost estimates are vital for effective acquisition decision-making and oversight. Cost estimates also support efficient and effective resource allocation decisions throughout the Planning, Programming, Budgeting, and Execution process. Life-cycle cost estimates cover the entire life cycle of the program and include the development, production, operations and support (including both sustainment and disposal) phases, regardless of funding source.

**CH 2–2.1.1 Major Defense Acquisition Programs**

DoDI 5000.02, Enc 10, sec. 2 requires that a DoD Component Cost Estimate (CCE) and DoD Component Cost Position (CCP) be submitted prior to an MDAP receiving Milestone A or B approval or entering low-rate initial production or full-rate production.

The CCE documents the cost analysis conducted by the Service Cost Agency (SCA) in cases where the SCA is not developing an independent cost estimate (ICE). This cost analysis may range from an SCA non-advocate estimate, independent SCA assessment of another government estimate, or other SCA cost analysis, as determined by the SCA and reflected in DoD Component policy.

The CCP is the cost position established by the DoD Component. It is derived from the CCE and program office estimate per DoD Component policy. The CCP must be signed by the DoD Component Deputy Assistant Secretary for Cost and Economics (or Defense Agency equivalent) and include a date of record.

Additionally, 10 USC 2334 requires that the Office of Cost Assessment and Program Evaluation (CAPE) conduct or approve ICEs for MDAPs and major subprograms at the following times:

1) prior to certification at Milestone A and certification at Milestone B;
2) before any decision to enter into low-rate initial production or full-rate production;
3) in advance of certification following critical cost growth; and
4) at any time considered appropriate by DCAPE or upon the request of the USD(AT&L) or the milestone decision authority.

If DCAPE does not conduct the ICE for an MDAP or major subprogram, the appropriate Service Cost Agency or Defense Agency equivalent conducts the ICE for DCAPE’s review and approval.

**CH 2–2.1.2 Major Automated Information System Programs**

DoDi 5000.02, Enc 10, sec. 2 requires that a CCE and CCP be submitted prior to a MAIS program receiving Milestone A, B, or C approval or a full deployment decision.

Additionally, DoDi 5000.02, Enc 10, sec. 2 and DoDi 5000.73 (Encl. 2, para 3.a.(1)(b)) provide that DCAPE may prepare an ICE for ACAT IAC programs at any time considered appropriate by the DCAPE or upon the request of the USD(AT&L) or the MDA.

**CH 2–2.1.3 Acquisition Category II and III Programs**

Cost estimates for ACAT II and III programs are conducted in accordance with each Service’s policy. While OSD does not play an active role in the preparation of these estimates, the guidelines set forth in CH 2–3.3, and CH 2–3.4, should be followed to the greatest degree possible.
CH 2–2.1.4 Operating and Support

DoDI 5000.73 (Encl. 2, para 2.d.(6)) provides that post-initial operational capability (IOC) DoD Components must continue to track operating and support (O&S) costs and update O&S cost estimates yearly throughout a program’s life cycle to determine whether preliminary information and assumptions remain relevant and accurate and to identify and record reasons for variances.

O&S cost estimates are independently reviewed at post-IOC reviews. Each O&S cost estimate must be compared to earlier estimates and the program’s O&S affordability caps, and, as appropriate, used to update the life-cycle affordability analysis provided to the MDA and requirements validation authority. This comparison must identify the reasons for significant changes and categorize those reasons into external and internal ones.

CAPE provides guidance on O&S cost estimating in its Operating and Support Cost Estimating Guidebook.

CH 2–2.2 Cost and Software Data Reporting
Systematic and institutionalized cost data collection by each DoD Component is important to support credible cost estimates of current and future programs. The cost data collection systems subject to CAPE oversight are the Cost and Software Data Reporting system and the Visibility and Management of Operating and Support Costs system. CAPE also provides technical oversight to the central repository for earned value management (EVM) data.

DoDI 5000.02, Enc 1 (Table 7) requires cost reporting for all contracts over $50 million for MDAPs and MAIS programs and may be required for special interest contracts or those requested by the Services or CAPE. When it is determined that cost reporting is required for a contract, the cost working group integrated product team (CW IPT) meets to develop an appropriate cost reporting plan. Figure 1 sets forth the CW IPT participants and each participant’s role.

Figure 1: CW IPT Participants and Roles
The CWIPT follows the timeline found in DoD 5000.04-M-1 (Encl. 2, Fig 1) when developing the cost reporting plan.

The CWIPT remains active with the validation of cost reports as the reports are submitted. The timeline found in DoD 5000.04-M-1 (Encl. 2, Fig 2) is followed for the submission and validation of cost reports.

Additional forms, templates, requirements, and contact information for cost and data reporting are set forth on the Cost Assessment Data Enterprise (CADE) website, http://cade.osd.mil/. CADE provides the users in the cost community with single-point access to the complete range of authoritative acquisition, cost, EVM, and technical data. Access to CADE is made available to government analysts throughout the cost and acquisition communities.

**CH 2–2.3 Analysis of Alternatives**

The Analysis of Alternatives (AoA) is an important element of the defense acquisition process. An AoA is an analytical comparison of the operational effectiveness, suitability, and life-cycle cost of alternatives that satisfy established capability needs. After the Materiel Development Decision, the AoA is initiated to examine potential materiel solutions with the goal of identifying the most promising option, thereby guiding the Materiel Solution Analysis phase. Subsequently, an update to the AoA is initiated when necessary or mandated by the DAE at the start of the Technology Maturation and Risk Reduction phase and is reviewed at Milestone B (which usually represents the first major funding commitment to the acquisition program). The update to the AoA is used to refine the proposed materiel solution, as well as to reaffirm the rationale, in terms of cost-effectiveness, for initiation of the program into the formal systems
acquisition process. For Major Defense Acquisition Programs at Milestone A, the Milestone Decision Authority (MDA) must certify in writing to the Congress that the Department has completed an AoA consistent with the study guidance developed by the Director, Cost Assessment and Program Evaluation (DCAPE), in addition to meeting other certification criteria. For Major Defense Acquisition Programs at Milestone B, the MDA must certify in writing to Congress that the Department has completed an AoA with respect to the program, in addition to meeting other certification criteria. Pursuant to DoDI 5000.02, the AoA is updated as needed at Milestone C.

CH 2–2.3.1 Role of the Analysis of Alternatives as Part of the Materiel Solution Analysis
The AoA process plays a key role in support of the Materiel Solution Analysis Phase. After a program has an approved Materiel Development Decision, the AoA process is necessary to better define the trade space across cost, schedule, and performance to enable the DAE and Service Sponsor to select a preferred materiel solution that addresses the capability gaps documented in the approved Initial Capabilities Document (ICD).

The DCAPE develops and approves study guidance for MDAP AoAs. The guidance is developed in consultation with other DoD organizations, as necessary. Prior to the MDD review, DCAPE provides the AoA study guidance to the DoD Component designated by the MDA. Following receipt of the AoA study guidance, the DoD Component prepares an AoA study plan that describes the intended methodology for the management and execution of the AoA. The AoA study plan is coordinated with the MDA and approved by DCAPE prior to the MDD review. A suggested template for the AoA study plan is provided in Section 2.3.2.

The study guidance requires, at minimum, full consideration of possible trade-offs among cost, schedule, and performance objectives for each alternative considered. The study guidance also requires an assessment of whether or not the joint military requirement can be met in a manner consistent with the cost and schedule objectives recommended by the JROC. The AoA study guidance and resulting AoA study plan should build on the prior analyses conducted as part of the Joint Capabilities Integration and Development System (JCIDS). The JCIDS process is described in CJCS Instruction 3170.01. The JCIDS analysis process that leads to an approved Initial Capabilities Document (ICD) is built upon the analysis known as the Capabilities-Based Assessment (CBA). The CBA provides recommendations (documented in the ICD) to pursue a materiel solution to address an identified capability gap. The CBA does not provide specific recommendations as to a particular materiel solution, but rather provides a more general recommendation as to the type of materiel solution (such as Information Technology system, incremental improvement to an existing capability, or an entirely new "breakout" or other transformational capability). In this way, the ICD can be used to establish boundary conditions for the scope of alternatives to be considered in the subsequent AoA. The AoA study guidance should be crafted to ensure that the AoA considers a sufficiently robust set of alternatives, given program cost, schedule, and performance constraints.

CH 2–2.3.2. Analysis of Alternatives Study Plan
The first major step leading to a successful AoA is the creation and coordination of a well-considered analysis plan. The study plan establishes a road map of how the analysis will proceed, and who is responsible for doing what. At a minimum, the study plan facilitates full consideration of possible trade-offs among cost, schedule, and performance objectives for each alternative considered, as well as an assessment of whether or not the joint military requirement can be met in a manner consistent with the cost and schedule objectives recommended by the JROC.

A recommended outline for the AoA study plan may resemble the following (but note that the study plan specifics will depend on the scope of the analysis and the criteria outline in the study guidance):

- **Introduction**
  - Background
  - Purpose
  - Scope
Ground Rules
- Scenarios
- Threats
- Environment
- Constraints, Limitations, and Assumptions
- Timeframe
- Excursions

Alternatives
- Description of Alternatives
- Nonviable Alternatives
- Operations Concepts
- Sustainment Concepts

Determination of Effectiveness Measures
- Mission Tasks
- Measures of Effectiveness
- Measures of Performance

Effectiveness Analysis
- Effectiveness Methodology
- Models, Simulations, and Data
- Effectiveness Sensitivity Analysis

Cost Analysis
- Life-Cycle Cost Methodology
- Additional Total Ownership Cost Considerations (if applicable)
- Fully Burdened Cost of Delivered Energy (if applicable)
- Models and Data
- Cost Sensitivity and/or Risk Analysis

Cost-Effectiveness Comparisons
- Cost-Effectiveness Methodology
- Displays or Presentation Formats
- Criteria for Screening Alternatives

Organization and Management
- Study Team/Organization
- AoA Review Process
- Schedule

As every AoA is unique, the above outline should be tailored to support the analytic scope outlined in the respective study guidance. Each point in the above outline is discussed further in the next several sections.

CH 2–2.3.2.1. Analysis of Alternatives Study Plan-Introduction
The introduction to the AoA plan describes the developments that led to the AoA, including prior relevant analyses (such as the Capabilities-Based Assessment). It should reference the applicable capability-needs document(s) and other pertinent documents, and highlight the capability gaps being addressed through the applicable capability needs. The introduction should describe the applicable AoA study guidance and any other terms of reference. It also should provide a broad overview of the planned AoA, which describes in general terms the level of detail of the study and the scope (breadth and depth) of the analysis necessary to support the specific milestone decision.

CH 2–2.3.2.2. Analysis of Alternatives Study Plan-Ground Rules
The ground rules described in the analysis plan include the scenarios and threats, as well as the assumed physical environment and any constraints or additional assumptions. The scenarios are typically derived from defense-planning scenarios and associated joint operational plans, augmented by more detailed intelligence products such as target information and enemy and friendly orders of battle. Environmental factors that impact operations (e.g., climate, weather, or terrain) are important as well. In
addition, environment, safety, and occupational health factors associated with the use of chemical and/or biological weapons may need to be considered as excursions to the baseline scenario(s).

The study plan should describe what future timeframe, or timeframes, will be considered in the analysis. Often, the time period(s) selected will be determined by the time period(s) assumed in the DoD-approved planning scenario. However, there is some flexibility on this point, especially if something significant -- such as the deployment of a new capability, or the retirement of a legacy system -- is projected to occur one or two years after one of the time periods in the scenario. A common and desirable practice is to consider two time periods of interest, say "near-term" and "far-term," separated by a decade or so.

The AoA study plan should describe the planned analytic excursions to the baseline scenarios and other major ground rules. Such excursions are strongly encouraged in order to explore any impact of changing threat levels, warning times, involvement of allied forces, and political constraints on basing or overflights, just to name a few issues. These excursions can be used to see if any major issues are critical to the relative cost-effectiveness of the alternatives considered in the AoA.

CH 2–2.3.2.3. Analysis of Alternatives Study Plan-Range of Alternatives
The analysis plan also should document the range of alternatives to be addressed in the analysis. In many cases, there will be a minimum set of alternatives required by the initial analysis guidance. Additional direction during subsequent AoA reviews may insert yet other alternatives. Practically, the range of alternatives should be kept manageable to ensure that the acquisition trade space is sufficiently well analyzed, while keeping the study schedule within a reasonable allotment. The number of alternatives can be controlled by avoiding similar but slightly different alternatives and by early elimination of alternatives (due to factors such as unacceptable life-cycle cost or inability to meet Key Performance Parameters). In many studies, the first alternative (base case) is to retain one or more existing systems, representing a benchmark of current capabilities. An additional alternative based on major upgrades and/or service-life extensions to existing systems also may be considered.

For each alternative, evaluation of system performance, unit effectiveness, and estimation of its life-cycle cost (or total ownership cost, if applicable) requires a significant level of understanding of its operations and support concepts. The operations concept describes the details of the peacetime, contingency, and wartime employment of the alternative within projected military units or organizations. It also may be necessary to describe the planned basing and deployment concepts (contingency and wartime) for each alternative. The sustainment concept for each alternative describes the plans and resources for system training, maintenance, and other logistics support.

It is important that the alternatives considered in the AoA should address alternative concepts for maintenance, training, supply chain management, and other major sustainment elements. In this way, the AoA can identify the preferred materiel solution not only in terms of traditional performance and design criteria (e.g., speed, range, lethality), but also support strategy and sustainment performance as well. In other words, the AoA should describe and include the results of the supportability analyses and trade-offs conducted to determine the most cost-effective support concept as part of the proposed system concept.

CH 2–2.3.2.4. Analysis of Alternatives Study Plan-Effectiveness Measures
The analysis plan should describe how the AoA will establish metrics associated with the military worth of each alternative. Military worth often is portrayed in AoAs as a hierarchy of mission tasks, measures of effectiveness, and measures of performance. Military worth is fundamentally the ability to perform mission tasks, which are derived from the identified capability needs. Mission tasks are usually expressed in terms of general tasks to be performed to correct the gaps in needed capabilities (e.g., hold targets at risk or communicate in a jamming environment). Mission tasks should not be stated in solution-specific language. Measures of effectiveness are more refined and provide the details that allow the proficiency of each alternative in performing the mission tasks to be quantified. Each mission task should have at least one measure of effectiveness supporting it, and each measure of effectiveness should support at least one mission task. Typically, a measure of performance is a quantitative measure of a system characteristic (e.g., range, weapon load-out, logistics footprint, etc.) chosen to enable calculation of one or more measures of effectiveness. Measures of performance are often linked to Key Performance
Parameters or other parameters contained in the approved capability needs document(s). Also, measures of performance are usually the measures most directly related to test and evaluation criteria.

CH 2–2.3.2.5. Analysis of Alternatives Study Plan—Effectiveness Analysis
The analysis plan spells out the analytic approach to the effectiveness analysis, which is built upon the hierarchy of military worth, the assumed scenarios and threats, and the nature of the selected alternatives. The analytic approach describes the level of detail at various points of the effectiveness analysis. In many AoAs involving combat operations, the levels of effectiveness analysis can be characterized by the numbers and types of alternative and threat elements being modeled. A typical classification would consist of four levels: (1) system performance, based on analyses of individual components of each alternative or threat system; (2) engagement, based on analyses of the interaction of a single alternative and a single threat system, and possibly the interactions of a few alternative systems with a few threat systems; (3) mission, based on assessments of how well alternative systems perform military missions in the context of many-on-many engagements; and (4) campaign, based on how well alternative systems contribute to the overall military campaign, often in a joint context. For AoAs involving combat support operations, the characterization would need to be modified according to the nature of the support. Nevertheless, most AoAs involve analyses at different levels of detail, where the outputs of the more specialized analysis are used as inputs to more aggregate analyses. At each level, establishing the effectiveness methodology often involves the identification of suitable models (simulation or otherwise), other analytic techniques, and data. This identification primarily should be based on the earlier selection of measures of effectiveness. The modeling effort should be focused on the computation of the specific measures of effectiveness established for the purpose of the particular study. Models are seldom good or bad per se; rather, models are either suitable or not suitable for a particular purpose.

It also is important to address excursions and other sensitivity analyses in the overall effectiveness analysis. Typically, there are a few critical assumptions that often drive the results of the analysis, and it is important to understand and point out how variations in these assumptions affect the results. As one example, in many cases the assumed performance of a future system is based on engineering estimates that have not been tested or validated. In such cases, the effectiveness analysis should describe how sensitive the mission or campaign outcomes are to the assumed performance estimates.

CH 2–2.3.2.6. Analysis of Alternatives Study Plan—Cost Analysis
The AoA plan also describes the approach to the life-cycle cost estimate. The cost analysis normally is performed in parallel with the operational effectiveness analysis. It is equal in importance as part of the overall AoA process. The cost analysis estimates the total life-cycle cost of each alternative, and its results are later combined with the operational effectiveness analysis to portray cost-effectiveness comparisons. It is important to emphasize that the cost analysis will be a major effort that will demand the attention of experienced, professional cost analysts.

The principles of economic analysis apply to the cost analysis in an AoA. Although the cost estimates used in an AoA originally are presented in constant dollars, they should be adjusted for discounting (time value of money), accounting for the distribution of the costs over the study time period of interest. In addition, the cost estimates should account for any residual values associated with capital assets that have remaining useful value at the end of the period of analysis. Further guidance on economic analysis is provided in DoDI 7041.3, "Economic Analysis for Decisionmaking."

The cost analysis should also describe the planned approach for addressing the Fully Burdened Cost of Energy for those AoAs where this issue is applicable.

CH 2–2.3.2.7. Analysis of Alternatives Study Plan—Cost-Effectiveness Comparisons
Typically, the next analytical section of the AoA plan deals with the planned approach for the cost-effectiveness comparisons of the study alternatives. In most AoAs, these comparisons involve alternatives that have both different levels of effectiveness and cost, which leads to the question of how to judge when additional effectiveness is worth additional cost. Cost-effectiveness comparisons in theory would be best if the analysis structured the alternatives so that all the alternatives have equal effectiveness (the best alternative is the one with lowest cost) or equal cost (the best alternative is the
one with the greatest effectiveness). Either case would be preferred; however, in actual practice, in many cases the ideal of equal effectiveness or equal cost alternatives is difficult or impossible to achieve due to the complexity of AoA issues. A common method for dealing with such situations is to provide a scatter plot of effectiveness versus cost. Figure 2 presents a notional example of such a plot.

Note that the notional sample display shown in Figure 2 does not make use of ratios (of effectiveness to cost) for comparing alternatives. Usually, ratios are regarded as potentially misleading because they mask important information. The advantage to the approach in the figure above is that it reduces the original set of alternatives to a small set of viable alternatives for decision makers to consider.

Figure 2: Sample Scatter Plot of Effectiveness versus Cost

CH 2–2.3.2.8. Analysis of Alternatives Study Plan-Organization and Management

Finally, the AoA plan should address the AoA study organization and management. Often, the AoA is conducted by a working group (study team) led by a study director and staffed appropriately with a diverse mix of military, civilian, and contractor personnel. Program offices or similar organizations may provide assistance or data to the AoA study team, but the responsibility for the AoA may not be assigned to a program manager, and the study team members should not reside in a program office. In some cases, the AoA may be assigned to an in-house analytic organization, a federally funded research and development center, or a similar organization.

The AoA study team is usually organized into panels along functional lines, with a chair for each panel. Typical functional areas for the panels could be threats and scenarios, technology and alternatives (responsible for defining the alternatives), operations and support concepts (for each alternative), effectiveness analysis, and cost analysis. In many cases, the effectiveness panel occupies the central position and integrates the work of the other panels. The study plan also should describe the planned oversight and review process for the AoA. It is important to obtain guidance and direction from senior reviewers with a variety of perspectives (operational, technical, and cost) throughout the entire AoA process.

The analysis plan is fundamentally important because it defines what will be accomplished, and how and when it will be accomplished. However, the plan should be treated as a living document, and updated as needed throughout the AoA to reflect new information and changing study direction. New directions are
inevitably part of the AoA process, so the analysis should be structured so as to be flexible. Frequently, AoAs turn out to be more difficult than originally envisioned, and the collaborative analytical process associated with AoAs is inherently slow. There are often delays in obtaining proper input data, and there may be disagreements among the study participants concerning ground rules or alternatives that lead to an increase in excursions or cases to be considered. Experience has shown that delays for analyses dealing with Special Access materials can be especially problematic, due to issues of clearances, access to data, storage, modeling, etc. It is often common for the study director to scale back the planned analysis (or at least consider doing so) to maintain the study schedule.

CH 2–2.3.3. Analysis of Alternatives Final Results

CH 2–2.3.3.1. Analysis of Alternatives Final Results and Assessment

Normally, the final results of the AoA initially are presented as a series of briefings. For potential and designated major defense acquisition programs (Acquisition Category (ACAT) I) and major automated information systems (ACAT IA), the final AoA results are provided to the Office of the Director, Cost Assessment and Program Evaluation (CAPE), no later than 60 days prior to the milestone decision meeting (Defense Acquisition Board or Information Technology Acquisition Board review). Providing emerging results to CAPE prior to the final briefing is wise to ensure that there are no unexpected problems or issues. For other programs, the AoA results should be provided to the DoD Component entity equivalent to CAPE, if applicable. In any case, the AoA final results should follow all of the important aspects of the study plan, and support the AoA findings with the presentation. In particular, all of the stated AoA conclusions and findings should follow logically from the supporting analysis.

Having received the final AoA briefing(s), the CAPE evaluates the AoA and provides an independent assessment to the Head of the DoD Component (or the Principal Staff Assistant) and to the Milestone Decision Authority. CAPE, in collaboration with the OSD and Joint Staff, shall assess the extent to which the AoA:

1. Illuminated capability advantages and disadvantages
2. Considered joint operational plans
3. Examined sufficient feasible alternatives
4. Discussed key assumptions and variables and sensitivity to changes in them;
5. Calculated costs
6. Assessed the following:
   • Technology risk and maturity
   • Alternative ways to improve the energy efficiency of DoD tactical systems with end items that create a demand for energy consistent with mission requirements and cost effectiveness
   • Appropriate system training to ensure that effective and efficient training is provided with the system

CH 2–2.3.3.2. Analysis of Alternatives Final Report

Usually, in addition to a final briefing, the AoA process and results are documented in a written final report. The report typically is not published formally by the time of the program milestone decision review, due to schedule constraints. However, the report nevertheless may be important to the historical record of the program, since the report serves as the principal supporting documentation for the AoA. The report also may serve as a reference source for analysts conducting future AoAs. The final report can follow the same format as the study plan, with the addition of these sections:

• Effectiveness Analysis
  o Effectiveness Results
• Cost Analysis
  o Life-Cycle Cost Results
• Cost-Effectiveness Comparisons
  o Cost-Effectiveness Results
By following the same format, much of the material from the (updated) study plan can be used in the final report.

**CH 2–2.3.4. Analysis of Alternatives Considerations for Major Automated Information Systems**

DoDI 5000.02, Enc 1 requires an AoA for MAIS programs at milestone decisions. Much of the discussion on AoAs provided in the earlier sections of the Guidebook is more applicable to weapon systems, and needs to be modified somewhat for MAIS programs. This section discusses AoA issues for MAIS programs. The AoA should include a discussion of whether the proposed program: (1) supports a core/priority mission or function performed by the DoD Component; (2) needs to be undertaken because no alternative private sector or governmental source can better support the function; and (3) supports improved work processes that have been simplified or otherwise redesigned to reduce costs, improve effectiveness, and make maximum use of commercial off-the-shelf technology. The analysis should be tied to benchmarking and business process reengineering studies (such as analyses of simplified or streamlined work processes, or outsourcing of non-core functions).

For all MAIS program AoAs, one alternative should be the status quo alternative as used in the Economic Analysis, and one alternative should be associated with the proposed MAIS program. Other possible alternatives could be a different system, network, and/or data architectures, or they might involve different options for the purchase and integration of commercial off-the-shelf products, modifications, and upgrades of existing assets or major in-house development.

Most likely, the effectiveness analysis in a MAIS program AoA will not involve scenario-based analysis as is common for the weapon system AoAs. The effectiveness analysis for an MAIS program should be tied to the organizational missions, functions, and objectives directly supported by the implementation of the system being considered. The results of the AoA should provide insight into how well the various alternatives support the business outcomes that have been identified as the business goals or capabilities sought. In some cases, it may be possible to express the assessment of effectiveness across the alternatives in monetary terms, so effectiveness could be assessed as benefits in the framework for the Economic Analysis. In other cases, the effectiveness might be related to measurable improvements to business capabilities or better or timelier management information (leading to improved decision-making, where it can be difficult or impossible to quantify the benefits). In these cases, a common approach is to portray effectiveness by the use of one or more surrogate metrics. Examples of such metrics might be report generation timeliness, customer satisfaction, or supplier responsiveness. In addition to management information, the effectiveness analysis also should consider information assurance and interoperability issues.

The cost analysis supporting the AoA should follow the framework of the Economic Analysis. The life-cycle cost estimates of the alternatives considered in the AoA should be consistent with and clearly linked to the alternatives addressed in the Economic Analysis. Both the effectiveness analysis and the cost analysis should address the risks and uncertainties for the alternatives, and present appropriate sensitivity analysis that describes how such uncertainties can influence the cost-effectiveness comparison of the alternatives.

The appropriate sponsor or domain owner should lead the development of the AoA for a MAIS program. Experience has shown that the MAIS programs for which the sponsor or domain owner engages with CAPE early in the process are much more likely to be successful than those that select a preferred alternative before contacting CAPE or completing the AoA.

The DoD Component performing the AoA should develop a study plan that addresses the AoA study guidance, as applicable. At a minimum, the study plan should address the following topics:

**AoA Study Plan Outline**

- Introduction (Background, Purpose and Scope)
- Ground Rules: Constraints and Assumptions
- Description of Alternatives
- Determination of Effectiveness Measures
1. Measures of Effectiveness (MOEs) operationally relevant and measurable
2. Measures of Performance technical characteristics required to satisfy MOEs, which are measurable and employed as an operational test criterion
e. Effectiveness Analysis Methodology
f. Cost Analysis
g. Cost-Effectiveness Comparisons
h. Risk & Sensitivity Analysis
   1. Mission
   2. Technology
   3. Programmatic, to include funding
i. Study Organization and Management
j. Schedule, with associated deliverables

CH 2–3. Business Practice

CH 2–3.1 Acquisition Category ID Cost Estimate Timeline

Figure 3 sets forth the typical timeline of events and deadlines to support the timely completion of an ICE for ACAT ID programs. This timeline may be tailored, as needed, depending on the program and the information needed to best support the decision-maker. The key events are as follows:

- At least 210 days before the planned overarching integrated product team (OIPT) meeting, the SCA will notify CA of a program’s upcoming milestone or acquisition event requiring an ICE.
- A kick-off meeting is held no later than 180 days before the OIPT meeting. Before the kick-off meeting, the SCA and CA will develop an agenda of information to discuss; the agenda will include requirements for the cost estimates, alternatives to consider, and the assumptions on which the cost estimates will be based. A CA representative and SCA representative will co-chair the kick-off meeting.
- The Program Management Office (PMO) will prepare and deliver the draft Cost Analysis Requirements Description (CARD) to CA no later than 180 days before the planned OIPT meeting. For joint programs, the CARD will include the common program agreed to by all participating DoD Components, as well as any unique program requirements of the participating DoD Components. Templates and instructions for preparing the CARD are available at http://cade.osd.mil/policy/card.
- No later than 45 days after receipt of the draft CARD (usually at least 135 days before the planned OIPT meeting), CA will provide feedback to the PMO on the draft CARD.
- No later than 45 days after receipt of the draft CARD (usually at least 135 days before a planned OIPT meeting), if the CARD is insufficient, CA and the SCA will sign a memorandum to the PMO informing the PMO that the CARD is insufficiently developed to continue with the preparation of the cost estimates. In this scenario, the planned OIPT meeting and defense acquisition board (DAB) meeting may be delayed.
- Following the kick-off meeting and continuing until the OIPT meeting, the CA analyst and representatives from the SCA and PMO will conduct site visits and collect and review program data. During this time, the CA analyst and SCA and PMO representatives will have ongoing discussions concerning the cost estimating strategies and methodologies used to develop all relevant cost estimates, including the ICE, CCE, program office estimate (POE), and CCP.
- At least 45 days before the OIPT meeting, the PMO and SCA representatives will brief CA on the working level drafts of the POE, CCE, CCP, and any other relevant estimates available at the time. Following this briefing, the PMO and SCA representatives will provide CA with any updates to the working level drafts of the estimates as appropriate or on request.
- A final copy of the CARD, signed by the program executive officer and program manager, must be provided to CA by the PMO at least 45 days before the scheduled OIPT meeting and placed into the electronic CA Library.
- At CA’s discretion, approximately 28 days before the OIPT meeting, the CA, PMO, and SCA representatives may meet to compare and discuss the results of the ICE and the CCP.
• The SCA must deliver the final, signed CCP and full funding certification memorandum to CA at least 10 days before the planned OIPT meeting. Copies of these documents will be submitted to the CA Library. If the program concept evolves after a milestone review, the SCA may update the CCP, and the DoD Component may fully fund the program in the Future Years Defense Program (FYDP) to the updated CCP. A copy of the updated CCP must be submitted to the CA Library.
• A CA representative will brief a summary of the ICE at the OIPT.
• Before the DAB review, CA will issue its ICE report, a copy of which will be placed in the CA Library.

**Figure 3: Timeline for Preparation of ACAT ID ICES**

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**CH 2–3.2 Acquisition Category IC Cost Estimate Timeline**

The DCAPE typically reviews the ICE prepared by the DoD Component for ACAT IC programs. In certain cases, the DCAPE will prepare the ICE for ACAT IC milestone reviews. The timeline in Figure 4 is followed when determining whether CA or the DoD Component will prepare the ICE and, if the DoD Component is preparing the ICE, the timeline for CA review.

- At least 210 days before the planned cost review board (CRB) meeting, the SCA will notify CA of an ACAT IC program's upcoming milestone that requires either a DoD Component ICE or a CA ICE.
- No later than 180 days before the planned CRB meeting, the PMO and SCA will brief the appropriate CA division director on the program, to include available data and methodologies. At or before the briefing, the PMO must deliver a draft CARD to CA. Templates and instructions for preparing the CARD are available at [http://cade.osd.mil/policy/card](http://cade.osd.mil/policy/card).
- At least 165 days before the planned CRB meeting, CA will make a decision whether to review the DoD Component ICE or prepare a CA ICE. CA will issue a memorandum, a copy of which will be placed into the CA library, documenting its decision. If CA decides to prepare the ICE, the program will follow a tailored version of the timeline and procedures described in paragraph 2b(1) of this enclosure for ACAT ID programs.
• If CA decides to review the DoD Component ICE, the CA analyst will continue to meet with technical and cost analysts from the PMO and SCA from 165 to 30 days before the CRB meeting. If, during this time, CA determines that there are significant changes to the program or increased cost or schedule risk, CA may decide to perform a CA ICE of the program.

• The PMO will deliver the final draft CARD to CA at least 45 days before the CRB meeting. The final draft CARD should be in near complete form, with only minor changes occurring between its delivery and the delivery of the final signed CARD at least 21 days before the CRB meeting.

• At least 30 days before the CRB meeting, PMO and SCA representatives will brief CA on working level drafts of the POE, DoD Component ICE, CCP, and any other relevant estimates available at the time.

• During the 30 days before the CRB meeting, CA will review the DoD Component ICE and provide feedback to the SCA. Based on the feedback, SCA will revise the DoD Component ICE as needed.

• At the CRB, the SCA will deliver the final DoD Component ICE to CA. CA will review and assess the adequacy of the ICE and document its assessment in a memorandum, copies of which will be delivered to the DoD Component Acquisition Executive (CAE) and placed in the CA Library.

• Following the CAE decision, the SCA will deliver to CA a signed CCP and full funding certification memorandum, copies of which will be placed into the CA Library.

**Figure 4: Timeline for ACAT IC Cost Estimate Review**

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**CH 2–3.3 How to Conduct a Cost Estimate**

Conduct of a cost estimate is a multistep process involving planning, gathering data, conducting the estimate, risk and uncertainty analysis, and presenting the estimate. Depending on the program and data available, the methodology for the conduct of the estimate may vary. The BCF 131 presentations set forth guidance for each stage of the estimating process.
CH 2–3.4 Milestone-Specific Analysis
At each milestone or decision point, the analyst should provide a holistic view of the program and not just an estimate of the proposed solution. The cost analyst should provide analysis to the decision maker which provides insight enabling the decision maker to answer two main questions:

- Has the DoD fully funded the program of record within the Future Years Defense Program (FYDP)?
- Is the program of record an affordable solution for the DoD’s needs?

Determining the answer to the first question is straightforward: namely, is there funding in the budget and the FYDP that corresponds to the amount of funding forecasted to be necessary to carry out the program? The answer to the second question is more complex, and the analysis will vary at each milestone. Specific strategic questions for analysis at each milestone are described below.

At all milestones, when presenting analysis that will help the decision maker determine whether the program of record is one that fulfills the DoD’s needs and that the DoD can afford, the analyst should provide insight into:

- The cost of the solution
- Time needed to achieve the solution
- Whether the solution pushes the envelope on performance
- Any potential cost in extending the life of the current materiel solution until the new proposed solution is operational
- Whether the solution impacts the DoD Component’s portfolio by affecting other programs that are valuable to the DoD.

The key strategic questions the analyst should consider while conducting the Milestone A cost estimate are:

- What is the cost and performance trade space for the conceptual materiel solution and other potential solutions?
- Is the program affordable to both buy and operate in the long term?
- Are CA’s insights into the program consistent with the preferred solution of the AoA?

When conducting the Milestone B cost estimate, the key strategic questions the analyst should consider are:

- What is the cost and performance trade space for the detailed materiel solution and other potential solutions?
- Is the program affordable to both acquire and operate in the long term?
- Are there alternative acquisition or programmatic strategies that can result in a more affordable and efficient program?
  - What is the nature and duration of competition for both prime and major subcontractors?
  - What is the appropriate time to down select to one contractor?
  - Are there ways to invest in manufacturing efficiencies?
- What technologies or strategies can be pursued to lower the overall sustainment cost?
  - What investments can be made in sustainability?
  - Have alternative sustainment strategies been considered in the BCA?
  - Is there a way to introduce competition into planned contractor logistics support for a system?

When conducting the cost estimate for the low-rate initial production decision, the analyst should answer key strategic questions, including:

- What is the most efficient and affordable way to procure the system when considering rate of procurement, programmatics, recompeting the contract, and use of government furnished equipment?
• What is the most efficient and affordable way to transition to low-rate initial production and full-rate production?
  o What is the timing of initial procurement relative to operational testing results and demonstrated manufacturing capabilities?
  o How many operational systems should be purchased before testing is complete?
• What technologies or strategies can be pursued to lower the sustainment costs?
• Do the results of the cost analysis support the product support strategy BCA results?
• Is the system affordable when compared to the annual O&S costs of the legacy system being replaced?
• Is contractor logistics support or organic support more efficient and affordable?
• Is the system cost effective, balancing the risks associated with the estimate of its O&S costs and related parameters such as reliability with higher system readiness and better mission availability?

When conducting the cost estimate for the full-rate production decision, the analyst should consider key strategic questions, including:

• Are there alternative procurement profiles that result in a more affordable and efficient program?
• Could substantial savings be achieved through the use of a multiyear procurement contract for the program?
• What changes should be made to the sustainment strategy in the BCA?

CH 2–3.5 Cost Analysis Requirements Description
The Cost Analysis Requirements Description (CARD) is a complete, detailed description of a DoD program for use in preparing an ICE, POE, CCE, CCP, or other cost estimate, as required. The CARD is completed by the program office staff as they should have the most in-depth knowledge and understanding of the program details.

The foundation of a sound cost estimate is a well-defined program, and the CARD is used to articulate details about the program. The primary objective of the CARD is to succinctly describe the key technical, programmatic, operational, and sustainment characteristics of a program, along with supporting data sources, and to provide all of the program information necessary to develop a cost estimate. By using the CARD, different organizations preparing cost estimates can develop their estimates based on the same understanding of program requirements. As a program evolves and its costs and funding needs change, the CARD, as a living document, evolves with it.

The secondary objective of the CARD is to collect in-depth technical data to allow for validation or updating of cost estimating relationships (CERs) and the development of new CERs. Though not required for completion of estimates, this information, particularly for systems whose designs have matured to the point of deployment, is of great value to the entire acquisition community in ensuring high quality estimates in the future.

The CARD is composed of a narrative and a workbook. Requirements for the narrative, as well as template workbooks for each commodity, are available electronically at http://cade.osd.mil/policy/card.

CH 2–Version and Revision History
The table below tracks chapter changes. It indicates the current version number and date published, and provides a brief description of the content.

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