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Acquisition

GUIDE TO ACQUISITION AND SUSTAINMENT LIFE CYCLE MANAGEMENT

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This publication complements Air Force Policy Directive (AFPD) 63-1/20-1, *Acquisition and Sustainment Life Cycle Management* and Air Force Instruction (AFI) 63-101 *Acquisition and Sustainment Life Cycle Management*. This Air Force Pamphlet (AFPAM) provides guidance and recommended procedures for implementing Integrated Life Cycle Management (ILCM) for Air Force (AF) personnel who develop, review, approve, or manage systems, subsystems, end-items and services (referred to as programs throughout this document) procured under Department of Defense Directive (DODD) 5000.01, *The Defense Acquisition System* and DOD Instruction (DODI) 5000.02, *Operation of the Defense Acquisition System* (collectively called the DOD 5000 acquisition series). This publication replaces several non-published guides and templates. Additional non-mandatory guidance on best practices, lessons learned, and expectations is available in the *Defense Acquisition Guidebook* (**http://akss.dau.mil/dag**)

If there is any conflicting guidance between this publication and DOD 5000-series, CJCSI 3170.01, CJCSM 3170.01, or other AF Directive Publications, the latter shall take precedence. To ensure standardization, any organization supplementing this publication must send the implementing publication to SAF/AQX for review and coordination before publishing. This publication applies to all military and civilian AF personnel; other individuals or organizations as required by binding agreement or obligation with the Department of the Air Force (DAF). This publication applies to Air Force Reserve Command (AFRC) Units. This publication applies to the Air National Guard. Nuclear components governed by joint Department of Defense-Department of Energy agreements are not covered by this publication. The life cycle management of nuclear weapons jointly developed by the Air Force (AF) and the Department of Energy's National Nuclear Security Administration (NNSA) is covered in DOD Instruction 5030.55, *DOD Procedures for Joint DOD-DOE Nuclear Weapons Life-Cycle Activities*, AFI 63-

103, *Joint Air Force-National Nuclear Security Administration (AF-NNSA) Nuclear Weapons Life Cycle Management*, and applicable DOD-DOE and/or AF-NNSA agreements.

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Chapter 1

ACQUISITION AND SUSTAINMENT LIFE CYCLE MANAGEMENT

1.1. RESERVED Chapter 1 will provide details on Integrated Life Cycle Management tenets to provide the reader with a set of management principles to guide execution of programs and activities. ***Note****: This chapter will be completed in a later revision and will be staffed separately and included through an interim change.*

Chapter 2

LIFE CYCLE MANAGEMENT PLAN

2.1. Introduction. This section of the pamphlet is not intended to replace or supersede regulatory or statutory requirements found in other documents. United States Code (USC) Title 10; DODD 5000.01, *The Defense Acquisition System*; DODI 5000.02 *Operation of the Defense Acquisition System*; Federal Acquisition Regulation (FAR) Part 7, as supplemented; AFI 63-101, *Acquisition and Sustainment Life Cycle Management*; and AFI 65-501, *Economic Analysis* (if applicable) are used to develop the appropriate content for the Life Cycle Management Plan (LCMP). This chapter presents key points helpful in the preparation and coordination process for LCMPs and replaces the March 2005 *LCMP Guide*.

2.2. LCMP Purpose. The Life Cycle Management Plan (LCMP) is the integrated acquisition and sustainment strategy for the life of a system. The LCMP serves several purposes:

2.2.1. The LCMP provides an integrated look at all aspects of acquisition and sustainment in a single plan in order to allow leadership, especially the Milestone Decision Authority (MDA), to make informed decisions. It is an overarching yet concise document that encompasses and integrates information from all other program plans and assessments in a way to provide leadership a sufficient understanding of what the program is doing and why. The LCMP is the primary document used by the PM, MDA, Program Executive Officer (PEO)/Designated Acquisition Official (DAO), functional staffs, and other leadership to guide program execution from program initiation (generally at MS-B) through disposal demilitarization and is used as the basis for program transfer planning and materiel (hardware, software, and services) fielding decisions. Since the LCMP describes overall program strategies, the program office should make the approved LCMP available to DOD stakeholders and consider making a copy of the approved LCMP available to industry at the earliest opportunity (with appropriate deletions of funding or other sensitive information).

2.2.2. The LCMP fulfills the DODI 5000.02 requirements of the Acquisition Strategy, which includes the Life Cycle Sustainment Plan, and provides a vehicle to identify and request the required statutory and regulatory approvals for implementation of the program strategies. The life cycle strategy approval required by an Office of the Secretary of Defense (OSD) MDA is evidenced by a signed Acquisition Strategy cover page on the LCMP. As the program matures, commensurate strategies will continue to evolve and new increments of capability will be developed and released for operational use. The LCMP is the vehicle to document these changes. These overall program strategies provide the management framework to support program decisions by senior officials through the life cycle (milestone review, contract award, partnering arrangements, sustainment execution, etc.).

2.2.3. The LCMP fulfills the FAR, DFARS, and AFFARS requirements of the Acquisition Plan and the need for written documentation (FAR 7.105, as supplemented).

2.2.4. The LCMP may also be used to meet other DODI 5000.02 requirements, such as the Systems Engineering Plan (SEP) or Test and Evaluation Master Plan (TEMP). While the MDA or Service Acquisition Executive (SAE) is the final approval authority for the LCMP and many of the regulatory approvals contained within the LCMP, other functional approvals may be required for specific sections of the LCMP. The PM may submit specific functional

approval requests for sections contained in the body of the LCMP or as attachments, but such requests must be clearly identified. An updated LCMP is not required if the PM becomes aware of the need for additional approvals after the original LCMP has been approved. The request for these additional approvals should be processed in accordance with existing procedures.

2.3. Applicability. In accordance with AFI 63-101, the LCMP is required for all Air Force or Air Force-led joint programs on the Acquisition Program Master List (APML), weapon systems identified in AFPD 10-9 *Lead Command Designations and Responsibilities for Weapon Systems*, and space programs. The AFMC/CC, ALC/CC, or PM can utilize an LCMP for programs on the Sustainment Program Master List (SPML) and other non-Acquisition Category (ACAT) activities at their discretion. An LCMP is not required for Air Force variants of Other Service-led joint programs.

2.3.1. The LCMP is approved by the MDA (unless delegated) for ACAT programs on the APML or by the designated approval authority for programs on SPML. See **paragraph 2.7** for more details on LCMP coordination and approval.

2.3.2. The LCMP is drafted as early as possible, approved prior to program initiation or prior to release of the request for proposals (RFP), and continually matured through the program life cycle. The LCMP is reviewed by the PM annually and revised as necessary.

2.3.3. The LCMP is updated/approved preceding each milestone decision point, whenever the approved strategy changes, or whenever the approval authority deems appropriate. Since the LCMP is required prior to release of the RFP for Engineering and Manufacturing Development (EMD), it may need to be updated after contract award.

2.3.4. At the discretion of the approval authority, the LCMP for a modification may be an annex to the existing and approved system LCMP (or legacy Acquisition Strategy document).

2.3.5. Fact-of-life changes, such as updates to schedule and funding adjustments, do not require a re-coordination of the LCMP unless they drive a significant change in the approved strategies or Acquisition Program Baseline (APB). Existing LCMPs do not need to change to revised templates or formats, but should be reviewed to ensure all new statutory or regulatory requirements are addressed, regardless of template used.

2.3.6. Existing programs that do not currently have an LCMP will transition to an LCMP when the program:

2.3.6.1. Enters a new milestone.

2.3.6.2. Implements a significant change that would have resulted in a revision to other legacy acquisition or sustainment strategy documents.

2.3.6.3. Implements a major system modification. At the discretion of the approval authority, the requirement may be met with an annex to the existing system approved acquisition/sustainment strategy documentation. The annex will be completed in accordance with all LCMP requirements.

2.3.6.4. When deemed appropriate by the MDA, Defense Acquisition Executive (DAE), SAE, PEO/DAO, or the AFMC/CC, ALC/CC, PM, or other designated authority for programs on the SPML.

2.4. Scoping the LCMP.

2.4.1. LCMPs should be initially written at a strategic level and updated with an increasing level of detail as the program matures. A LCMP crafted at a strategic level provides the vehicle by which the Air Force Secretariat and OSD can provide overarching guidance, while maintaining empowerment of the implementation strategy to the PM and PEO/DAO.

2.4.2. The discussion in the LCMP should be limited to the information required to adequately describe the overall strategy and support the requested decision. With few exceptions, the summary information required to meet statutory requirements should be incorporated into the body of the LCMP, and the detailed document referenced. Attachments should be minimized and be essential to support the program strategy (per Defense Acquisition Guidebook). When using attachments or embedded information to meet other DODI 5000.02 requirements, clearly identify theses sections/attachments as well as the additional or unique coordination requirements they drive. When determining the scope of the LCMP, consider if using the LCMP to address other requirements may have the unintended consequences of delaying approval.

2.4.3. Program Managers should develop a separate LCMP for each program on the APML. However, the PM can document modification programs as an annex to an existing LCMP if the same basic strategy is being applied and the information is current. As an example, this approach could be used to develop a program-level LCMP covering the broad management aspect of a weapon system (e.g., the F-16), with annexes covering individual modification programs on the weapon system (e.g. avionics upgrade, landing gear replacement, etc.), each serving as its own stand-alone management approach. The annex should then follow the approval process outlined below, with the existing LCMP included in the coordination package for reference.

2.5. Preparing the LCMP. The most effective approach to developing a LCMP is through the use of Integrated Product Teams (IPTs).

2.5.1. A well written and useful LCMP is a direct result of the collaborative efforts of a multifunctional team. In many respects, the process used to develop the LCMP is as important as the document itself. All stakeholders must be active participants in this process. This is best accomplished through the establishment of a LCMP IPT.

2.5.2. The LCMP IPT, led by the PM or another designated leader, will develop a proposed life cycle strategy as early in the program as possible (see **Figure 2.1**). The process begins by developing a draft of the LCMP based on the results of the Analysis of Alternatives (AoA) and the Technology Development Strategy (TDS) as part of early program activities. Several iterations of the draft will likely be required within the LCMP IPT before all stakeholders are satisfied with its content. This process could take several months, based on program complexity and the number of stakeholders involved. It is important to record the activities, issues, agreements, and comments as well as the disposition of issues and comments in order to avoid revisiting them later in the development and approval process. This record can take the form of detailed meeting minutes, comment resolution matrix, or an IPT journal. The final draft should be ready for approval, at or immediately following, the Acquisition Strategy Panel (ASP) and reflect the direction provided by the ASP.

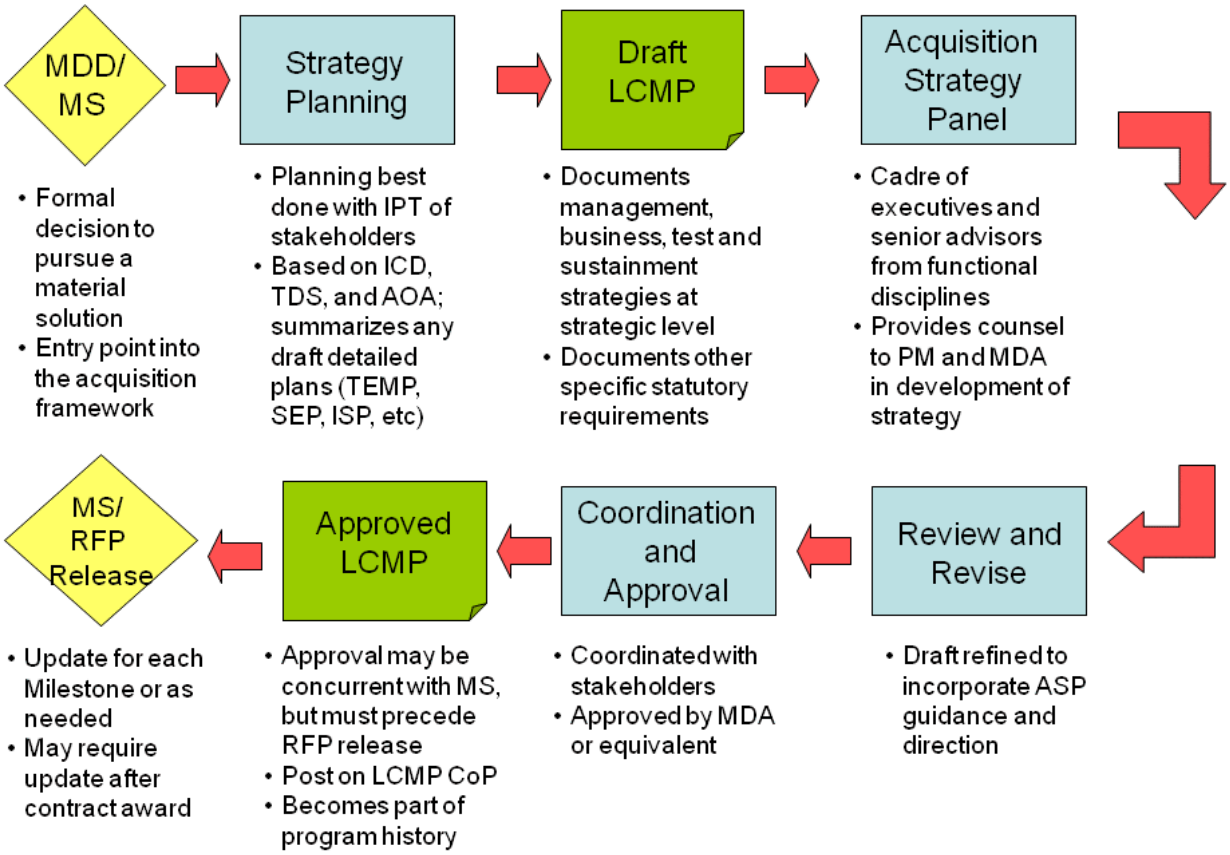
2.5.3. In accordance with DODI 5000.02 and AFI 63-101, the MDA may tailor regulatory program information requirements and acquisition process procedures contained within the respective regulations to achieve cost, schedule and performance goals. Tailoring decisions need to be documented and the ability to tailor does not remove the need to process waivers from guidance in accordance with documented procedures. Examples of tailoring with regard to LCMP preparation may include the consolidation of multiple documents into the LCMP, the level of detail included in the LCMP, the format of the LCMP, or the timing of approval of different LCMP subject areas. If tailoring results in an LCMP section not being applicable to a specific program, identify it as "not applicable" and provide justification, rather than just omitting it from the document. Statutory requirements cannot be tailored.

2.5.4. The Program Manager should consider if the LCMP is planned for release to the public and/or contractors when preparing the document. Required content should not be avoided or talked around, but identified for review prior to release. If the LCMP contains sensitive information (such as source selection, Scientific and Technical Information (STINFO), etc.) that should not be openly shared, the LCMP should be reviewed and, if necessary sections removed, prior to releasing to the public, contractors, or to other restricted personnel (such as foreign nationals). Removed sections should be clearly identified and a reference and/or POC provided.

2.5.5. As a result of the collaborative effort of the LCMP IPT, each version of the LCMP will have the appropriate level of detail and emphasis. Accordingly, the MDA and SAE expectations will be that all relevant issues have been discussed and any alternative program management, acquisition, and sustainment strategies have been explored during the LCMP preparation process. The final version of the LCMP should focus on the best alternative for the program.

2.5.6. Updated LCMPs (or amended LCMP annexes) should include a statement summarizing the changes. Identify all changes with a vertical bar in the margin, and reflect the current status of the change action(s) described.

Figure 2.1. LCMP Development Process



2.5.7. When determining participants on the LCMP IPT, PMs should take into account the context of the program, the content and maturity of the LCMP, and the level of involvement of the functional areas and stakeholders. As a minimum, the PM should include representatives for the following functional areas on the IPT: comptroller/finance, contracting, systems engineering (to include National Infrastructure asset requirements), human systems integration (HSI), safety, Occupational Health, intelligence (consider information needs for both adversaries as well as friendly entities), Judge Advocate, life cycle (acquisition and sustainment) logistics, acquisition and information security (to address the Program Protection Plan and Information Assurance), the test community including the responsible test organization (RTO) and the operational test organization, and the Acquisition Center of Excellence (ACE) (for advice and guidance). In addition, representatives from the lead command, the primary using Major Command (MAJCOM) and the sustainment ALC should be invited. Depending on the context of the acquisition, PMs should consider adding a representative from the small business office. In most cases, the local representatives from these functional areas will be adequate to start the process, but HAF functional involvement in the IPT may be needed as you approach the ASP (especially for MDAP/MAIS programs).

2.6. Stakeholders.

2.6.1. Each of the program's stakeholders must be involved in the LCMP preparation process. A stakeholder is an individual or organizational entity (users, developers, acquirers,

technologists, testers, budgeters, sustainers, and industry) that is, or will be, associated with implementing and supporting the associated system, subsystem, or end-item capability requirements. This includes representation from all appropriate staff levels (Secretariat, Air Staff, OSD), MAJCOMs, Direct Reporting Units (DRU) and Field Operating Agencies (FOA) as well as the local Center staff (including ACE). PMs should contact the Program Element Monitor (PEM) to identify HAF-level staff elements and agencies that should participate in the LCMP preparation and approval process. Particular consideration should be given to the functional areas (listed in the previous section on IPT membership), but the specific stakeholders are based on the individual program. In addition, representation from other participating services or governmental agencies should be involved as necessary to ensure interoperability and consistency with future joint concept of operations (CONOPS). Early and continuous involvement with both operational and sustainment organizations have proven to enhance a cooperative relationship and maximize the opportunity for a successful program. The level of representation from these organizations may vary according to the ACAT level of the program.

2.6.2. The nature of the stakeholders' involvement in the LCMP process depends primarily on the size and complexity of the program. Not all stakeholders will want to be involved from the very start. However, the PM should invite them to be part of the process as early as possible to ensure they understand that active, early participation of the right people is the real key to program success.

2.6.3. The program manager (PM) should ensure LCMP accessibility for stakeholders using any number of methods such as Communities of Practice (CoP) sites (e.g., Air Force Knowledge Now (AFKN)), automated collaboration and routing tools (such as Microsoft Office SharePoint Services), or other data sharing methods. A CoP provides a single-entry point web-based integrating environment where the LCMP can collaboratively be authored and maintained. PMs can and should manage and control the LCMP visibility including user access and privileges, especially funding and contracting information prior to and during source selection. All LCMPs must be posted to the AFKN LCMP CoP when approved in accordance with AFI 63-101. If the LCMP contains sensitive information (such as source selection, STINFO, etc.) that should not be openly shared, consider using the document security functions of the CoP to limit access or removing sections. Removed sections should be clearly identified and a reference and/or POC provided.

2.7. Coordination and Approval.

2.7.1. The LCMP IPT, signature authorities, and local procedures recommend which offices coordinate on the LCMP package. All signature agencies should be represented on the LCMP IPT to ensure early involvement and thus minimize coordination time during the coordination phase. Signature agencies should be identified early in the acquisition planning process to ensure their participation is obtained. Use of applicable automated workflow tools (e.g. SharePoint) should be considered to expedite coordination and provide visibility/transparency throughout the coordination cycle. The ACE offices and PEMs provide a valuable resource for advice in developing and coordinating the LCMP, but the PM is ultimately responsible for ensuring that the level of detail and coordination is sufficient in order to facilitate a decision.

2.7.2. Step 1: Local Coordination.

2.7.2.1. As a minimum, it is suggested that coordination with the following "local" organizations take place: the competition advocate, procuring contract office, the Judge Advocate's office, the Small Business Office and the appropriate ALC or Logistics Office. Additionally, depending on the type of program, signatures may be required from the buying office, contracting official or Senior Center Contracting Official, and using MAJCOM. For SPML programs, local coordination would also be with appropriate AFMC or AFPSC functional offices. Consult your center-level ACE for local coordination and approval procedures.

2.7.2.2. Once the initial LCMP (with an Acquisition Strategy cover page for ACAT IAM and ACAT ID programs) is completed and considered ready for coordination, the PM will send it to the PEO/DAO staff (or as instructed per local procedures). The PEO/DAO staff will distribute it to local advisors for final review and comment. Once all comments are addressed to the satisfaction of the PM, the PM seeks Deputy PEO (DPEO) or DAO review and coordination. If headquarters (HQ) Air Force (HAF) review is required (see below) the PM will prepare a HAF staff package for DPEO/DAO signature. Once signed, the PM will forward the staff package to the PEM for HAF coordination and provide it HQ AFMC or HQ AFSPC for information.

2.7.3. Step 2: HAF Staff Review/External Coordination.

2.7.3.1. For ACAT I, IA, and non-delegated II programs, the LCMP staff package will require, at a minimum, the coordination of the relevant HAF/SAF Director with PEM responsibility, the Deputy Assistant Secretary for Acquisition Integration (SAF/AQX) or SAF/USA for space programs, the Deputy Assistant Secretary of Logistics (SAF/IEL), and the Deputy General Counsel (Acquisition) (SAF/GCQ). The LCMP should be provided to the ASP or AFRB membership. Representatives from any outside offices or agencies, as well as other HQ-level IPT members should also be included as necessary for multi-Service programs. The Deputy Assistant Secretary (Contracting), SAF/AQC, as the Air Force Competition Advocate General, will review and coordinate on the LCMP to indicate concurrence with the overall business strategy embodied within the LCMP. AF PM&AE will review to ensure the document reflects the agreements from the ASP and current best practices. SAF/FMBI may also be requested to coordinate on ACAT I and II LCMPs. Once coordinated among the HQ-level offices and comments satisfactorily addressed, the LCMP is returned to the PEO staff for PEO signature.

2.7.3.2. Delegated ACAT II, ACAT III, and SPML programs do not require HAF coordination unless requested to address interoperability issues, meet statutory requirements, or as needed to satisfy unique program considerations. If uncertain, the PM may request the PEM assess and provide recommendations regarding HAF coordination. Following local coordination and any required external coordination the LCMP should be submitted to the PEO/DAO for approval for delegated ACAT II and ACAT III programs, or the designated approval authority for SPML programs.

2.7.3.3. As part of the coordination process during this step, non-space LCMPs are provided to HQ AFMC, and space LCMPs (or IPSs) are provided to HQ AFSPC for information purposes in order to support enterprise planning (mission assignment) and allow AFMC/CC or AFSPC/CC (or their designee) the opportunity to make

recommendations supporting milestone decisions. ***Note***: If a program uses resources from another MAJCOM (e.g. a space program managed by AFMC resources) it should be provided to the resourcing command for information and planning purposes.

2.7.3.4. The PM should prepare a SSS for use by the PEM as the coordination vehicle through HQ-level offices. The SSS should highlight the life cycle strategy and include a program overview. Any outstanding waivers, certifications or approvals that require resolution should also be addressed in the SSS. The PEM may call an LCMP coordination meeting if deemed necessary. Any concerns raised by the MDA during the ASP should be reflected in the ASP minutes along with appropriate resolution. A copy of the ASP charts, minutes, and resolution of those actions items should be attached to the SSS.

2.7.3.5. When submitted for SAF/AQC coordination, the Contracting Operations Division (SAF/AQCK) will accomplish a final check to ensure the LCMP incorporates the proper business, contract, and competition strategies, and will enter the initial document into the Regulatory Contracting Approval Tracking System (RCATS).

2.7.4. Step 3: Other Statutory/Regulatory Approvals.

2.7.4.1. Since the LCMP meets the intent of multiple statutory or regulatory requirements specific approval signatures are required. Depending on the decisions requested or statutory information provided, additional signatures may be required. For example, in procurement of conventional ammunition cases the Single Manager for Conventional Ammunition (SMCA) in the Army is required to review and provide written concurrence with all DOD LCMPs.

2.7.4.2. The PM may choose to have the LCMP be the signature vehicle for other statutory or regulatory approvals or have the LCMP summarize separate approvals. If an individual is approving only a portion of the LCMP, indicate that specific portion next to the approving official's signature block.

2.7.4.3. With either approach as each approval is obtained, the PM will be authorized to implement the decisions appropriate for that signature.

2.7.5. Step 4: Final Approval by the MDA.

2.7.5.1. Minimum required signatures are indicated in **Table 2.1** Depending on the decisions requested or statutory information provided, additional signatures may be required.

Table 2.1. LCMP Final Approval Authority

Approval Authority	Acquisition Category						
	ID	IAM	IAC	IC	II	III	SPML
OSD (AT&L)	X						
ASD (NII)		X					
SAE (SAF/AQ or SAF/US)	X	X	X	X	X		
PEO / DAO					*	X	
Approval Authority as Designated							X

OSD (AT&L) – Under Secretary of Defense, Acquisition, Technology, and Logistics
ASD (NII) – Assistant Secretary of Defense, Networks and Information Integration
SAE – Service Acquisition Executive (SAF/AQ - Assistant Secretary of the Air Force (Acquisition)) for non-space programs; SAF/US - Under Secretary of the Air Force for space programs
PEO – Program Executive Officer
DAO – Designated Acquisition Official
* If delegated.

2.7.5.2. As each of the LCMP approval signatures is obtained, the PM can begin to implement the actions appropriate for the level of approvals received. For example, approvals for certain source selection preparation activities following local contracting approval.

2.7.5.3. Final approval is indicated by presence on the LCMP of the typed name, title and signature of the approving official, and the date of the signature.

2.7.5.4. For ACAT ID and IAM programs the PEO/DAO staff (or other depending on local procedures) returns the signed LCMP after PEO/DAO signature to the PEM for final signature by the SAE. Provide an electronic copy to facilitate changes. The PEM will submit the coordinated staff summary package to SAE for approval. SAE will sign the LCMP prior to forwarding it to OSD(AT&L) or ASD(NII), respectively. After OSD approval, a copy of the document should be forwarded to SAF/AQCK for entry into RCATS.

2.7.5.5. For ACAT IAC, IC and non-delegated ACAT II programs, the PEO staff (or other depending on local procedures) returns the signed LCMP after PEO signature to the PEM for final signature by the SAE. Provide an electronic copy to facilitate changes. The PEM will submit the coordinated staff summary package to SAE for approval. After SAE approval the PEM should forward a signed copy of the document to SAF/AQCK for processing through the RCATS.

2.7.5.6. All approved LCMPs are posted to the *LCMP Community of Practice (CoP)*(**https://wwwd.my.af.mil/afknprod/ASPs/CoP/OpenCoP.asp?Filter=OO-AQ-AF-51**) by the PM. If the LCMP contains sensitive information (such as source selection, STINFO, etc.) that should not be openly shared, consider using the document security functions of the CoP to limit access or removing section

2.7.6. Prior approved versions should be maintained by the PM for historical purposes. All appreciable changes to the product support strategy of the LCMP will be properly reflected in the document as well as the historical database.

2.8. Regulatory Contracting Approval (RCA) Documents.

2.8.1. RCAs are additional Secretariat approvals required for a variety of situations. These include, but are not limited to: Indemnification Requests, Special Termination Cost Clause Approvals, Source Selection Delegation Requests, Source Selection Plans, Fixed Price Determinations, Organizational Conflict of Interest Waivers, Truth In Negotiations Act Waivers, and Justification and Approvals. A program may need one or more RCAs concurrent with the LCMP approval in order to implement its acquisition strategy.

2.8.2. Approval of some RCAs is dictated by statute and is often above SAF/AQ. Use of a LCMP does not change the preparation and submittal of the various RCAs. As a convenience, the PM can elect to submit the LCMP, along with other RCAs for parallel processing. The approving official's awareness of the overall management strategy embodied in the LCMP will usually hasten the coordination and approval process of the RCA if processed in parallel.

2.9. Solicitation Release. The MDA must approve the LCMP (as the Acquisition Strategy) prior to the Contracting Officer's release of the final solicitation for the Engineering and Manufacturing Development phase (DODI 5000.02, AFFARS 5307.104(d)). Other approvals (e.g., approval of the source selection plan in a competitive acquisition) may also be required prior to solicitation release. Consult all current guidance prior to releasing the solicitation.

2.10. Preparing the LCMP. **Paragraph 2.11** contains the prescribed LCMP format, content, and some general considerations when preparing the LCMP. A template is also provided at Attachment 4 and can be downloaded from the LCMP CoP. The specific format is at the PM's discretion, however, at a minimum, compliance with FAR 7.105, as supplemented, for documenting the acquisition plan is required. ***Note***: Refer to DODI 5000.02, for a complete listing of statutory, regulatory, and contract reporting information and milestone requirements.

2.10.1. The content will be a direct result of the unique circumstances of the program and the membership of the LCMP IPT. With the exception of Special Access Program LCMPs that are submitted through the appropriate channels, the entire LCMP content should remain unclassified and also free of any source selection sensitive information. Incorporate classified or source selection sensitive information by reference.

2.10.2. The format and content in **paragraph 2.11** provides a guide to the PM to ensure all areas are considered, but can be tailored based on the phase, ACAT level, and type of program with concurrence from the MDA. All section identified in **paragraph 2.11** should be included in the LCMP; if a section is not applicable to the program, state "Not Applicable" and provide justification. This will communicate that the area was considered and not just overlooked. If something needs to be added that is unique to the program, add it, but try to retain the standard format. The use of the standard format helps streamline coordination by helping reviewers easily locate specific information.

2.10.3. Referencing Other Documents. The LCMP is a summary document and must remain consistent with other program documentation. The final conclusions, recommendations, or summary of program documents may be incorporated into the LCMP where appropriate.

Rather than paste large sections from other documents, the LCMP should reference documents (and provide a link if possible) if additional detail is required. The following are examples of documents that may contain information that needs to be summarized or referenced (either all or in part) in the LCMP and should be considered, if available, during the LCMP development process.

2.10.3.1. Acquisition Intelligence Lifecycle Cost Estimating Structure (AILCES)

2.10.3.2. Acquisition Program Baseline (APB)

2.10.3.3. Analysis of Alternatives (AOA)

2.10.3.4. Aircraft Information Program (AIP) Management Plan

2.10.3.5. Capability Development Document (CDD)

2.10.3.6. Capability Production Document (CPD)

2.10.3.7. Collaboration and Measurements Requirements Summary (CMRS)

2.10.3.8. Concept of Operations (CONOPs)

2.10.3.9. Cost Analysis Requirements Description (CARD)

2.10.3.10. Information Support Plan (ISP) - *(Per CJCSI 6212.01C, replacing C4ISP)*

2.10.3.11. Initial Capabilities Document (ICD)

2.10.3.12. Integrated Technology Roadmap

2.10.3.13. Force Structure Analysis

2.10.3.14. Life Cycle Cost Estimates (LCCE)

2.10.3.15. Manpower Estimate Reports (MER)

2.10.3.16. Memorandums of Understanding (MOU)/Memorandums of Agreement (MOA) (for joint programs)

2.10.3.17. Modeling & Simulation Support Plan

2.10.3.18. Programmatic Environment, Safety, and Occupational Health (ESOH) Evaluation (PESHE)

2.10.3.19. Program Protection Plan (PPP)

2.10.3.20. Source of Repair Assignment Process (SORAP) Package

2.10.3.21. Source Selection Plan (SSP)

2.10.3.22. Systems Engineering Plan (SEP) (Organizational or Programmatic)

2.10.3.23. System Threat Analysis (STA)/System Threat Assessment Report (STAR)/Information Operations Capstone Threat Assessment/Capability Threat Assessments (CTA)

2.10.3.24. Technology Development Strategy (TDS)

2.10.3.25. Technology Readiness Assessments (TRA)

2.10.3.26. Technology Transition Plan (TTP)

2.10.3.27. Test and Evaluation Master Plan (TEMP)/Test and Evaluation Strategy (TES)

2.11. LCMP Format and Content. The LCMP should fully describe the initial increment of capability (i.e., the initial deployment capability), and how it will be funded, developed, tested, produced, and supported. The LCMP should preview similar planning for subsequent increments, and identify the approach to integrate and/or retrofit earlier increments with later increment improvements. For areas requiring statutory or regulatory approvals (other than the Acquisition Strategy), the PM may choose to integrate the requirement in the LCMP and have the LCMP be the signature vehicle, or the requirement may be approved under separate signature and summarized as needed in the LCMP to provide a complete overview of the life cycle strategy. Reference DODI 5000.02, AFI 63-101, and Chapter 2 of the Defense Acquisition Guidebook (DAG) for additional details and guidance.

2.11.1. **Cover Page.** Identify the program, date and version, and classification. For ACAT ID and ACAT IAM programs, the cover page should identify the document as the Acquisition Strategy with "(Air Force Life Cycle Management Plan)" underneath.

2.11.2. **Approval Signature Page.** Contains the mandatory approving officials to include at a minimum the PM, the PEO/DAO, and the MDA (if not the PEO). Other statutory or regulatory signatures may be added. If an individual is approving only a portion of the LCMP, indicate that specific portion next to the approving official's signature block.

2.11.3. **Coordination Signature Page (Optional).** Contains stakeholder's coordination signatures as required. Organizations should be considered for coordination based on the specifics of the program. Consider the appropriate level and functional areas as required to provide input and ensure awareness such as: comptroller/finance, contracting, small business office, systems engineering safety, Occupational Health, intelligence, Judge Advocate, life cycle logistics, acquisition and information security, test, the primary using MAJCOM, sustainment, and (if applicable) representation from other participating services or governmental agencies.

2.11.4. **Table of Contents.**

2.11.5. **Executive Summary.** Briefly discuss the program objectives and the expected decisions this LCMP supports. This high level summary should be able to stand on its own and should be completed based on the details and supporting information provided in the later sections of the LCMP.

2.11.5.1. Identify the capability need the program is intended to meet and briefly describe the specific capabilities it will provide.

2.11.5.2. Provide the reason the LCMP is being prepared or updated (milestone review, full rate production decision, change in strategy, etc.). Identify the decisions being sought and any significant waivers/deviations required. State the reason the LCMP is being prepared or updated (milestone review, full rate production decision, change in strategy, etc.).

2.11.5.3. Briefly summarize (no more than a paragraph for each) the basic management business, technical, and sustainment strategies detailed in the main body of the LCMP.

2.11.6. **Acquisition Approach.**

2.11.6.1. **Acquisition Approach Summary** . Describe the basic acquisition strategy (i.e. evolutionary in multiple increments, single delivery, multiple prototypes then down select, etc.).

2.11.6.1.1. Describe the plan to acquire the initial increment to include a strategic discussion of the anticipated cost, schedule and performance drivers of the phase (independent of future increments, first in series of time-phased requirements, etc.). Describe the plan to transition from initial increment to later increments.

2.11.6.1.2. Summarize the plan to complete all increments.

2.11.6.1.3. Identify whether or not this is a New Start program. Verify that the appropriate Congressional notifications have been completed. (Reference, DOD 7000.14-R, *DOD Financial Management Regulation*, Volume 3, Chapter 6 for guidance on new start determinations.)

2.11.6.1.4. Describe the relevant technical and contractual history of this program. Describe how this acquisition approach "fits in" with any previous relevant acquisitions on this program.

2.11.6.1.5. Identify if this is a joint program. If so, describe the joint nature and characteristics of the program. Identify the service(s) involved, summarize the key service-specific technical and operational differences in the end deliverables, and describe the principal roles and responsibilities of each service in the management and execution of the program.

2.11.6.1.6. Describe any unique program circumstances, such as transitioning from on a Joint Concept Technology Demonstration, selection as special interest program, etc.

2.11.6.1.7. Identify if Low Rate Initial Production (LRIP) is part of the program strategy. If so summarize the LRIP plan, identify the justification, and provide quantities

2.11.6.2. **Open System Approach Summary.** Briefly describe how the program implements a modular open systems approach (MOSA) or provide justification for the decision to provide a system with closed interfaces.

2.11.6.2.1. Summarize how the strategy supports a modular open systems approach in order to allow the assessment and use of widely supported commercial standards facilitating rapid fielding, technology updates, and enhanced interoperability.

2.11.6.2.2. Identify key modules and interfaces in the systems architecture.

2.11.6.2.3. Summarize how MOSA fits into the program's overall business and technical strategy. Summarize how MOSA affects the contracting, development, manufacturing and T&E strategies.

2.11.6.2.4. Summarize how the program will develop, implement, monitor, and assess MOSA implementation and ensure system openness (as applicable).

2.11.6.3. **Tailoring.** Identify proposed tailoring initiatives for MDA approval, as well as already approved (e.g. via ADM) tailoring plans. Consistent with statutory and federal regulatory requirements, the PM and MDA may tailor the phases and decision points to meet the specific needs of the program.

2.11.7. **Source and Related Documents.** List key source documents as identified in Chapter 2 of the DAG. Include approval date and note the approval status. If a document is still in draft and not approved, it should be so noted and the projected approval date provided.

2.11.8. **Capability Need.** Describe the unclassified mission need, desired warfighting capabilities, threat assessment, and concept of operations. Any classified information should be incorporated by reference.

2.11.8.1. Provide a summary description of the capability requirement. Identify the key operational and sustainment requirements for this system. (Summarize the time-phased capability requirements as described in the Initial Capabilities Document (ICD), Capability Development Document (CDD), and/or Capability Production Document (CPD).)

2.11.8.2. Summarize the expected operational mission of this program. Identify the user and summarize the user's concept of operations and the users support concept for this program. Briefly describe how the program fits into the CONOPS (AF and Joint) and current and future integrated architectures (AF and Joint).

2.11.8.3. Summarize the threat assessment in relation to the capabilities or operational concepts the system will support. Identify the threat this system is responding to, as well as any man-made or natural threats to mission performance. Also identify which elements of the threat (if any) are not yet fully defined, and which elements of the threat (if any) will not currently be countered by the system capabilities or Concept of Operations (CONOPS).

2.11.8.4. Describe how the program meets the user's needs and operational employment concept. Describe the program objectives and the capabilities the system provides.

2.11.8.5. Describe the alternative solutions considered during the Materiel Solution Analysis and, if required, the Analysis of Alternatives (AOA).

2.11.9. **Top-Level Integrated Schedule.** Identify the top-level program milestones and schedule events. Reference DAG Chapter 2 for additional information.

2.11.9.1. Discuss the different acquisition phases and increments. For each phase identify what is to be accomplished and the exit criteria.

2.11.9.2. Identify any schedule dependencies on other programs or external resources. (e.g. test resources, facility construction, etc.)

2.11.9.3. Identify the interrelationship between the milestones and activities in one increment to those in another increment. Describe any overlap or concurrency between increments.

2.11.9.4. Reference the key items from the Integrated Master Plan/Integrated Master Schedule (IMP/IMS) to include contract events and technical reviews.

2.11.9.5. No later than the Milestone C LCMP update, identify the program's target transfer date for moving from acquisition to sustainment.

2.11.10. **Program Interdependency and Interoperability**. Identify and assess the interoperability issues that could impact execution of the acquisition strategy.

2.11.10.1. Information Interoperability.

2.11.10.1.1. Identify the information technology (IT)/national security systems (NSS) compatibility, IA protection, and interoperability requirements for this system (to include applicable International Standardization Agreements) and state how they are being addressed.

2.11.10.1.2. Identify any systems and programs that will provide data or services required by this system. Describe how this program will ensure the required data/services are available when required.

2.11.10.1.3. Identify any systems or programs that require data or services from this system. Describe how this program will ensure it can provide the required data/services when required.

2.11.10.2. Other than Information Interoperability.

2.11.10.2.1. Identify any non-information compatibility and interoperability requirements for this system and state how they are being addressed.

2.11.10.2.2. Identify if this is part of a system-of-systems or family-of-systems acquisition. If so, identify the other systems involved. Identify any other related programs and describe the relationship of the program to those other programs.

2.11.10.3. Coalition Interoperability. Identify any applicable U.S. ratified International Standardization Agreements (ISA) for compatibility, interoperability, and logistics interchangeability of materiel in allied and coalition operations. Discuss if ISAs have been considered as part of the strategy. If all materiel is intended for use by U.S. Forces, discuss if possible future multinational operations have been considered. Reference DOD 4120.24-M, *Defense Standardization Program (DSP) Policies and Procedures*, and CJCSI 6212.01, *Interoperability and Supportability of Information Technology and National Security Systems*.

2.11.11. **International Cooperation** . Describe any opportunities for allied participation in the program. For additional information reference DAG Chapter 2.

2.11.11.1. Describe your international cooperative strategy at a level sufficient to satisfy the statutory (10 U.S.C. 2350a) requirement for a Cooperative Opportunities document.

2.11.11.2. Identify and describe any evaluations of alternatives that are planned or are in development by the U.S. and allied nations, to meet the warfighter's requirements and to increase the opportunity for coalition interoperability.

2.11.11.3. Identify if foreign military sale, commitment to sell, or DOD agreement to license for export is planned. If the program is an ACAT I or II system that has not successfully completed Developmental Test and Evaluation (DT&E) and IOT&E, identify if you have received USD (AT&L) approval or when approval will be received.

2.11.12. **Risk and Risk Management.** Identify and describe your risk process and your top technical, programmatic, and operational risks identified by the stakeholders at the current point in the program. Describe how funding, schedule and performance are planned to be balanced and traded to manage/mitigate key risks.

2.11.12.1. Describe the approach for identifying, analyzing, mitigating, tracking, and controlling performance/technical, cost, schedule, and programmatic risks throughout the life of the program.

2.11.12.1.1. Include the approach to identify risk based on interdependence on other programs.

2.11.12.1.2. Describe the process to continue technical awareness efforts and interaction with stakeholders and key information sources (AFRL, industry, etc.) to highlight if and how risks have changed

2.11.12.1.3. Identify the key technical risk elements. Describe the associated cost and schedule risk with these elements. Identify additional costs and/or schedule risks independent of the technical risk elements. Describe how these risks are being eliminated or minimized.

2.11.12.1.4. **Chapter 12** of this AFPAM and the following risk management tools are available for consideration in developing the Risk Assessment approach. AFMC Pamphlet 63-101, Risk Management, provides PMs and their program management team a basic understanding of the terms, definitions, and processes associated with effective risk management. *Risk Management Guide for DOD Acquisition* is designed to provide acquisition professionals and program management offices with a reference book for dealing with system acquisition risks.

2.11.12.2. Describe your top technical risks (e.g., technology maturation, engineering integration, manufacturing, industrial base). Identify the program Critical Technology Elements (CTE) and their technology readiness levels (TRL); explain how the CTE list was formed and why the list is believed to be complete. Identify who assessed the TRLs for each of the CTEs. Summarize the technology maturation plans and risks for each CTE. Discuss how the program's acquisition strategy is appropriate given the technical maturity level of the system.

2.11.12.3. Describe your top programmatic challenges and how the program plans to address each of these challenges. Identify any programmatic areas that have yet to be evaluated or programmatic risks for which mitigation plans have not been formulated, and identify when this analysis and planning will take place.

2.11.12.4. Describe your top sustainment/operational challenges and how the program plans to address each of these challenges. Identify any programmatic areas that have yet to be evaluated or programmatic risks for which mitigation plans have not been formulated, and identify when this analysis and planning will take place. Identify the level of user involvement and insight in evaluating sustainment/operational challenges.

2.11.12.5. Identify and describe any risks that have been deferred to future increments. Explain why these risks can be deferred and whether any residual risks remain in this increment.

2.11.12.6. Provide a risk matrix to show relative severity and probability of occurrence for the risks. (see **Chapter 12** of this AFPAM, AFI 63-101, and (**http://www.acq.osd.mil/sse/docs/2006RMGuide4Aug06finalversion.pdf**) for format).

2.11.13. **Technology Maturation.** Summarize the strategy to mature technology, in concert with integration and design development efforts, to reach the desired level at the next Milestone.

2.11.13.1. Summarize the Technology Development Strategy (TDS) for maturing technology required for your system and describe the research and collaboration accomplished to assess the availability and applicability of new advances. Explain why you think your technology is mature enough to enter the particular milestone. Technology maturity includes the manufacturing aspects as well as the science. Identify alternate technologies that could be used if existing technology is not sufficiently mature to incorporate into the baseline system design. Include software maturity strategy.

2.11.13.2. Describe how the program has identified the "critical" technologies in their program and identify how you plan to either show they are mature or how you intend on maturing technology.

2.11.13.3. Describe the planned prototyping and CP for technology maturation and end item integration to meet the capability. Summarize how competitive prototyping will be used in the program to reduce risk.

2.11.13.4. Identify major events such as proof testing and the overall schedule and resources for the upcoming Milestone Technology Readiness Assessment. Summarize the key technical requirements for meeting the performance parameters their status/availability (e.g., requires development, off-the-shelf), and any system integration issues.

2.11.13.5. Summarize how the Technology Readiness Assessment (TRA) was conducted or address how/when a TRA will be conducted.

2.11.13.6. Describe the approach for Continued Technology Surveillance. Describe/include the communications plan identifying the program stakeholders and the flow of information.

2.11.14. **Systems Engineering Approach.** Critical considerations include, but are not limited to, Operational Safety, Suitability, and Effectiveness (OSS&E), software engineering, interoperability, verification, security, supportability, human systems integration (HSI), product and system integrity, ESOH, identification and protection of critical program information (CPI), and industrial base issues. Identify the key system engineering metrics, such as technical performance measures (TPMs), which will be used to gauge technical progress over the life of the program. If the program is an ACAT ID ACAT IAM, or other program with a stand-alone program SEP, summarize the Systems Engineering (SE) approach documented in your SEP reflecting a disciplined process to ensure critical considerations are implemented during concept development, requirements definition, system design, development, production, test, and sustainment. If an organization SEP is being used and no stand-alone program SEP is planned, reference the organizational SEP and provide all program unique systems engineering processes in the LCMP, i.e. those processes not

captured in the relevant organizational SEP, in accordance with the DOD *Systems Engineering Plan Preparation Guide*. If used to meet SEP approvals, this section may require additional coordination as required per SEP guidance. (Reference AFI 63-1201, *Life Cycle Systems Engineering*, for additional information.) ***Note***: The following items need to be specifically addressed in the LCMP (and identified in the table of contents) regardless of if the program has a separate SEP.

2.11.14.1. **Environment, Safety, and Occupational Health (ESOH) Summary.**

2.11.14.1.1. Summarize the results of the Programmatic Environment, Safety, and Occupational Health Evaluation (PESHE).

2.11.14.1.2. Include the National Environmental Policy Act (NEPA)/EO 12114 compliance schedule.

2.11.14.1.3. Summarize the support strategy for integrating Natural Infrastructure Asset considerations into the systems engineering process; include responsibilities and how progress will be tracked.

2.11.14.1.4. Identify the potential for significant adverse natural infrastructure asset impacts associated with the decisions to be made during the next phase. Identify if the National Environmental Policy Act (NEPA) is applicable and if the applicable documentation is being used to mitigate these impacts. (National Environmental Policy, 42 USC §§4321-4347)

2.11.14.1.5. Summarize the potential for significant adverse operational readiness impacts associated with Natural Infrastructure Assets and ESOH laws, regulations, and Executive Orders and how pollution prevention actions mitigate this risk. (National Environmental Policy, 42 USC §4321-4347)

2.11.14.2. **Human Systems Integration (HSI) Planning.** Summarize HSI planning per DODI 5000.02, Enclosure 8 addressing human factors engineering, personnel, habitability, manpower, training, environment, safety, and occupational health, and survivability. Focus on the approach being taken to ensure the system is being built to accommodate the characteristics of the user population that will operate, maintain, and support the system.

2.11.14.3. **Corrosion Control and Prevention Planning.** Summarize management and technical efforts planned to control corrosion throughout the life cycle. Identify if the program has a corrosion management working group and if so, identify the members. List the components or sub-systems requiring corrosion control. Reference DODI 5000.67, *Prevention and Mitigation of Corrosion on DOD Military Equipment and Infrastructure.*

2.11.14.4. **Serialized Item Management/Item Unique Identification.** Summarize the strategy for implementing Item Unique Identification (IUID) and Radio Frequency Identification (RFID) including legacy property. See **Chapter 8**, Item Unique Identification Implementation Plans for more information on IUID.

2.11.14.5. **Modeling and Simulation.** If appropriate, identify how Modeling and Simulation has been integrated into the program planning activity. Identify desired Modeling and Simulation expectations and model to use. Describe how Modeling and

Simulation will be developed, maintained, stored, and used throughout the lifecycle of the program. (*Defense Acquisition Guidebook (***https://akss.dau.mil/dag/***)*, and AFI 16-1002, *Modeling and Simulation (M&S) Support to Acquisition*).

2.11.14.6. **Configuration Management.** Summarize the configuration management approach and identify how changes to the baselines will be approved and documented. Discuss if the same process is used for functional, physical, product, and contractual baselines. Identify who will manage, approve, and maintain the configuration throughout the life cycle and if configuration control will change during the life cycle. Describe how will you identify, document, and manage key interface requirements. Identify if you will have a configuration control board, and if so the members and chair. Identify if and how you are using the AF designated system for managing AF product data.

2.11.15. **Industrial Capability and Manufacturing Readiness.**

2.11.15.1. **Industrial Capability.** Summarize the results of industrial base capability analysis (public and private) to design, develop, produce, support, and, if appropriate, restart an acquisition program. Identify the impact of this acquisition approach on national technology or industrial base and the analysis used to make this determination. If there is an impact, summarize the industrial base constraints, how they will be managed, and the plan for future assessment (including frequency). Some available tools for identification and management of industrial constraints are available at Appendix 7. (Technology and Industrial Base Plans, 10 USC §2440)

2.11.15.2. **Industrial and Manufacturing Readiness.** Identify DOD investments needed to create or enhance certain industrial capabilities. Identify the risk of industry being unable to provide program design or manufacturing capabilities at planned cost and schedule. Describe the Manufacturing and Quality Management systems and how they will contribute to minimizing cost, schedule, and performance risks throughout the product life cycle.

2.11.15.3. **Sustaining Industrial Capabilities.** Summarize the make or buy approach to establish and maintain access to competitive suppliers for critical areas at system, subsystem, and component level (e.g., requiring an open systems architecture, make or buy plan). (FAR 7.105(b)(11), and FAR 15.407-2.) When the analysis indicates that industrial capabilities needed by the Department of Defense are in danger of being lost, the DOD Components should determine whether government action is required to preserve the industrial capability. Address product technology obsolescence, replacement of limited-life items, regeneration options for unique manufacturing processes, and conversion to performance specifications at the subsystems, component, and spares levels.

2.11.16. **Business Strategy.** Address the main contracting approach to include contract types, competition expected, source selection procedures, provisions, sources, and product support considerations. The requirements for an acquisition plan (reference FAR 7.105, as supplemented) are used to help frame this area of the LCMP. Additional content will vary depending on the nature, circumstances, and stage of the acquisition.

2.11.16.1. **Contract Approach.** Summarize the proposed contracting approach. (10 USC §2304, 10 USC §2305, and 10 USC §2306)

2.11.16.1.1. Performance Based Business Strategy. Describe how a performance-based business strategy is applied consistent with a Performance-Based Business Environment as described in FAR Part 37.6.

2.11.16.1.1.1. Explain how Performance Based Logistics (PBL) is being applied. Identify if Performance Based Logistics is being addressed in the Request for Proposal (RFP). Identify if a Performance Based Agreement (between organic organizations) is planned. (Reference AFI 63-101) Describe the Contractor Logistics Support (CLS) approach, if CLS is applicable.

2.11.16.1.1.2. If services, describe performance based/non-performance based, service delivery summary etc. program – ordering contract, C contract etc.

2.11.16.1.1.3. Describe the industry involvement to date.

2.11.16.1.1.4. Describe partnering arrangements that are involved in the approach.

2.11.16.1.2. Modular Contracting. (Major IT Programs Only) Describe the extent your program is implementing modular contracting. (FAR Section 39.103)

2.11.16.1.3. Contracting Bundling or Consolidation. If the program is a bundled acquisition (consolidating two or more requirements for supplies or services, previously performed under smaller contracts, into a single contract that is likely to be unsuitable for award to a small business), identify the specific benefits anticipated to be derived from bundling. Reference FAR 7.107, *Acquisition Planning*. (15 USC §644)

2.11.16.1.4. Major Contract(s) Planned. Identify the number and type of contract(s) anticipated. (FAR Part 16, 10 USC §2306)

2.11.16.1.4.1. Identify if you contemplate a competitive award, or sole source award, or multiple source development with down select to one production contract. Describe how this strategy changes from core (initial) to subsequent increments. If sole source, identify the exception to full and open competition that applies and provide justification for the duration and timing of the sole source procurement. (Procurement, 10 USC §2304, 10 USC §2305, and 10 USC §2306, 15 USC §644 (a), (d), and (j); PL 100-533)

2.11.16.1.4.2. For each major contract (greater than $40 million (then year dollars) for an MDAP and greater than $17 million for MAIS), describe what the basic contract buys; how major deliverable items are defined; options, if any, and prerequisites for exercising them; and the events established in the contract to support appropriate exit criteria for the phase or intermediate development activity.

2.11.16.1.4.3. Identify any special contracting considerations. Discuss any unique clauses/special provisions that will be included in the contract. Identify if foreign contractors are permitted to participate at the prime contractor level. Identify any special test and evaluation, unique tooling, or other similar contractual requirements.

2.11.16.1.4.4. Identify any other pertinent information that may ensure understanding of the contracting strategy to include, but not limited to, projected use of Government Furnished Property, safety office review/involvement, period of performance/length of contract, contract format.

2.11.16.1.4.5. Identify the financial reporting that will be required by the contractor on this program.

2.11.16.1.4.6. Describe consideration of multiyear contracting for full rate production, and address whether the production program is suited to the use of multiyear contracting. (10 USC §2306b).

2.11.16.1.5. Contract Incentives. Describe the anticipated contract incentives. Identify how contract incentives are going to be employed to achieve required cost, schedule, and performance outcomes. **Chapter 7** of this AFPAM has more information on contract incentives.

2.11.16.1.6. Warranties. Identify if a warranty is considered and summarize the reasoning. If a product warranty option is being considered, explain the results of the Cost Benefit Analysis (CBA) to determine if the warranty will be cost beneficial. (FAR 46.703, AFI 65-501)

2.11.16.1.7. Leasing. Identify if leasing was considered (applies to use of leasing in the acquisition of commercial vehicles and equipment) and, if part of the strategy, justify that leasing of such vehicles is practicable and efficient and identify the planned length of the lease. ***Note***: The PM may not enter into any lease with a term of 18 months or more, or extend or renew any lease for a term of 18 months or more, for any vessel, aircraft, or vehicle, unless the PM has considered all costs of such a lease (including estimated termination liability) and has determined, in writing, that the lease is in the best interest of the Government (10 U.S.C. 2401a).

2.11.16.1.8. Source Selection. Identify the Source Selection procedures being utilized such as Full Trade-off (FTO), Performance Price Trade-off (PPT), or Lowest Price Technically Acceptable (LPTA). (AFFARS 5315.3, 10 USC §2305)

2.11.16.1.9. GFP/GFE/GFI. Identify required government furnished property/government furnished equipment/government furnished information. Address whether the system includes any types of Government owned property, (i.e., government furnished material, government furnished equipment, and government owned software including database information).

2.11.16.2. **Competition**

2.11.16.2.1. Competition. Describe how competition will be sought, promoted, and sustained. Include breakout plans for each major component or sub-system as well as

spares and repair parts. Include the comparative benefits of awarding a new contract vice placing an order under an existing contract. (10 USC §2306, 10 USC §2304.)

2.11.16.2.2. Market Research. Briefly describe how market research was conducted and summarize the results. For more information, reference FAR part 10, *Market Research*, and DFARS Part 210.001 (10 USC §2377).

2.11.16.2.3. Small Business. Identify how small business participation has been maximized at both the direct award and subcontracting levels.

2.11.16.2.4. Buy American Act. Identify consideration of the Buy American Act and any possible waiver requirements to the Berry Amendment in accordance with 10 USC §2533a and FAR Part 25, *Foreign Acquisition*.

2.11.17. **Resource Management.** Address program resource requirements; consider changes in efforts as the program progresses.

2.11.17.1. **Program Office Staffing and Organization.** Address the planned personnel resources as derived via a time phased workload assessment to include support contractors. Highlight key manpower requirements, functional competency requirements, and requirements for extended staffing (e.g. legal expertise from command council or cost analysis support from a separate activity). Identify resource limitations that pose a risk to program/PMO success.

2.11.17.1.1. Manning Profile through Fielding. Provide a time-phased workload assessment identifying the manpower and functional competencies required for successful program execution through fielding. Considering the overall, technical, acquisition, sustainment, and management approach, identify how many resources and in what functional areas are required to manage this program through fielding. Include the number of government, Systems Engineering and Technical Assistance (SETA), Contracted Advisory and Assistance Services (CAAS), and Federally Funded Research and Development Centers (FFRDC) support personnel required. A projected manning profile based upon the overall approach and program schedule should be included for government, SETA, and FFRDC support.

2.11.17.1.2. Organization Chart. Provide or describe an organization chart that indicates what service fills the billet (for a joint program), whether it is filled with military, civilian or contractor personnel, what seniority level the billet is intended to be filled with, and whether the billet is currently filled, or vacant.

2.11.17.1.3. Acquisition Chain of Authority**.** Identify the specific lines of programmatic authority. Show how the authority chain meets the requirements identified in DODD 5000.01, paragraph E.1.1.26. Examples of representative lines of authority can be found as attachments to the template at Attachment 5.

2.11.17.2. **Stakeholders.** Identify the primary stakeholders. Describe how you will organize to effectively manage the program and ensure all stakeholders are involved (IPTs, boards, reviews, etc.) If applicable, describe how the contractor will be involved in Program IPTs. Describe the anticipated business management relationship between (1) the program office and the contractor, and (2) the program office and other government agencies.

2.11.17.3. **Program Reporting.** Identify your program reporting requirements. Summarize how reporting will be used to help acquisition execution leadership including the MDA and/or SAE maintain an appropriate level of insight on this program (e.g. Selected Acquisition Report/Defense Acquisition Executive Summary reporting, Monthly Acquisition Reporting, periodic reviews, etc.). Identify what financial reporting will be used on this program. Identify any program unique reporting requirements. Identify any systems or tools that will be used by the program (SMART, EITDR, etc) to meet reporting requirements.

2.11.17.4. **Cost and Funding.** Describe the cost management approach. Identify how and when estimates will be updated. Identify approaches to reduce future costs. Provide a funding chart and track to budget chart. ***Note***: Available program funding should be based on the most recent appropriated budget. It is acceptable to footnote any updated budget figures which are under review but not currently appropriated. (see DAG Chapter 2 for examples and templates)

2.11.17.4.1. Summarize the program office estimate: for total program, initial and subsequent increments; life cycle cost estimate (LCCE) for total program, initial and subsequent increments; dependencies between increments accounted for in the estimates; and the estimating models used for core and subsequent increments.

2.11.17.4.2. Describe how funding will be tracked separately for each discrete increment of the program (e.g., for subsets of the program that will be subject to a separate APB).

2.11.17.4.3. Identify objective and threshold values from the Acquisition Program Baseline, (10 USC §2435); consider including a reference to the APB or an unclassified APB as an attachment.

2.11.17.4.4. Separately identify the funding required to support planned Developmental Test and Evaluation (DT&E) and Operational Test and Evaluation (OT&E) programs (10 USC §139; MDAPs, 10 USC §2431).

2.11.17.4.5. Include breakout by year of appropriation and appropriation type for all funding sources and identify support from the Working Capital Fund areas as required for Depot Maintenance or Supply Management.

2.11.17.4.6. Identify all significant budget changes or shortfalls and describe how the resulting programmatic impacts have been addressed. Verify that the funding for the program still matches program content. If it does not, describe the plan to resolve the disconnect. ***Note***: A LCMP prepared to support a milestone decision should not have any unresolved shortfalls.

2.11.17.4.7. Verify that a comparison of performance objectives vs. actual costs for post-production programs been accomplished, and summarize the results of that comparison.

2.11.17.5. **Cost Control and Cost as an Independent Variable (CAIV) Plan.** Describe the process to update estimates (e.g., x months before each decision review or x months before beginning each increment).

2.11.17.5.1. If any items cannot be estimated, so state and why. Describe when the estimates will be available.

2.11.17.5.2. Discuss how tradeoffs between cost and performance will be encouraged and the government's role in managing the trade space. Define the technical and cost parameters that will be used to manage the program. Describe how all significant budget changes and resulting programmatic impacts will be addressed. Describe how you will involve the stakeholders in this process.

2.11.17.5.3. Identify if a CAIV approach is planned. Describe the CAIV approach including teaming strategies to define cost goals and trade space, ensuring capability base processes, and how the cost-performance trade process is to be executed. If a CAIV approach is not planned, justify the overall cost control approach and the rationale for not using CAIV principles.

2.11.17.5.4. Discuss how your cost management approach adequately considers funds management. Identify any contingent liabilities (award fee, special incentives, economic price adjustment, business base clauses, termination liability, etc.) planned for or associated with the program. Identify which contingent liabilities have been funded. Describe the plan for addressing any unfunded contingencies.

2.11.17.5.5. For acquisitions of Federal Information Processing (FIP) resources with expected costs greater than $100 million, identify the key outcome performance measures. Describe the tracking system that will be used to measure and report on selected outcome performance measures.

2.11.17.5.6. Summarize how the program will implement the Reduction in Total Ownership Costs (RTOC) approach.

2.11.17.5.7. Describe how office costs have been considered as the program transitions to production and sustainment.

2.11.17.6. **Earned Value Management.** Describe how the program will comply with EVM requirements (as appropriate for the projected contract value and type.)

2.11.17.7. **Advance Procurement.** Identify if advance procurement of long lead items is planned. Reference DAG Chapter 2 for additional information.

2.11.17.8. **Business Case Analysis (BCA)/Economic Analysis (EA).** Identify if a BCA or EA is required identify what decision it is targeted to support and when it is required. If a BCA or EA is completed, summarize the results.

2.11.17.8.1. A BCA is a decision support document that identifies alternatives, and presents business, economic, risk, and technical arguments for selecting an alternative to achieve organizational or functional missions or goals. The BCA is a method by which product support strategies from competing support alternatives are evaluated on quantitative and qualitative evidence to determine best value for the Air Force. For example, the PM performs a BCA on fielded ACAT I and ACAT II weapon systems not currently planned to implement Performance Based Logistics (PBL). The subsequent best value strategy is documented in the LCMP. Reference AFI 65-509, *Business Case Analysis.*

2.11.17.8.2. An EA is defined as a systematic approach to the problem of choosing how to use scarce resources. It reveals the present value of the monetary costs and benefits associated with all alternatives under consideration, and provides as accurate and complete a picture as possible of nonmonetary costs and benefits. EAs are completed in accordance with AFI 65-501, *Economic Analysis*. Often the term BCA is used interchangeably with the term EA, but a BCA is broader in scope than an EA and tends to have a more comprehensive, enterprise-wide perspective. Reference AFI 65-509, *Business Case Analysis*, AFI 65-501, *Economic Analysis*, and AFMAN 65-506, *Economic Analysis.*

2.11.18. **Program Protection Planning.**

2.11.18.1. **Critical Program Information Summary** . Describe the process used to identify critical program information (CPI) and, if applicable, measures for the protection of CPI Identify when the critical program information (CPI) assessment was accomplished using the systems engineering process (if not yet accomplished, state why and summarize the plan to accomplish). State if a Program Protection Plan (PPP) is needed. List the basic information about existing PPPs (title, date, etc.) and briefly summarize content; if it was determined a PPP was not needed, provide information on or attach the approval document. Reference DOD 5200.1-M, *Acquisition Systems Protection Program*, DODI 5200.39, *Critical Program Information (CPI) Protection Within the Department of Defense*, AFI 63-101, and AFPAM 63-1701, *Program Protection Planning* (will convert to AFMAN 63-113, *Program Protection Planning for Life Cycle Management*) for more information on program protection.

2.11.18.2. **Anti -Tamper Measures.** Describe the plan for Anti-Tamper (AT) throughout the lifecycle to include post-production validation of the AT implementation.

2.11.18.3. **Information Assurance (IA) Strategy.** Summarize the Acquisition Information Assurance Strategy. Identify the IA requirement for the system, including certification requirements, and summarize how they are being addressed. Identify interfaces with other systems and their impact to the security posture of the program and if the system is “Mission Critical” or “Mission Essential” as defined per DODI 5000.02. Refer to the DAG for a detailed template of the Information Assurance Strategy. This section may contain a summary of the Information Assurance Strategy or the PM may address all areas of an IA Strategy and have this section of the LCMP be the vehicle for the approvals of the Acquisition Information Assurance Strategy. (DODI 8580.1, *Information Assurance (IA) in the Defense Acquisition System*, DODI 5000.02, DODD 8500.1, DODI 8500.2, AFPD, 33-2, AFI 33-200, and AFI-33-210.)

2.11.19. **Test and Evaluation** . Describe the anticipated approaches to contractor and government development test and evaluation, Live Fire Testing (if required), and operational test and evaluation. Consider depicting the testing activities using a diagram of the Evaluation Framework from the TES/TEMP as applicable.

2.11.19.1. For programs on the OSD T&E Oversight List, a stand-alone TEMP is required. For non-OSD T&E Oversight programs, the PM can produce a stand-alone TEMP (separate or as an annex) and reference the program TEMP for details, or include critical elements of the TEMP in the LCMP. PMs may tailor the content and format of the TEMP within regulatory guidelines to fit individual program needs and satisfy MDA

requirements. All ITT members should be included when preparing the T&E portions of the LCMP.

2.11.19.2. If the TEMP is stand-alone, reference the program TEMP, provide the objectives of the test program, and summarize the program's integrated testing activities to include testing of training, handling, test, and other support equipment. If needed to ensure understanding, depict the testing activities using a diagram of the Evaluation Framework from the TEMP/TES.

2.11.19.3. If the TEMP is integrated in the LCMP, content, staffing, and approval of this section needs to be consistent with the TEMP requirements identified in AFI 99-103, *Capabilities Based Test and Evaluation*. Content will need to include TEMP Parts II, III, IV, and V in the LCMP. (See the Defense Acquisition Guidebook (DAG) and AFI 99-103, for additional details about TEMP content).

2.11.19.4. Describe efforts to use common T&E data base that promotes integrated testing through more efficient and effective use of all T&E data.

2.11.20. **Data Management Strategy.** The Data Management Strategy (DMS) documents short and long-term data needs of all functional disciplines of the program. The DMS must be approved and integrated in the AS and integrated with other life cycle sustainment planning prior to issuing a contract solicitation. It should address all forms of recorded information, regardless of the method of recording, and include both government and contractor-created data. Reference 10 USC §2320, Public Law 109-364, DOD Instruction 5000.02 (E12.9.1), DFARS 227, and DAG chapters 2, 4, and 5 to determine the necessary content.

2.11.20.1. **Data Management and Technical Data Rights.** Summarize the strategy for meeting long term data rights requirements.

2.11.20.1.1. Summarize the data required to design, manufacture, and sustain the system as well as to support re-competition for production, sustainment, or upgrade. Strategy should consider, but is not limited to baseline documentation data, analysis data, cost data, test data, results of reviews, engineering data, drawings, models, and Bill of Materials (BOM).

2.11.20.1.2. Describe how the program will provide for rights, access, or delivery of technical data that the Government requires for systems' total life cycle sustainment. Include consideration of data needs to implement the product support life cycle strategy including such areas as materiel management, training, IA protection, cataloging, configuration management, engineering, technology refreshment, maintenance/repair within the technical order (TO) limits and specifically engineered outside of TO limits, and reliability management.

2.11.20.1.3. Address data needs to support other associated activities/elements such as: source of repair and supply decisions, core capability requirements, limitations on the performance of depot-level maintenance, electronic warfare integrated reprogramming, theater friendly force capabilities and staging information, preservation of competition, and weapon system characterization. Include the approach to collect maintenance data to include the following: who performed

maintenance, equipment used to perform maintenance, performance times for each maintenance operation, and the parts removed and installed.

2.11.20.1.4. Address the merits of including a priced contract option for the future delivery of technical data and intellectual property rights not acquired upon initial contract award. Include consideration of the contractor's responsibility to verify any assertion of restricted use and release of data, including Independent Research and Development (IRAD) funded data. (e.g. will require contractor to declare IRAD up front, will establish a review process for proprietary data).

2.11.20.2. **Integrated Data Environment (IDE).** Summarize any plans to establish a cost-effective data management system and digital environment that allows stakeholders to cost-effectively create, store, access, manipulate, and exchange digital data. Briefly describe leveraged and/or planned new development IDE infrastructure.

2.11.20.2.1. Address long term storage of data required for the life of the program.

2.11.20.2.2. Identify if a government or contractor provided management information system will be used for the sharing of documents and information, to include a Product Lifecycle Management (PLM) system, if one has been designated. If used, identify who will transfer data between all stakeholders and address risks of incompatible data systems, who will maintain the system, who will have access to the system, and if/how the information will be stored to meet life cycle needs per the Data Management Strategy.

2.11.21. **Life Cycle Sustainment Plan (LCSP).** Outline the plan to provide the product support environment envisioned in the DOD 5000-series regulations and by the Air Force. For large and complex programs, separate, detailed document(s) may be required in addition to the LCSP section of the LCMP in order to further address specific sustainment activities; for smaller programs, the LCSP section of the LCMP will likely be sufficient.

2.11.21.1. **Summary of Sustainment and Maintenance Concepts.** Summarize the strategy to provide product support throughout the system life cycle. The sustainment strategy should reflect the Maintenance or Support CONOPS and consider: impacts to system capability requirements; responsiveness of the integrated supply chains across government and industry; maintaining long-term competitive pressures on government and industry providers; and providing effective integration of weapon system support that is transparent to the warfighter and provides total combat logistics capability.

2.11.21.1.1. Describe how the support concept ensures integration with other logistics support and combat support functions to optimize total system availability while minimizing cost and logistics footprint.

2.11.21.1.2. Describe how the product support strategy will ensure the selection of best value support providers, maximize partnering, and advocate integrated logistics chains IAW DOD product support objectives.

2.11.21.1.3. Describe how manpower and spares be will optimized.

2.11.21.1.4. Describe efforts to ensure secure and integrated information systems across industry and government that enable comprehensive supply chain integration and full asset visibility.

2.11.21.1.5. Describe how product support and other data to support life cycle management of the system will be provided to the AF designated Product Life Cycle Management system; include data from the prime contractor as well as requirements and risk data.

2.11.21.1.6. Identify dedicated investments needed to achieve continuous improvement of weapon system supportability and reduction in operating costs.

2.11.21.1.7. If post MS C/Build Approval, compare the performance expectations, as defined in performance agreements, to actual performance results. Summarize the results of the Post Implementation Review (PIR).

2.11.21.1.8. If strategy includes CLS, address CLS contract flexibility to support the sustainment concept.

2.11.21.1.9. Describe how you will ensure product support integration throughout the system life cycle.

2.11.21.2. **Core and 50/50. (Core Logistics Analysis)** Summarize the results of any 50/50 assessments and identify program specific issues. If applicable, describe the approach to developing organic depot repair capability for those workloads identified to satisfy a core capability requirement. (10 USC §2464, 10 USC §2466)

2.11.21.3. **Depot Source of Repair (DSOR).** Identify if a DSOR decision has been completed and, if complete, summarize the source of repair (SORAP) and Depot Maintenance Interservice (DMI) recommendations. If depot maintenance is required, summarize the Depot Implementation Plan. Provide the Automated Management System file/folder name and tracking number of the DSOR as appropriate. If a DSOR decision has not been completed, identify the plan to complete the DSOR prior to expending depot maintenance funds. ***Note***: Approval by other authorities than the MDA may be required to meet these requirements

2.11.21.4. **Stakeholders.** Identify the relationships, roles, and responsibilities of key players (e.g. user, supply chain, industry) specific to product support.

2.11.21.5. **Program Performance/System Indicators and Requirements.** Identify the reliability, maintainability, and supportability (RAMS) requirements, summarize your approach to meeting the requirements, and identify any concerns.

2.11.21.5.1. State any sustainment metrics identified as Key Performance Parameters (KPP) or Key System Attributes (KSA). Describe how they will be measured and verified.

2.11.21.5.2. Identify any cost, schedule, or technical risks that could impact RAMS and describe how they are being addressed.

2.11.21.5.3. Describe your maintenance and inspection program; include the methodology basis (Conditioned Based Maintenance Plus (CBM+), Reliability Centered Maintenance (RCM), and/or Maintenance Steering Group III (MSG-3). Describe the relationship of the RAM approach with other related program efforts such as Weapon System Integrity Programs (WSIP), Aircraft Information Program (AIP), and Military Flight Operations Quality Assurance (MFOQA) Program.

2.11.21.6. **Sustainment Implementation Plan** . Provide the details of the LCSP in terms of the twelve product support elements provided below. (***Note***: The 12 product support elements below must be used for the discussion in this section of the LCMP and use of these terms should be made consistent throughout all AF sustainment documents.). Include a discussion of each element as shown below as it relates to the entire system and consider how related systems (such as contractor's systems) interface with the Air Force system support strategy; describe current and planned cost reduction initiatives; identify funding shortfalls and performance shortfalls linked to supportability; and identify any product support elements that are marginal or unsatisfactory. **Chapter 3** of this document provides additional details on each product support element. The twelve product support elements that must be addressed are:

2.11.21.6.1. Sustaining/Systems Engineering. Address how configuration management, habitability, survivability, environment, safety/explosive safety, corrosion control, Human Systems Integration (HSI), and occupational health will be addressed during the sustainment and operations phases. Identify any other system engineering topics specific to the program that may impact life cycle sustainment strategy decisions.

2.11.21.6.2. Design Interface. Address the relationship of logistics-related design parameters to readiness and support resource requirements. Logistics-related design parameters include reliability and maintainability (R&M), deployability, availability, survivability, standardization and interoperability.

2.11.21.6.3. Supply Support. Describe the process to minimize the variety of parts and maximize standardization. Describe the process to provision, acquire, catalog, receive, store, transfer, and issue supplies.

2.11.21.6.4. Maintenance Planning and Management. Describe the plans to develop and establish maintenance concepts and requirements for the life-cycle of the system. Describe the approach to maintaining system availability to perform assigned missions, and assessing and utilizing public-private partnerships (PPP). Identify any issues or critical dependencies of the program pertaining to AF statutory requirements for core and 50/50.

2.11.21.6.5. Support Equipment/Automatic Test Systems (SE/ATS). Describe the approach for satisfying SE/ATS requirements. Describe the diagnostics, prognostics, and health management systems and techniques in embedded and off-equipment applications. If system-unique SE/ATS is planned, justify why standard or family SE/ATS was not feasible and/or cost-effective.

2.11.21.6.6. Facilities. Address permanent, semi-permanent, or temporary real property assets required to operate and support the system, subsystem or end-item. Describe associated approaches to minimize or eliminate facilities requirements.

2.11.21.6.7. Packaging, Handling, Storage, and Transportation (PHS&T). Describe the resources, processes, procedures, and design considerations for packaging/preservation, handling, storing, and transporting assets.

2.11.21.6.8. Technical Data Management/Technical Orders. This element includes engineering data, data rights, data management strategy, drawings and associated

documents, technical orders (TOs), specifications and standards, and data item descriptions (DIDs). Describe the process to optimize the quantity, format, and interchangeability of technical data, ensure data requirements are consistent with the planned support concept, and provide the minimum essential data to effectively support the fielded system. Describe initial and future plans for procuring, developing, marking, distributing, and sustaining technical data, with emphasis on TOs.

2.11.21.6.9. Manpower and Personnel. Identify the number, skills, and grades of personnel, based on Government workforce standards, required to operate, support, and maintain the system over its planned lifetime. Describe efforts to minimize the quantity and skill levels of manpower and personnel required to operate, support, and maintain the system.

2.11.21.6.10. Training. Summarize the System Training Plan, if available. Include the strategy to provide for training resources and actual training. Address the processes, procedures, curricula, techniques, training devices, simulators, other equipment and software necessary to train civilian and active duty/reserve duty personnel to operate and support/maintain the defense system.

2.11.21.6.11. Computer Resources. Identify the facilities, hardware, software, documentation, manpower, and personnel needed to operate and support computer systems. Include stand alone and embedded systems (documented in Computer Resources Support/Software Support Sustainment Plans), computer resources used in the design and test environment, and computer systems used to support configuration management.

2.11.21.6.12. Protection of Critical Program Information and Anti-Tamper Provisions. Identify and briefly describe efforts and provisions, to include anti-tamper provisions, required to protect sensitive information identified in the Program Protection Plan during operations and sustainment. If necessary may be provided as a separate, classified attachment.

2.11.21.7. **Existing System Sustainment (Replaced System Sustainment Plan).** Summarize the sustainment plan for the existing system if the capability provided by the existing system will remain necessary and relevant during fielding of and transition to the new system. Identify the budget needed to sustain the existing system until the new system assumes the majority of mission responsibility. Include an analysis of the ability of the existing system to maintain mission capability against relevant threats. (Reference 10 USC §2437)

2.11.21.8. **Interim Contract Support.** Identify if Interim Contract Support (ICS) is planned. If planned, summarize the ICS requirements, approach and a plan to transition to normal sustainment support.

2.11.21.9. **Diminishing Manufacturing Sources and Material Shortages** . Describe the obsolescence and Diminishing Manufacturing Sources and Material Shortages (DMSMS) management planning factors

2.11.22. **Spectrum Supportability Determination** . Summarize the approach to meeting electromagnetic spectrum requirements of the system over its entire life cycle. If applicable,

identify the steps taken to obtain spectrum supportability. Indicate the status of spectrum supportability (e.g. early planning complete, a DD 1494, *Application For Equipment Frequency Allocation*, was submitted, spectrum certification is complete). (DODD 4650.1, *Policy for Management and Use of the Electromagnetic Spectrum*, and AFI 33-118, *Electromagnetic Spectrum Management.*). ***Note***: Approval by other authorities than the MDA may be required to meet these requirements.

2.11.23. **Life Cycle Signatures/Intelligence Support Plan.** Summarize the results of intelligence supportability analysis. Describe signature support requirements and required funding to support program-related efforts. Identify requirements for intelligence support, products and data (including signature data) to include the identification of intelligence support shortfalls and associated mitigation strategies. Pertinent information can be documented within the LCMP itself or as a separate annex.

2.11.24. **Chemical, Biological, Radiological, and Nuclear Survivability.** Describe the requirements and efforts to meet those requirements related to chemical, biological, radiological, and nuclear survivability.

2.11.25. **Military Equipment Valuation and Accountability (MEVA) (Military Equipment Program).** (***Note***: Paragraph only required for Milestone C (MS-C)/Build Approval or any other decision point that leads to production or procurement of end items to be used for operations).

2.11.25.1. Describe the plan for implementation of the Military Equipment Program for any deliverable end items that meets the capitalization threshold. Address (or reference IUID Implementation Plan as appropriate) how deliverable equipment requiring capitalization will be serially identified, valued at full cost, properly registered, and tracked throughout its lifetime. The program's military equipment description will identify the following deliverables at a detail level consistent with level 2 of the Program Work Breakdown Structure (WBS) (detailed guidance on the work breakdown structures for defense materiel items is located in MIL-HDBK-881, *Work Breakdown Structure*.)

2.11.25.1.1. The end item(s) meeting the capitalization thresholds. (Reference DOD FMR, Vol 4, Chap 6)

2.11.25.1.2. The government furnished material that will be included in the end item(s).

2.11.25.1.3. Other deliverables that will accompany the end item (e.g., manuals, technical data, etc.).

2.11.25.1.4. Other types of deliverables that will be bought with program funding (e.g., initial spares, support equipment, etc.) but that cannot be directly attributed to a specific end item.

2.11.25.2. Additional guidance on MEVA and related accounting review is available in Chapter 2 of the DAG.

2.11.26. **Migration/Disposal Approach.** Summarize the anticipated migration (disposal) approach and any related concerns/issues. Identify when the initial migration plan is needed, and if it has been accomplished or when it is expected to be accomplished. (AFI 16-402, *Aerospace Vehicle Programming, Assignment, Distribution, Accounting, and Termination*).

2.11.27. **Clinger Cohen Act (CCA) Applicability** . Summarize the use of IT in the system, including National Security Systems, infrastructure, and support considerations identified in the Information Support Plan. State if the Clinger-Cohen Act of 1996 is or is not applicable to your program. If applicable, describe how the requirements of the Clinger-Cohen Act of 1996 and the Information Technology Management Reform Act been met. If not met, describe when and how they will be met. (FAR Part 39, Acquisition of Information Technology). ***Note***: Approval by the Chief Information Officer is required to meet CCA requirements.

2.11.28. **Arms Control.** Identify which, if any, United States Government arms control and international agreement obligations are applicable to the program and identify how that determination was made (e.g., SAF/GC, AF/A3/5, AF/JA program review). Summarize actions planned or taken to ensure compliance with obligations, if any. (Reference DODI 5000.01, Enc E1.1.15, DODD 2060.1, *Implementation of, and Compliance with, Arms Control Agreements*, AFI 16-601, *Implementation of, and Compliance with, Arms Control Agreements*, and AFI 63-101.)

2.11.29. **Other Certification or Independent Assessments.** Identify other required certification or assessment requirements and briefly summarize the plan to meet the requirements. (e.g. airworthiness, Independent Verification and Validation (IV&V), SEEK EAGLE.) ***Note***: Approval by other authorities than the MDA may be required to meet these requirements.

2.11.30. **Fielding.** Summarize the projected materiel fielding methodologies and timelines and present the materiel fielding-related activities to be conducted during the EMD phase. State if any early prototypes will be fielded during the development process and prior to the full-rate production (FRP) decision.

2.11.31. **LCMP Attachments.**

2.11.31.1. Life Cycle Management Chain of Authority.

2.11.31.2. Others as required.

Chapter 3

LIFE CYCLE SUSTAINMENT AND THE PRODUCT SUPPORT ELEMENTS

3.1. Life Cycle Sustainment. Life Cycle Sustainment consists of the support functions necessary to maintain the readiness and operational capability of weapon systems, subsystems, and support systems throughout their life cycle. It encompasses all critical functions related to weapon system readiness. The primary focus is to optimize life cycle customer support and achieve optimum system availability at the lowest total ownership cost. The life cycle focus on weapon system sustainment cost dictates a seamless, integrated, continuing process to assess and improve product support strategies.

3.2. Life Cycle Sustainment Strategies. Life cycle sustainment strategies should consider the following characteristics for possible inclusion:

3.2.1. Performance based logistics, as justified based upon results of Business Case Analysis (BCA). (Reference AFI 65-509, *Business Case Analysis*.)

3.2.2. Performance-based support arrangements/contracts/services, based on high-level metrics.

3.2.3. Government prime support integration activities.

3.2.4. Exploitation of common mechanical and structural components across systems, common avionics, common support equipment, open systems architecture, and reduction of logistics (deployment) footprint.

3.2.5. Long term business relationships.

3.2.6. Optimized best business practices.

3.2.7. Partnering to leverage the best skills and capabilities.

3.3. Product Support Elements. The Air Force currently groups life cycle sustainment into 12 product support elements. The following definitions and descriptions of those elements should be used in all programmatic planning and documentation to provide standardization throughout the Air Force logistics community.

3.4. Element 1: Sustaining/Systems Engineering: The technical effort required to support an in-service system in its operational environment to ensure continued operation and maintenance of the system with managed risk, including:

3.4.1. Collection and evaluation of service use and maintenance data and root cause analysis of in-service problems such as operational hazards, deficiency reports, parts obsolescence, corrosion effects, reliability and maintainability trends, safety hazards, failure causes and effects, and operational usage profile changes.

3.4.2. Development of required design changes to resolve operational issues, introduction of new materials, and revising product specifications, processes, and test plans and procedures.

3.4.3. Oversight of the design configuration baselines to ensure continued certification compliance and technical surveillance of critical safety items, and approved sources for those items. This effort includes system safety analysis of the modifications to ensure form, fit, function, interface, and operability.

3.4.4. Periodic review of system performance against baseline requirements, analysis of trends, and development of management options and resource requirements for resolution.

3.5. Element 2: Design Interface: Design Interface considers what is needed to integrate the logistics-related readiness, combat capability, systems commonality, and supportability design parameters into system and equipment design. The factors listed below collectively affect the testing, operation, support, and costs of our weapons systems. When addressing Design Interface consider:

3.5.1. Reliability, maintainability, and deployability.

3.5.2. Availability.

3.5.3. Sustainability.

3.5.4. Survivability.

3.5.5. Standardization and interoperability.

3.6. Element 3: Supply Support: Supply Support is the process conducted to determine, acquire, catalog, receive, store, transfer, issue, and dispose of secondary items necessary for the support of end items and support items. The process includes initial support (provisioning) and follow-on requirements (routine replenishment). Consideration should be given to minimize the variety of parts, in order to maximize standardization. When addressing Supply Support:

3.6.1. Address the sparing concept to support Reliability, Availability, Maintainability, and Supportability (RAMS) and deployability requirements, taking into account peacetime and wartime operations and maintenance concepts; and primary operating stocks and readiness spares support concepts.

3.6.2. Determine the defined wartime assignments based on Readiness Spares Packages (RSP) and In-Place Readiness Spares Packages (IRSP) in terms of deployability (deployment footprint and associated support tail), maintenance concepts, operations tempo, days of support without resupply, and peculiar mission requirements of each organization.

3.6.3. Develop a provisioning strategy and plan that balances best value, production, reliability, the industrial base, procurement lead times, availability of vendor provided spares, and the adequacy of commercial data needed to identify replacement parts. Provisioning must be completed on all support equipment acquisitions. Consider these factors when planning for pre-operational spares support; government and contractor-furnished equipment programs; direct purchase, breakout and competition; data acquisition; initial and replenishment provisioning; and contractor support.

3.6.4. Address funding requirements for provisioning technical documentation, spares acquisition integrated with production, re-procurement data that support competitive replenishment spares acquisition, and long-term spares support for non-developmental or commercial-off-the-shelf items.

3.6.5. Consider energy requirements in system design, especially systems operated under austere conditions in deployed locations. Consider requirements for standby emergency power, liquid oxygen or nitrogen, hydraulic fluids, electricity, multi-fuel and synthetic fuel, and energy storage.

3.7. Element 4: Maintenance Planning and Management: This factor documents the process conducted to develop and establish maintenance concepts and requirements for the life-cycle. An acquisition program establishes maintenance plans throughout the development process and concepts that reflect the optimum balance between readiness and life-cycle cost. The process should consider all elements of maintenance support necessary to keep systems and equipment ready to perform assigned missions. This includes all levels of maintenance and implementation of those levels; includes any partnering, organic, and contract support. When addressing Maintenance Planning and Management:

3.7.1. Address the requirements and constraints inherent in applicable on-equipment, off-equipment, and depot maintenance for operations and support commands. Consider the entire life cycle of the system, including its requirements during peacetime, wartime, and other contingency scenarios.

3.7.2. Describe the operational maintenance environment for the total (scheduled and unscheduled) maintenance effort, including basing concept; expected weather and climate (including weather to accommodate mobility); and acceptable frequencies and repair times (including ease of maintenance, accessibility of components, and accurate fault isolation testing).

3.7.3. Describe the Depot Source of Repair (DSOR) actions and status.

3.7.4. Summarize metrology and calibration support requirements (Reference AFI 21-113, *Air Force Metrology and Calibration Management*) to include how will: verify quantifiable measurements are traceable to either approved national measurement standards maintained by the National Institute of Standards and Technology, or Air Force Metrology and Calibration (AFMETCAL) approved standards; leverage USAF investment in existing calibration support infrastructure (i.e. organic calibration capability - PMELs); collaborate with the AFMETCAL Director/PGM in the development of calibration support and analysis of alternatives for calibration support.

3.7.5. Specify levels and organizations responsible for maintenance. Evaluate the levels of maintenance. Specify ensuing/required logistics support for each specific level of maintenance.

3.7.6. Specify an acceptable AF organic, interservice, or contractor mix. Ensure that planning includes contractor participation in fielded operations if contractor support is anticipated.

3.7.7. List the generic type of maintenance tasks these organizations will perform. Include workload and time phasing for depot maintenance requirements.

3.7.8. Assess the need for, or intention to perform, centralized repair at selected operating sites or at safe areas. Include requirements for battle damage repair.

3.7.9. Address maintenance constraints posed by requirements for the physical make-up of the equipment, electronics, chemicals, nuclear hardness, survivability, safety, occupational health, and environment.

3.7.10. Include requirements for demilitarization and redistribution.

3.7.11. Address the requirements for spares, consumables, technical orders, support equipment, facilities, skill levels, training, and other pertinent logistics support areas.

3.7.12. Where appropriate, consider compatibility with systems that transmit on-aircraft or system faults to base-level management information systems.

3.7.13. Define requirement for maintenance data collection. Technical Order 00-20-2 provides a broad understanding of the objectives, scope, concept, and policy of Maintenance Data Documentation (MDD) and some intended uses of the data collected. Define what is to be collected (failure, availability, maintenance) and when it should be reported (IOC, turnover, etc.). Define how and where to report data. Integrated Maintenance Data System (IMDS) is the approved Air Force Base Level MDD system and Reliability and Maintainability Information System (REMIS) is the approved Depot Level MDD system.

3.7.14. Consider using expert systems to help reduce data and filter fault data down to a manageable level.

3.8. Element 5: Support Equipment/Automatic Test Systems (SE/ATS):

3.8.1. SE/ATS considerations include equipment for transportation, ground handling, munitions maintenance, metrology and calibration, test and diagnostics, aircraft battle damage repair, software support and reprogramming, and automatic test along with tools and computer programs.

3.8.2. Consider integrated manpower, personnel, and comprehensive training and safety (IMPACTS) when designing and modifying SE/ATS. Correlate the SE/ATS requirement with the maintenance concept and identify SE/ATS development constraints to include US ratified ISAs for logistics interoperability and supportability. Ensure that the SE/ATS is supportable and meets the timing and calibration requirements necessary to the systems.

3.8.3. Address design requirements that incorporates existing common support, non-developmental items. Minimize the introduction of unique types of SE/ATS minimized in considering hardware and software.

3.8.4. Address collaboration with the SE/ATS Product Group Manager (PGM) and the calibration and meteorology PGM/Director for support equipment acquisitions to standardize equipment or make it compatible with other systems or equipment and calibration support solutions and analysis of alternatives for calibration support.

3.8.5. Address SE/ATS schedule development to correlate with the development of the prime mission equipment. SE/ATS should be kept to a minimum and the use of common SE is strongly preferred rather than peculiar SE/ATS. A system should be designed to use standard support equipment and common, embedded test, measurement, and diagnostics equipment to support organizational maintenance and depot support.

3.8.6. Address the test and evaluation approach that will be used for SE/ATS.

3.8.7. Specify SE/ATS design limitations and requirements, such as RAM and deployability parameters; size, weight, and power; complexity, safety, and calibration; test tolerance consistency and self-test features; required manpower skills and levels; repair tools; climatic operational environment; and equipment performance, mobility, transportability, and service life.

3.8.8. Determine warranty/repair contract/service agreement requirements for SE/ATS under development and SE/ATS undergoing modification, if appropriate.

3.8.9. Relate SE/ATS use to built-in test and integrated diagnostics; i.e., how they will work together or alone.

3.8.10. Consider integrated test and diagnostic software and download capabilities for both software and hardware.

3.8.11. Consider acquiring deployable, integrated, multi-function SE/ATS rather than separate SE/ATS for each subsystem.

3.8.12. Consider what equipment and software tools will be needed for software support, including support equipment that sends and receives software changes; when possible, use tools previously used for software development.

3.8.13. Consider the impact of support equipment availability on the force structure of large active duty units; squadrons split due to mobilization; and smaller, geographically separated reserve component units.

3.8.14. Develop firm requirements and goals for reducing the impact of support equipment on deployment footprints, logistics support tails, and logistics system infrastructure vulnerabilities.

3.8.15. The following factors that influence the quantities of SE/ATS required at field units to facilitate beddown and sustainment of weapon systems should be considered:

3.8.15.1. Types and quantities of weapons to be supported at that location.

3.8.15.2. Net Explosive Weight (NEW) storage capability versus new weapon receipt.

3.8.15.3. Quantity of weapons to be transported per unit SE.

3.8.15.4. Distances from weapon storage to build-up area, flight line, and return.

3.8.15.5. Operational concept, i.e., weapon build-up, pre-built weapons, two-stage or single-stage delivery concept, NEW capability, etc.

3.8.15.6. Number of Combat Coded (CC) aircraft to support.

3.8.15.7. Number of operational squadrons/load crews to support and their deployment locations.

3.8.15.8. Aircraft initial load/Take-Off/Quick-turn time requirements.

3.8.15.9. Deployment/mobility requirements/locations.

3.8.15.10. Deployment with SE/ATS or prepositioned SE/ATS available at deployment location.

3.8.15.11. Additional SE/ATS required for returning aircraft/weapons download after deployment.

3.8.15.12. SE/ATS Maintenance Concept developed by PM with MAJCOM approval for both home station and deployed location(s).

3.8.15.13. Environmental consideration affecting any of the above factors, i.e., snow, desert sand, rough terrain, day/night operations, etc.

3.8.15.14. SE/ATS differences/capabilities affecting aircraft/weapon support.

3.8.15.15. Spare parts/spare SE/ATS as computed by weapon system/SE/ATS PM and MAJCOM.

3.8.15.16. Calibration requirements affecting SE/ATS at home station and deployed location(s).

3.8.15.17. Peculiar SE/ATS requirements that supplement/replace common SE/ATS.

3.8.15.18. Funding availability for procurement and/or development of required SE/ATS.

3.9. Element 6: Facilities. Facilities include the permanent, semi-permanent, or temporary real property assets required to operate and support the system, subsystem, or end-item. The analysis includes conducting studies to define necessary facilities or facility improvements and determining locations, space, utilities, environmental, real estate, and equipment needs; however, effort should strive to minimize or eliminate the facilities required. Where facilities are demonstrated to be absolutely needed, maximizing the use of existing facilities should be considered. (***Note***: Logistics considerations for facilities do not include Civil Engineering areas of responsibility. Logistics considers support requirements such as space for maintenance activities in support of the weapon system, space systems, and Communication-Electronic systems. It may also include storage for spare parts, controlled storage, training space for maintenance and operations, technical orders, operational storage library, mobility equipment, etc.)

3.9.1. Consider the full spectrum of Air Force facility engineering responsibilities, including environmental analysis, programming, design, and facility acquisition.

3.9.2. Identify the facility constraints that may apply, including support facility requirements.

3.9.3. Specify whether the system or equipment needs new facilities or must be designed to fit existing facilities. Give specific utility requirements.

3.9.4. Identify the impact of the new facility on existing facilities including airfield pavements.

3.9.5. Consider explosives hazards and site licensing requirements, as applicable.

3.9.6. Consider physical security requirements for the new system. Consider the requirement for a Secret Compartmentalized Information Facility (SCIF) to support Intel sensitive programs.

3.10. Element 7: Packaging, Handling, Storage, and Transportation (PHS&T): This Element includes the resources, processes, procedures, design considerations, and methods to ensure that assets are packaged/preserved, handled, stored, and transported properly.

3.10.1. Identify PHS&T requirements to ensure that personnel package, transport, preserve, protect, and properly handle all systems, equipment, and support items.

3.10.2. Consider geographical and environmental restrictions; electrostatic discharge-sensitive and hazardous materiel PHS&T requirements; and standard handling equipment and procedures. The related analysis includes determination of environmental considerations, preservation requirement for short- and long-term storage, transportability requirements, and

other methods to ensure elimination/minimization of damage to the defense system and its necessary support infrastructure.

3.10.3. Address development and procurement plans for systems, equipment, and munitions so that existing or programmed commercial or military transportation facilities can accommodate their gross weights and dimensions. Require a search of the Container Design Retrieval System for suitable existing containers before developing new ones.

3.10.4. Address minimizing the deployment footprint, particularly for outsized airlift.

3.10.5. For equipment approaching the dimensions of an International Standards Organization (ISO) container, identify design and building requirements so that individual or mated ISO containers can accommodate the equipment.

3.10.6. Address mobility, deployment, and transportation requirements. For example, identify maximum allowable cubic dimensions per load or pallet and maximum number of loads or pallets to support the design reference mission profile. Address pallet dimensions to ensure that airlift is flexible and compatible with available logistics transportation within theaters of employment. Identify air/ground vehicle when known (e.g., will be deployed on C-17 aircraft). Address design requirements so as not to exceed capabilities of existing ground, air, rail, or ocean vessels.

3.10.7. Identify the maximum time permitted to prepare for deployment and set up on arrival (consider both movement preparation and assembly time) at austere and improved sites, as applicable.

3.10.8. Identify requirements for specialized (environmental), intermodal, or tactical shelter containers and container handling equipment to support mobility operations. If mobility is required, identify the requirement and limitations. For example, state that personnel must be able to transport an item in fielded military design vehicles or airlift them in road mobile configuration.

3.10.9. Address shelf life; service life; quantity-distance criteria; and other storage, mobility, and transportation characteristics, such as how to reprogram missiles stored in containers or loaded on aircraft.

3.10.10. Consider alternatives that could improve PHS&T efficiency, such as system or subsystem design modularity and standardization.

3.10.11. Consider any special security handling implications to PHS&T.

3.10.12. Consider marking and or labeling to assist with In-Transit Visibility (ITV).

3.11. Element 8: Technical Data Management/Technical Orders: This factor addresses technical data and technical orders (TOs), as defined in AFI 63-101. Elements to be addressed include data rights, data management strategy, engineering data, drawings and associated documents, specifications, and the scientific or technical information (recorded in any form or medium) necessary to operate and/or maintain the defense system. When planning for Technical Data Management/Technical Orders, consideration should be given to optimize the quantity, format, and interchangeability of technical data; and ensure data requirements are consistent with the planned support concept and provide the minimum essential to effectively support the fielded system.

3.11.1. Identify requirements for fielding up-to-date, technically accurate, and user friendly technical data at the point of use.

3.11.2. Describe unique requirements for developing, distributing, using, storing, controlling, and maintaining technical data IAW Technical Order 00-5-3, *Life Cycle Management*.

3.11.3. Address delivery of digital data to satisfy Joint Computer-Aided Acquisition and Logistics Systems (JCALS) initiatives and standards. The use of intelligent data and formats is highly desired.

3.11.4. Automated technical orders are strongly preferred. Consider interactive Electronic Technical Manuals in the context of and integrated with enterprise product support systems (when available).

3.11.5. Establish a process whereby the developer validates and the Government verifies technical data is accurate and adequate to support, operate, and maintain system and equipment in the required state of readiness.

3.11.6. Evaluate existing commercial manuals or technical data from other services, and decide whether these give adequate information or if supplementing existing data will be acceptable.

3.11.7. Identify plan to ensure access to critical proprietary information through purchase of data rights or other agreements.

3.11.8. Consider backup methodologies for archiving technical data to protect it from destruction during disasters.

3.11.9. Consider if acquired engineering data is compatible with the Joint Engineering Data Management Information and Control System (JEDMICS); data should be compatible to the maximum extent feasible.

3.12. Element 9: Manpower and Personnel: The manpower and personnel element addresses the people required to operate and support the system over its planned life cycle. This element should identify military and civilian personnel with the skills and grades required to operate and support the system over its planned lifetime. Considerations should strive to minimize the quantity and skill levels of manpower and personnel required to operate and support the system.

3.12.1. Identify both quantitative and qualitative manpower requirements.

3.12.2. Establish personnel requirements based on operations and support tasks, their frequency, and the planned future force structure.

3.12.3. Determine number of manpower authorizations; the desired mix of officers, enlisted personnel, civilian employees, Air Reserve technicians, and contractors; the Air Force specialty code structure; the desired distribution of skill levels; sources of specialists; and the facility's projected impact on the draw-down system.

3.12.4. Consider manpower and personnel requirements for wartime scenarios; projected manpower budgets; system training plans; potential safety and health hazards; and the effect of planned work loads on operators and maintenance personnel (including software support personnel) in the operational environment.

3.13. Element 10: Training: The training element includes training resources and actual training. This element addresses the processes, procedures, curricula, techniques, training devices, simulators, other equipment, and software necessary to train civilian and active duty/reserve duty personnel to operate and support/maintain the defense system; includes acquisition, installation, operation, and support of training equipment/devices.

3.13.1. Determine the training concept to include aircrew, operator, and maintenance training; its relationship to training for existing systems; and using mockups, simulators, and training aids.

3.13.2. Address the need to establish a multi-command Training Planning Team (TPT) to prepare a life-cycle training development plan or system training plan according to AFI 36-2201, *Training Development, Delivery, and Evaluation*.

3.13.3. Address scheduling with MAJCOMs and Headquarters Air Education and Training Command (AETC) to ensure that using and maintenance personnel (including software support personnel) receive timely, appropriate training.

3.13.4. Address training needs, including civilian (depot), active duty, and reserve personnel training; individual and crew training; new equipment training; and initial, formal, and on-the-job training. Address the number of personnel that will be requiring training at any given time

3.13.5. Develop a training program that:

3.13.5.1. Integrates weapon system design, operational concepts, employment environments, and current maintenance concepts.

3.13.5.2. Encompasses the full training spectrum, including on and off equipment maintenance at all applicable maintenance levels.

3.13.5.3. Addresses training for personnel with site activation test team and initial cadre responsibilities.

3.13.5.4. Supports organic course development, development test and evaluation, and initial operational test and evaluation team training requirements.

3.13.6. Identify responsibilities of the Air Force and the contractor for developing and conducting each phase of training.

3.13.7. Address required training equipment for inventory items, prime-mission equipment, support equipment and training devices.

3.13.8. Address logistics support for training equipment and devices; projected equipment type, number, required location, and interim training support provisions; additional facility or manpower requirements necessary to support projected training and training devices; and IMPACTS application and warranty considerations when designing and modifying training equipment.

3.13.9. Address the need for a System Training Plan as identified in AFI 36-2251, *Management of Air Force Training Systems*.

3.13.10. Emphasize the need for a Training System Requirements Analysis (TSRA) to determine total training requirements (training hardware, software, facilities, instructional

media, etc) throughout the life cycle of the defense system, reference AFH 36-2235 Vol III, *Information for Designers Of Instructional Systems*.

3.13.11. Identify existing training, if applicable; identify training needs and deficiencies, if applicable, for operator training: Document a functional composition of the mission; identify all functions and tasks required to accomplish the mission; compare existing operational and maintenance training with functional baseline; and identify tasks requiring training.

3.13.12. Identify existing, emerging, and state-of-the-art training systems; compare similar systems; and identify optimal number and mix of training equipment.

3.13.13. Identify sensory stimulus requirements of the learning objectives; identify instructional delivery system functional characteristics, and document training system support considerations.

3.13.14. Address funding of sustaining the training system for the life of the weapon system.

3.13.15. Address the training concept, to include operator and maintenance training; procedure, crew and mission training; its relationship to training for existing systems; and preferred media (i.e. mockups, simulators, training aids).

3.13.16. Describe configuration management approach to include process for ensuring the training system configuration is synchronized with the operational system configuration

3.14. Element 11: Computer Resources: This element includes the facilities, hardware, software, documentation, manpower, and personnel needed to operate and support computer systems. Include stand alone and embedded systems (documented in Computer Resources Support/Software Support Sustainment Plans), computer resources used in the design and test environment, and computer systems used to support configuration management.

3.14.1. Consider system requirements and design constraints within the context of the support concepts. When justified by program size, establish Computer Resource Support Plan to describe development, acquisition, test, and support plans for computer resources.

3.14.2. Describe specific requirements and constraints pertaining to computer programs and associated documentation, related software, source data, facilities, hardware, firmware, manpower, personnel, and other factors required to operate and support mission-critical computer systems. Make sure that the system can support and use the software in the operational environment when the system is delivered.

3.14.3. Address the level of MAJCOM involvement and control of mission software and data. Identify requirements for configuration management and software quality control for using and supporting commands.

3.14.4. Consider using spare memory loader verifiers (MLV) memory storage media and blank or programmed firmware devices to accommodate multiple software configurations to meet mission requirements.

3.14.5. Determine if there is reasonable certainty that specific technology will become obsolete within a system's lifetime. Address the need and cost effectiveness of one-time lifetime buys.

3.14.6. Identify required interfaces. Include message formats for data sharing between systems, human-machine interfaces, and interaction among subsystems. Identify other

systems that may need to adapt to new requirements. If feasible, consider identifying standardized interfaces across various weapon systems to enhance the operations and support efficiency.

3.14.7. Identify interfaces to the Defense Information Switch Network (DISN) or other networks.

3.14.8. Identify requirements for spare memory, spare throughput, computer memory growth, software partitioning, modular design, and software module size.

3.14.9. Identify constraints such as operating environment, package limitations, standards (including higher order language, architecture, modularity, and MLV), required reliability, separation of mission data from the operating systems, and partitioning required to meet operational needs.

3.14.10. Identify required reaction times for all support agencies. Specify the time required for responses when a change requirement notices is received and before receiving software or firmware changes by operational unit.

3.14.11. Identify maximum time allowed between software updates, corollary test program set updates, and automatic test equipment updates.

3.14.12. Identify requirements for reprogramming software. Specify when personnel need to upload software in all of an end item's reprogrammable components for peacetime and wartime configuration. (TCTOs should be considered one of the primary documents that provide implementation/incorporation start dates and rescission dates.) Computer Program Identification Numbers (CPIN) should be included for configuration management purposes if software changes are required.

3.14.13. Address requirements for computer system security, sensitive information protection, the integrity of critical processing, and support software such as compilers, simulators, emulators, and software development or support tools.

3.14.14. Develop a software support concept that supports mission capability and system ownership costs. If software changes are required:

3.14.14.1. Consider how to implement them at the operational unit level and what manpower, training, equipment, and documentation you need to accomplish the task.

3.14.14.2. Address how all reprogrammable assemblies in the end item will have as many of the same design interfaces as possible for uploading new or changed software. Specify how to ensure when possible all items share the same protocols, data buses, architecture, power levels, pin connections, connector types, and so on.

3.14.14.3. Consider ways to distribute software changes.

3.14.14.4. Address Information Assurance throughout the life cycle.

3.15. Element 12: Protection of Critical Program Information and Anti-Tamper Provisions: This Element addresses efforts and provisions required to protect sensitive information identified in the Program Protection Plan during operations and sustainment.

3.15.1. Consider efforts required to protect Critical Program Information during sustainment and operations.

3.15.2. Consider plans for post-production anti-tamper validation of end items.

3.16. Logistics Information Requirements. For additional details regarding logistics information requirements to support the product support elements reference MIL-PRF-49506, *Logistics Management Information*. Reference to this PRF does not imply that the logistics information is contractor provided.

Chapter 4

ACQUISITION SUSTAINMENT TOOL KIT

4.1. Background. The Acquisition Sustainment (AS) Tool Kit was developed by acquisition and sustainment professionals and subject matter experts from across the Air Force as part of the Product Support Campaign Process Focus Team effort. It is designed for program and logistics managers use but can also be used by other disciplines in the acquisition and sustainment communities.

4.2. Purpose. The AS Tool Kit is designed to provide standardized, repeatable processes to ensure product support is incorporated early in the planning stages and throughout the life cycle. The application of this tool will enable the acquisition and sustainment communities to field products and services with complete cradle to grave support that are affordable, reliable, and sustainable. The AS Tool Kit's approach to up front supportability planning directly contributes to the AFPD 63-1/20-1, *Acquisition and Sustainment Lifecycle Management*, direction of establishing an ILCM approach to recapitalize Air Force capabilities through maximum acquisition cycle time efficiency. This will in turn provide agile support that will optimize fielded capabilities and the supply chain, minimize the logistics footprint, and reduce total ownership cost.

4.3. Applicability. The AS Tool Kit can be used by anyone performing daily acquisition and sustainment tasks on any weapon system or commodity. Use of the AS Tool Kit will aid in the development of operationally safe, suitable, and effective weapon systems and facilitate their transition to sustainment.

4.3.1. Formal training on the AS Tool Kit is available through the following Air Force Institute of Technology (AFIT), and Defense Acquisition University (DAU:

4.3.1.1. AFIT LOG 131, Industrial Maintenance Management

4.3.1.2. AFIT LOG 499, Logistics Executive Development Seminar

4.3.1.3. AFIT SYS 281, Air Force Acquisition & Sustainment

4.3.1.4. AFIT SYS 400, Current Topics in Air Force Acquisition & Sustainment

4.3.1.5. DAU LOG 206, Intermediate Sustainment Management

4.3.1.6. DAU LOG 210, Supportability Managers Course

4.4. Content. The AS Tool Kit is a single body of acquisition logistics information, containing checklists and links to DOD and Air Force directives, instructions, policies, and guides for acquisition and sustainment procedures. Each process or task is listed under its applicable Department of Defense (DOD) 5000 acquisition phase for easy reference and must be evaluated for program application. All current Air Force Instructions, the Acquisition Process Architecture Team (APAT) Model, and Independent Logistics Assessment Handbook were used to develop the AS Tool Kit. The Tool Kit consists of:

4.4.1. AS Processes Matrix – The AS Processes Matrix encompasses all programmatic aspects relevant to product supportability, logistics, and readiness at major acquisition milestones and other key decision points. It is a roadmap of separate logistics processes

sequentially listed from pre-Milestone A through disposal. The processes matrix serves as a ready reference for ensuring product support is incorporated early in the planning stages.

4.4.2. AS Checklists – The AS Checklists supplement the Processes Matrix and contain process descriptions, subtasks, and hyperlinks to supporting documentation for specific, complex tasks. They provide a starting point of the who, what, where, when, and how of the matching process embedded in the Processes Matrix.

4.4.3. AS Kneepad Checklist – The AS Kneepad Checklist serves as a user guide to supplement the Processes Matrix and Checklists, providing greater detail on each process. All AS Checklists are attached to an appendix in the Kneepad Checklist for quick and easy reference.

4.5. Access. All processes and tasks within the AS Processes Matrix, Checklists, and Kneepad Checklist are linked by the same Task Identification number, providing for easy cross reference. Access the AS Tool Kit through the Air Force Portal at **https://www.my.af.mil/gcss-af/USAF/ep/globalTab.do?command=org&channelPageId=-999406** or the Air Force Knowledge Now Product Support Campaign Community of Practice at **https://afkm.wpafb.af.mil/ASPs/CoP/OpenCoP.asp?Filter=MC-LG-01-82**

4.6. Configuration Control: The AS Tool Kit will continue to evolve to ensure Air Force logistics support maintains a system life cycle focus. Responsibility for update and configuration control of the AS Tool Kit rests with the Commander, Air Force Materiel Command (AFMC/CC). The AS Tool Kit will be updated to maintain consistency with emerging policy changes as required; as a minimum, the AS Tool Kit will be updated annually. Current AS Tool Kit configuration is identified by a date included in all documents and file names of the tool kit materials. Additionally, the AFKN AS Tool Kit CoP home page scrolling marquee contains the current version date for easy reference. Proposed changes and edits will be evaluated and incorporated in accordance with the AS Tool Kit Virtual Configuration Control Process (VCCP). For details on the AS Tool Kit VCCP, see the AS Tool Kit CoP at: **ttps://afkm.wpafb.af.mil/ASPs/DocMan/DocMain.asp?Filter=MC-LG-01-82&FolderID=MC-LG-01-82-5-7**.

4.7. Points of Contact. Specific questions or comments on the AS Tool Kit should be addressed through HQ AFMC/A4U at: AFMC.Product.Support.Campaign@wpafb.af.mil

Chapter 5

MANAGEMENT OF DEFENSE BUSINESS SYSTEMS

5.1. Defense Business System. A Defense Business System is an information system, other than a national security system, operated by, for, or on behalf of the Department of Defense including financial systems, mixed systems (financial and non-financial in one system), financial data feeder systems, and information technology and information assurance infrastructure, used to support business activities, strategic planning and budgeting, installations and environment, and human resource management.

5.1.1. Mission-Critical Information System. A system that meets the definitions of "information system" and "national security system" in the Clinger-Cohen Act, the loss of which would cause the stoppage of warfighter operations or direct mission support of warfighter operations. The designation of mission critical is made by a Component Head, a Combatant Commander, or their designee. A financial management IT system is considered a mission-critical IT system when designated by the Under Secretary of Defense (Comptroller) (USD(C)).

5.1.2. Mission-Essential Information System. A system that meets the definition of "information system" in the Clinger-Cohen Act, that the acquiring Component Head or designee determines is basic and necessary for the accomplishment of the organizational mission. The designation of mission essential is made by a Component Head, a Combatant Commander, or their designee. A financial management IT system is considered a mission-essential IT system when designated by the USD(C).

5.2. Business Capability Lifecycle (BCL). The Business Capability Lifecycle (BCL) is the overarching framework for review, approval, and oversight of the planning, design, acquisition, deployment, operations, maintenance, and modernization of defense business systems (DBS). It facilitates DBS acquisition by providing a development process tailored to the unique requirements of business systems.

5.2.1. Focus of the BCL is to enable the:

5.2.1.1. Rigorous analysis of a capability gap or need and summarizing it as a Problem Statement.

5.2.1.2. Analysis of potential solutions across the Doctrine, Organization, Training, Materiel, Leadership, Personnel, and Facilities (DOTMLPF) spectrum.

5.2.1.3. Justification of the best alternative for a materiel solution needed to reach desired outcomes.

5.2.1.4. Definition of program structure, planning, and documentation that will allow the solution to be quickly procured and implemented in a manner that provides the highest value to the Government.

5.3. Implementing BCL – RESERVED

Chapter 6

PROGRAM MANAGEMENT AGREEMENT (PMA)/

6.1. Purpose. This chapter provides guidance on preparing and maintaining a Program Management Agreement/Expectation Management Agreement (PMA/EMA). The PMA/EMA establishes a "contract" between the MDA (Service Acquisition Executive (SAE) for ACAT ID/IAM), PM, and the lead command. It will provide a documented basis for ensuring that a PM's annualized plan is consistent with those of the stakeholder organizations, that there is a common basis for understanding and accountability, that the specified plans are resourced and achievable, and that the organization's and individual's responsibilities are effectively communicated. The PMA/EMA is a formally documented agreement used to proactively resolve or de-conflict potential issues to include cost, schedule, and performance expectations over the life of the program. The PMA/EMA is designed to facilitate effective communication and provide updates and support for building an understanding between the acquisition/sustainment and operational communities. This chapter is intended to be used in conjunction with the requirements outlined in AFI 63-101, *Acquisition and Sustainment Life Cycle Management*. All ACAT I and II programs are required to have a PMA/EMA. ACAT III programs and programs on the SPML are encouraged to use PMAs/EMAs.

6.2. Overview. Expectations Management focuses on addressing accountability and credibility. Effective Expectations Management will reduce the number of significant issues and surprises that hurt the acquisition community's credibility with Air Force leadership, OSD, and the operator. Too often, programs start with fully executable programs that are then asked to do the impossible (i.e. stay the course) when funding or requirements change. In the end, this adherence to meeting original agreements when changes make them unrealistic hurts the acquisition community's credibility when the program fails to meet expectations. The Air Force can no longer stand for holding to program schedules, performance, or cost when significant perturbations occur. The PM has the authority to object to the addition of new requirements if they are inconsistent with parameters established at Milestone (MS) B unless approved by the Configuration Steering Board (CSB) and has the authority to recommend reduced requirements to the CSB that could improve cost or schedule. The Service Acquisition Executives will hold Program Executive Officers (PEO), Designated Acquisition Officials (DAO), and Program Managers (PM) responsible to ensure this policy is fully embraced and implemented.

6.3. Preparing and Maintaining a PMA/EMA. The PM initiates a PMA/EMA that is jointly developed by all stakeholders after the AF makes an investment decision to pursue a new program. Once realistic expectations are mutually agreed to, changes that impact those expectations, no matter what their source, must be identified and communicated to leadership by updating the original PMA/EMA. Bottom line is that there should be an established program process that leads to an agreement between the acquisition community and the operator that the current funding matches the program content and matches the schedule.

6.3.1. Regularly (at least once a year but preferably more frequently) talk face-to-face with your operator about the status of the program and the progress it is making towards meeting their requirements. Do not hide anything or try to present a rosier picture than reality. Conduct frank and open discussions about program risks, risk mitigation plans, and probability of success. Begin by addressing the current status of your ability to deliver what

the operator wants. Discuss any changes that may be needed to the capabilities requirements document or program content and the rationale**.** If you have not had a recent discussion concerning your current capability requirements document, take time to go through the details of the program and the capabilities document, particularly those requirements with thresholds and objectives, to ensure that you both understand each requirement, the rationale behind it, and the impact on the program if not met. Discuss recommendations to or results from the CSB. This is also a good opportunity to go through other program documentation, resources, and regulatory guidance to facilitate the PMA/EMA discussion.

6.3.2. In addition to the suggestions above, the Program Manager should address the following during the face-to-face meeting and include them in the resultant PMA/EMA so that the PMA/EMA contains an achievable and measurable annual plan that is fully resourced and reflects the approved program to include acquisition, fielding and sustainment:

6.3.2.1. Status of program execution against the APB and any existing Expectations Management Agreement.

6.3.2.2. Status of program execution against all requirements identified in the capabilities document.

6.3.2.3. Results to date from Test and Evaluation (T&E) activities.

6.3.2.4. Other programmatic expectations identified and agreed to by the program manager, operator, and other major program stakeholders as significant but not found in the capabilities document. (Key is to include whatever assumptions and provisions are needed to have an executable program).

6.3.2.5. Status of cost execution and expectations versus existing program cost estimates.

6.3.2.6. Status of funding expectations for successful program execution.

6.3.2.7. Any mutually agreed-to changes in expectations relating to cost, schedule, and performance.

6.3.2.8. Identified risks, risk mitigation strategies, and residual risk acceptance decisions.

6.3.2.9. Any concerns about expectations or areas of disagreement between the program manager, operator, or other major program stakeholder (if none, so state).

6.3.2.10. Any new program requirements the PM identifies as inconsistent with the parameters established at Milestone B that have not been approved by the appropriate Configuration Steering Board (CSB).

6.3.2.11. Recommendations (if any) from the PM to the appropriate CSB on reduced program requirements that have the potential to improve program cost or schedule in a manner consistent with program objectives.

6.3.2.12. Any mutually agreed-to changes in expectations relating to the support strategy and sustainment activities.

6.3.2.13. Any trade-off decisions made for areas identified with medium to high levels of risk.

6.3.2.14. Any commitment by the acquisition/sustainment community regarding the PM's tenure.

6.3.2.15. If during the discussions with your operator there are no changes identified that impact the execution of the program, then a statement to that effect should be included.

6.3.2.16. All PMAs/EMAs should contain a statement similar to the following: "After completing discussions on the status of the XYZ program, we agree that the program is fully executable based on the program funding profile found in XXXX, the requirements documented in XXXX, and any changes, additional agreements, or exceptions identified in this PMA/EMA."

6.3.3. PMA/EMA status is reported in System Metric and Reporting Tool (SMART).

6.4. PMA/EMA S ignatories

6.4.1. After the Program Manager has completed discussions and written down all of the agreements, the PMA/EMA document will be signed as follows:

6.4.1.1. ACAT ID and IAM PMAs/EMAs are signed by the PM, the Lead Command (General Officer/SES), and the SAE.

6.4.1.2. ACAT IC, IAC, II, and III PMAs/EMAs are signed by the PM, the Lead Command (General Officer/SES), and the MDA.

6.4.1.3. The PM should consider posting approved PMAs/EMAs to the PMA/ EMA Community of Practice (COP) at the following website: **https://afkm.wpafb.af.mil/ASPs/CoP/openCoP.asp?Filter=OO-AQ-MC-01** as appropriate based on content, to share with others and provide examples of successful documents.

6.4.2. The PM is responsible for ensuring PMA/EMAs are reviewed, updated, and signed annually. This may occur more frequently if the conditions that formed the basis for the agreement (requirements, funding, or execution plans) have changed. Changes to the PMA/EMA must be agreed to by all signatories.

6.5. PMA/EMA Format. Format for the PMA/EMA is at the discretion of the PM but must contain the minimum AFI 63-101 listed requirements. Whatever format is used must clearly and succinctly communicate to anyone who reads it the current agreed to expectations of both parties and that they agree the program is executable under the stipulated conditions. An example PMA/EMA format is included as an appendix to this pamphlet. This policy is designed to increase leadership stability while enhancing management accountability. It is consistent with the intent to improve AF business processes so we can make the most effective use of scarce resources while achieving the maximum support to the Warfighter.

6.5.1. Samples are posted on the PMA/EMA Community of Practice. Other PMA/EMAs may be reviewed as attachments to PMDs at the AF Library (PMDs): **https://pml.wpafb.af.mil**/

6.6. Initiating a PMA/EMA The following is an example of what steps could be taken to initiate a PMA/EMA, not intended to be an exhaustive list but an aid to start the process:

6.6.1.1. PM writes down its view of the status of the program and where it is going, addressing the subjects previously identified in this chapter. Staff through the operator and find areas of agreement and disagreement.

6.6.1.2. Convene a meeting to resolve any disagreements or discuss any disconnects between the program's and the operator's perspective.

6.6.1.3. Possible examples of PMA/EMA content concerning capability requirements:

6.6.1.3.1. Start with the program capability documents (ICD, CDD, CPD) and the integrated risk management plan.

6.6.1.3.2. Are the KPPs and any associated thresholds clear? If they are not, document the common understanding after discussions.

6.6.1.3.3. Are there any non-KPP requirements that are not straightforward and could be open to interpretation? If there are, document the common understanding after discussions.

6.6.1.3.4. Are there any implied requirements that should be documented?

6.6.1.3.5. Are there any "handshake" or "sidebar" agreements that need to be documented?

6.6.1.3.6. Are there any trade-offs that have been made as a result of areas identified with medium to high levels of risk?

6.6.1.4. This is also a good opportunity to go through other program documentation, resources, and regulatory guidance to facilitate the PMA/EMA discussion.

6.6.1.5. Determine if both parties have a complete understanding of the funding and costs of the program.

6.6.1.6. Identify, based on a common understanding of the capability requirements, what funding is needed to execute the program.

6.6.1.7. Determine if the warfighter provided and/or budgeted enough money to execute the program. If not, discuss and document in the PMA/EMA what actions are going to be taken to resolve shortfalls.

6.6.1.8. Ensure a common understanding of what will be delivered and when.

6.6.1.9. Identify the planned schedule for the program based on the common understanding of requirements and funding.

6.6.1.10. Discuss anything that has changed that will impact the planned schedule for the program. If something has impacted the schedule, discuss plans to adjust the schedule and document the newly agreed to schedule.

6.6.1.11. Bottom Line - Is the program executable (i.e. do the capability requirements match the funding and match the schedule)? If it does not, then come to an agreement with the operator on what needs to be done to get a match of the capability requirements with the funding and the schedule. Document in the PMA/EMA what each side needs to do to achieve the executable program.

6.7. Frequency After you have signed your PMA/EMA, plan the time of your next meeting. Schedule it when it makes the most sense taking into consideration key program decisions and the volatility of your program. Do not schedule it beyond one year from your previous meeting. A good PMA/EMA process should ensure that when program conditions change and have

significant impact on expectations, the acquirer and operator have some way to immediately communicate the issue and assess the impact on the current agreement. If they cannot reach agreement on how to handle the change, the issue needs to be elevated to the GO/SES levels within the acquiring and operator communities to reach consensus.

6.8. Ten Questions to Consider When Preparing the PMA/EMA.

6.8.1. If someone put the Program Manager in one room and the operator in another, would they both say the same thing about the programs requirements, funding, and schedule?

6.8.2. Does your PMA/EMA simply repeat requirements that are documented in other program documentation or does it identify agreements not currently documented elsewhere?

6.8.3. Did you include in your PMA/EMA all of the "sidebar" and/or "handshake" agreements that are critical to the successful execution of the program?

6.8.4. If either the Program Manager or operator representative were to leave the program tomorrow, will their replacements know what each side is expected to provide for the successful execution of the program?

6.8.5. Would there be anyone surprised if the status of your program were briefed at any program review where the operator was present?

6.8.6. Has your program experienced any changes in funding, schedule, or capability requirements? If yes, can you still deliver 100% of what the operator requires and when they need it?

6.8.7. Are the changes occurring in the program frequent enough and significant enough that I should talk to my operator counterpart more than once a year?

6.8.8. Are your bosses (both on the acquisition and operator side) aware of the agreements you are making to successfully execute the program?

6.8.9. Can anyone reading my PMA/EMA, clearly understand what both the acquisition community and operator have agreed to do in order to have a fully executable program?

6.8.10. Has your program team ever sat down with the operator and gone over the Capabilities/Requirements Document to ensure both sides have a common understanding of what is required? (Especially for those new programs with ICDs)

Chapter 7

CONTRACTOR INCENTIVE GUIDE

7.1. Purpose of Incentives

7.1.1. One of the primary responsibilities of a PM is the development of an effective acquisition strategy to achieve cost, schedule, and performance objectives. This chapter provides insight into company motivation, possible incentive tools/approaches and a series of questions to guide the PM in developing incentives appropriate to his or her particular effort.

7.2. Contractor Motivations. Money (or profit) is the usually the first motivator considered, but that is not the only motivation. Contractors are also concerned with:

7.2.1. Company growth (new business, new products).

7.2.2. Increased market share.

7.2.3. Enhanced public image and prestige.

7.2.4. Opportunity for follow-on business.

7.2.5. Keeping available skills and capacity (keeping personnel on the payroll for future business).

7.2.6. Intangibles - Intangibles include a number of psychological and sociological factors. Companies are run by “people”, and their individual and group motivations play a basic role in how well an incentive works in a company.

7.3. What to Incentivize. The government normally incentivizes three factors: cost control, technical performance, and schedule. However, in order for an incentive to be effective, the contractor must perceive that it is achievable.

7.3.1. Cost control incentives generally relate directly to the contract type (for a full discussion of contract types, see FAR Part 16 or talk to your Contracting officer and local Acquisition Center of Excellence (ACE)). The government has a range of contract types available for its use. The spectrum covers Firm Fixed Price (FFP) (most incentive to control cost) to Cost Plus Fixed Fee (CPFF) (less incentive to control cost). A firm fixed price contract provides the ultimate cost control motivation to deliver at the agreed to price or face the consequences. A cost reimbursement contract provides less motivation to control costs but by including an Incentive Fee, the contractor has the opportunity to earn additional profit by controlling costs.

7.3.2. Technical Incentives have been used to motivate superior technical performance to design-in improved reliability or maintainability, increase speed, ease of manufacturability, and designing for lower unit prices (design-to-cost) or to ease long-term logistics costs (life cycle cost).

7.3.3. Schedule Incentives have been successfully used for early delivery of a product/service when it is critical to meeting operational needs.

7.4. Other Fee Types

7.4.1. Incentive Fees are typically used to control of cost or schedule. Used for cost control purposes, they generally work by distributing the additional cost or the cost savings between the government and contractor.

7.4.2. Award fee contracts emphasize multiple aspects of contractor performance in a wide variety of areas, such as quality, timeliness, technical ingenuity, and cost effective management. Award fee incentives are tied to acquisition objectives in terms of cost, schedule, and performance, with some subjective criteria allowed for appropriate use. An example of an objective is timely and satisfactory completion of a milestone, such as Critical Design Review (CDR), system demonstration, or first flight test. A subjective incentive allows the government to use "judgment" such as "anticipation of problems" or "problem solving" to reward a contractor. Subjective incentives should only be used when it is not feasible to establish objective incentives to fully evaluate contractor performance; use requires documented justification and approval.

7.4.2.1. Typically, award fee contracts emphasize multiple aspects of contractor performance in a wide variety of areas, such as quality, timeliness, technical ingenuity, and cost effective management.

7.4.2.2. They should be structured to motivate superior contractor performance with award fee earned only for realized successful performance. No fee may be paid for unsatisfactory performance.

7.4.2.3. An award fee is to be earned—each evaluation period the contractor starts at 0% earned, but by satisfactory to outstanding performance, it can earn up to 100% of the award fee. No award fee should be earned if the contractor does not meet minimum essential contract requirements.

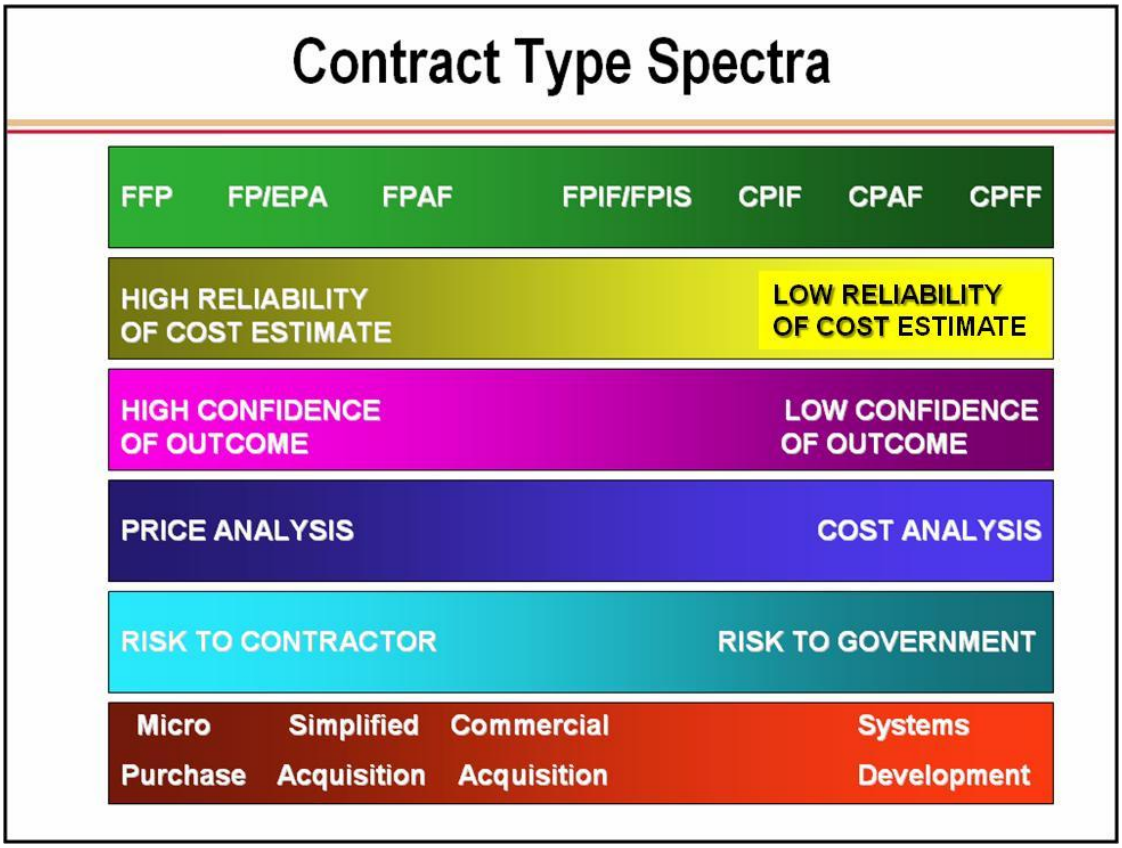
7.4.2.4. On rare occasions, an award fee rollover may be used, which defers all or part of an award fee to a later period based on specific circumstances and with approval of the FDO.

7.4.2.5. Use of an award fee requires a management structure to oversee and evaluate the contractor's performance, which adds administrative costs and management effort to oversee the program. Therefore, award fee contracts are only recommended when the contract amount, performance period, and expected benefits warrant the additional administrative effort. This means the cost/benefits analyses are documented.

7.4.3. In those instances where objective criteria exist, and the Contracting Officer and Program Manager decide to also evaluate and incentivize subjective elements of performance, the most appropriate contract type would be a multiple incentive type contract containing both incentive and award fee criteria (e.g., cost-plus-incentive/award fee, fixed-price-incentive/award fee) or a fixed price/award fee contract.

7.4.4. 'Non-Monetary' Incentives. Award Term contract can be a useful incentive for recurring products or services. It allows a contractor, through superior performance, to earn additional work—the potential for future revenue can be a very effective incentive. ***Note***: Award Term cannot be used for annually funded work.

Figure 7.1. General Overview of Incentives, Contract Type and Risk



7.5. Selecting an Incentive.

7.5.1. The first question the PM should ask is--Do I need an incentive? The answer could very easily be no! —the contract is short-term, the contractor has a proven history of superior performance on similar efforts and can deliver the required product without an incentive.

7.5.2. But, if the program has critical delivery dates, technology issues, software risks, or performance needs—an incentive may be a good business decision. That said--Do not pick the tool first. Rather, decide what is necessary to achieve or what result you are seeking and then chose the incentive tool or combinations of tools to achieve the desired results.

7.5.3. In constructing a business arrangement and incentive package, there is no substitute for planning, knowledge, and research. PMs must work with their Contracting Officers, as well as other program team members, when considering choices for contract incentives.

7.5.4. Use market research, to include early one-on-one meetings with potential contractors, to gain information on product knowledge, technology status, industry practices and business arrangements. If the contract is sole source, contact the Defense Contract Management Agency (DCMA) for information on the company's long-term objectives.

7.5.5. Take care to ensure that different incentives in the plan work together and do not conflict. For example, look at how the different criteria are related to ensure you are not incentivizing a contractor to focus solely on performance and ignores cost and schedule.

7.5.6. In order for an incentive to be effective, the contractor must perceive that it is achievable. Remember that a “reward” that cannot be gained is no reward.

7.5.7. Motivational theory indicates that tying rewards to specific behavior (or event) and choosing rewards that are paid “immediately” are the most effect way to motivate. An incentive paid years from event completion will probably not motivate a company, particularly since companies (or at least the people) tend to have a short term focus (generally quarterly and/or yearly) and the personnel currently running the company will have moved on to other jobs or into retirement in 10 years.

7.5.8. The following series of questions can help guide the decision when selecting and incentive:

7.5.8.1. What is important to the program—technical, schedule, cost—for program success?

7.5.8.2. What are the key program risks and how can incentives help to mitigate risks and improve probability of success?

7.5.8.3. Is the effort you want to incentivize realistic given the state of the art for technology?

7.5.8.4. Are there objective criteria that can be used to measure how well the contractor is performing towards meeting incentive targets?

7.5.8.5. Is it within the contractor’s control to meet your identified goals?

7.5.8.6. Is incentive amount adequate to provide sufficient motivation? How is that known?

7.5.8.7. What is the contractor’s environment?

7.5.8.7.1. What are the company goals? (DCMA is a good point of contact to get this type of information.)

7.5.8.7.2. Where does this particular program fit within the contractor’s overall portfolio of work? Is it one of many contracts, or is it a major contract and plays a key role in the company’s future?

7.5.8.7.3. What role do the employees play in the development of the product? How/Will the incentive flow to employees? As an example, software is very manpower dependent—some contractors have been successful in identifying that a portion of the incentive will go directly to their program personnel. This gives the financial incentive to the people who are doing the work, encouraging "buy-in" at all levels throughout the contractor’s organization.

7.5.8.7.4. Does the subcontractor play a critical role in program success? How/Will the incentive flow to the subs? How will the prime communicate with the sub? Understanding how the incentive may help you determine if it will have the result you are looking for, however, the government cannot dictate/negotiate subcontract types.

7.5.8.8. What is the government environment?

7.5.8.8.1. Is there something in the contract administration process that will mitigate against the incentive?

7.5.8.8.2. How often should the incentive be paid?

7.5.8.8.2.1. At end of contract? Throughout the contract? Award fee periods should probably be at least six months, but no longer than one year.

7.5.8.8.2.2. Some Award Fee contracts, where the program schedule has slipped, have found themselves out of money at the end of the contract.

7.5.8.8.3. Should a negative incentive be considered? A negative incentive could require, in the event of non-performance, the contractor to return a portion of the award fee paid (*Comptrollers of companies hate to write checks returning money to the government*) or have provisions for early termination of the contract or elimination of contract options.

7.5.8.9. If you decide you need an incentive, the next step is to work with your Contracting Officer, legal, and others, as appropriate to develop suitable contract language. The Acquisition Centers of Excellence can be a good source of information and expertise for this.

7.6. Follow Up/Execution. Awarding the contract does not mean the efforts to implement a successful incentive strategy are complete. The effort includes managing and administering the program and contract. Effective and timely communication with the company will be key to the success of the incentive. If the incentive has been selected correctly, then the PM should be "on message" in communicating regularly to your counterpart with the company. What is said will impact the contractor's efforts.

7.7. Considerations for Successful Implementation of Incentives

7.7.1. There are programs that have successfully used incentives; however it is as much an "art" to developing and effectively managing an incentive as it is a science to evaluating incentive types against program risks and other factors.

7.7.2. Competition, as well as positive and negative incentives, has been used as to improve contractor performance. Consider that low award fees for poor performance could result in management changes and improved performance, and schedule incentives for early delivery of a product may help focus a contractor on completion.

7.7.3. Unfortunately, there are cases where incentives do not work. There are programs where the contractor does not have the capability and cannot perform. Use of an award fee during a down-select could not overcome the competition incentive or the incentive was not attainable—an unachievable unit cost goal.

7.7.4. It is important to understand when it is working and when it is not working; and if it is not working, work with the contracting officer and consider changing it.

7.7.5. There is no "cookie cutter" approach that will guarantee desired results. Although financial goals tend to be the contractor's most immediate objective, there are other non-monetary factors that should be considered. The Program Manager is responsible for developing the incentive strategy. Start by determining the government needs. Be prepared to assist the contracting officer in negotiations with the contractor to achieve the government objective. Communicate openly with the contractor in an atmosphere of trust and mutual respect in order to achieve the goal. Be prepared to ask questions of the requirements community as well as the technical and business staffs to ensure that you are incentivizing

performance that is important to the government and worth the money spent. Stay away from complicated incentive approaches and use objective criteria whenever possible. Management is important—contractor will focus on what you focus on—make sure it relates to the incentives.

7.7.6. When creating an incentive consider a "war-game." Look at how the incentive works, is planned to work, and then create several possible test cases to anticipate the potential trade-offs. As an example if the contractor seeks to increase reliability by 100 hours and as a result spends $10M extra dollars. Is it of value to the government and to the contractor for that trade off? Is this an outcome you want and need to incentivize?

7.7.7. Plan and collect metrics and documentation so you can accurately determine whether criteria are being met. Know your Award Fee Plan inside and out (your contractor will) and take the time to analyze the data as objectively as possible.

7.7.8. Incentives should not be paid unless the contractor is meeting the minimum cost, schedule, and performance requirements. Make sure the minimum requirements are clearly defined and well understood.

7.8. Additional Information / Training

7.8.1. Acquisition Centers of Excellence (ACE): Each Product and Logistics center, as well as the Air Force Program Management and Acquisition Excellence office (AF PM&AE) have personnel familiar with incentives and can help guide your effort in selecting and creating a contract incentive. For additional information on contract incentives, please contact the local ACE or AF PM&AE at (703) 253-1450 or at the : **https://www.my.af.mil/gcss-af/USAF/ep/globalTab.do?channelPageId=-2055590&pageId=681742** .

7.8.2. Training: Defense Acquisition University (DAU) (**http://www.dau.mil**).

7.8.2.1. Contractual Incentives Course - Course Number: CLC018. This module focuses on understanding the balance between government and industry goals and objectives in crafting an effective incentive strategy that delivers value to both parties. The ability to "think through the nature of the deal" is critical to constructing a successful business relationship that effectively motivates and incentivizes the contractor to deliver what the government needs, when it needs it, and within budget.

7.8.3. For additional information reference the DOD Contracts Incentives Guide at: **https://learn.dau.mil/CourseWare/801321_2/module_1/docs/incentivesguide-0201.htm** and the Air Force Award-Fee Guide available at: **https://www.my.af.mil/gcss-af/USAF/AFP40/d/1075940151/Files/Other.Pubs/Other.Guides/award.fee.oct08.pdf**

Chapter 8

ITEM UNIQUE IDENTIFICATION IMPLEMENTATION PLANS

8.1. Introduction. This chapter is written to be used with AFI 63-101, *Acquisition and Sustainment Life Cycle Management*, DODD 8320.03, *Unique Identification* (*UID) Standards for a Net-Centric Department of Defense, DOD Guide to Uniquely Identifying Items*, DODI 8320.04, *IUID Standards for Tangible Person Property*, and DODI 4151.19, *Serialized Item Management (SIM) for Materiel Maintenance*.

8.1.1. Purpose of Item Unique Identification (IUID). IUID is a Department of Defense program requiring the marking and registering of assets that will enable easy access to information about DOD possessions in order to make acquisition, repair, and deployment of items faster and more efficient. Tangible assets are marked and associated with a set of data that is globally unique and unambiguous, ensures data integrity and data quality throughout the life of the component, and supports multi-faceted business applications and users.

8.1.2. Terms.

8.1.2.1. DOD Item Unique Identification – A system of marking items delivered to the DOD with unique item identifiers (UII) that have machine-readable data elements to distinguish an item from all like and unlike items. Items are marked with a Data Matrix, the contents of which are encoded in a syntax of ISO/IEC 15434 and the semantics of ISO/IEC 15418 or the Air Transport Association Common Support Data Dictionary (ATA CSDD) for Text Element Identifiers (TEIs). The data matrix contents may be either a Unique Item Identifier (Contruct#1 or Construct #2) or a DOD recognized IUID equivalent.

8.1.2.2. Data Matrix – A two-dimensional matrix symbology containing dark and light square data modules based on ISO/IEC 16022. It has a finder pattern of two solid lines and two alternating dark and light lines on the perimeter of the symbol. Data matrix is used for item marking applications using a wide variety of printing and marking technologies. The Data Matrix ECC 200, which uses Reed-Solomon error correction, is the specified symbol for a UII when physically marked on an item.

8.1.2.3. Enterprise Identifier – A code that is uniquely assigned to an enterprise (the manufacturer, vendor, etc.) responsible for assigning item unique identifiers to an item.

8.1.2.4. Item – A single hardware article or unit formed by a grouping of subassemblies, components, or constituent parts.

8.1.2.5. Marking – The application of legible numbers, letters, labels, tags, symbols, or colors to ensure proper handling and identification during shipment and storage.

8.1.2.6. Unique Item Identifier (UII) – A set of data elements marked on an item that is globally unique and unambiguous. For items that are serialized within the enterprise identifier, the UII data set includes the data elements of enterprise identifier and a unique serial number (Construct #1). For items that are serialized within the part, lot or batch number within the enterprise identifier, the UII data set includes the data elements of enterprise identifier, the original part, lot or batch number, and the serial number (Construct #2).

8.1.3. Additional information and guidance including information specifically geared to PMs, depots, and industry can be found at the (**http://www.iuidtoolkit.com**).

8.2. Applicability of Item Unique Identification Implementation Plans. The program manager (PM) is responsible for preparing an IUID implementation plan for all programs that result in the delivery of tangible personal property items to the Department of Defense. Through the plan the PM will identify and address all items meeting the IUID criteria (reference AFI 63-101). The implementation plan will address cost, schedule, impacts on legacy assets in service and in inventory, existing ongoing contracts, engineering drawing update strategy, budget requirements, and impacts to foreign military sales. Plans should reflect coordination between program acquisition and sustainment activities, and industry.

8.2.1. For programs newly designated as an ACAT program, the PM is required to prepare an initial IUID implementation plan. The IUID implementation Plan will be summarized in the SEP at Milestone A and included as an annex to the SEP at Milestones B and C. Adequacy of the IUID implementation plan requirements is assessed at all milestone reviews and a summary is included in the LCMP.

8.2.2. Plans will be approved by the program's Milestone Decision Authority (MDA) for programs on the APML or assigned logistics or materiel commander for activities or systems not on the APML.

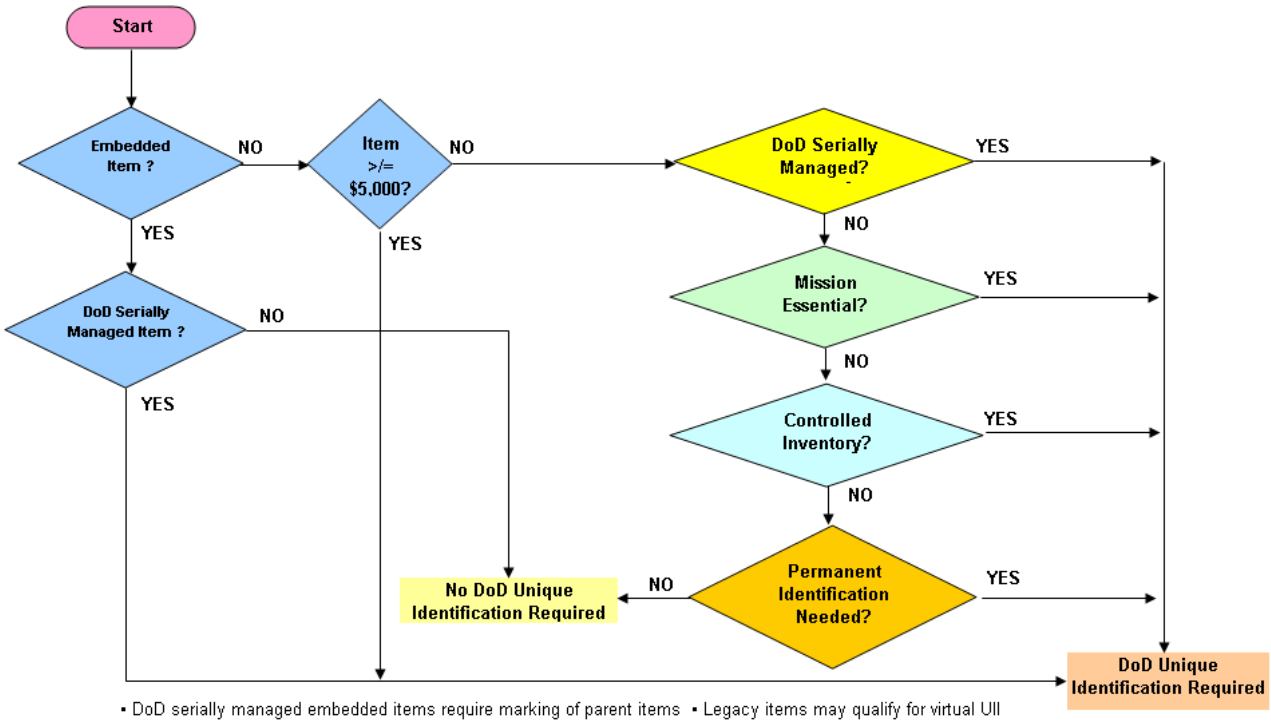
8.2.3. The PM is required to review the plan no less than annually to ensure currency and track progress toward completion until all items meeting IUID criteria used by the program have been uniquely identified.

8.2.4. IUID implementation plans will be consolidated for programs related to the same weapon system in a logical manner while maintaining appropriate visibility on priority programs. ACAT programs with existing legacy items should work with the sustainment activities and reference any existing or projected plans for IUID implementation.

8.2.5. Program planning for Automatic Identification Technology (AIT) infrastructure requirements and/or Automated Information Systems (AIS) enhancements to include IUID should occur only if the program is responsible for the management and/or maintenance of AIT and/or AIS.

8.2.5.1. Plans should identify the items used by the program that meet the IUID criteria identified below. This includes items managed by the AF, other DOD Components and Agencies, Government agencies outside the DOD, or support contractors. **Figure 8.1** provides a decision flowchart for determining if an item meets the criteria for IUID marking.

Figure 8.1. Determining if UID is Required



8.2.6. The PM is responsible for requiring unique identification of all program assets meeting the following criteria: (For additional guidance reference DODI 8320.04, *Item Unique Identification (IUID) for Tangible Personal Property*, DOD 4140.1-R, *Supply Chain Material Management Regulation*, and *DOD Guide to Uniquely Identifying Items*.)

8.2.6.1. Items for which the Government's unit acquisition cost is $5,000 or more. For existing items already owned by the Government, this value should be construed as the acquisition value to replace the item.

8.2.6.2. Items for which the Government's unit acquisition cost is less than $5,000, when identified by the managing or requiring activity as serially managed, mission essential, controlled inventory or requiring permanent identification.

8.2.6.2.1. Serially managed items are items the DOD elects to manage by means of its serial number. An item may be used that has been serialized by the manufacturer, but is not designated by the DOD (usually the PM or Item Manager) to be uniquely tracked, controlled or managed in maintenance repair and/or supply by means of its serial number.

8.2.6.2.2. Mission essential is a measure of an item's military worth in terms of how its failure (if a replacement is not immediately available) would affect the ability of a weapon system, end item, or organization to perform its intended functions. This determination, relative to UID, is made by the PM in coordination with the user.

8.2.6.2.3. Controlled inventory are those items that are designated as having characteristics that require that they be identified, accounted for, segregated, or handled in a special manner to ensure their safeguard and integrity. Includes

classified items, sensitive items (such as precious metals, hazardous items, etc.) and pilferable items (see DOD 4100.39-M, *Federal Logistics Information System (FLIS) Procedures Manual*, Vol. 10, Table 61), and safety controlled items.

8.2.6.3. Regardless of value, (a) any DOD serially managed subassembly, component, or part embedded within a delivered item and (b) the parent item that contains the subassembly, component, or part.

8.2.6.4. Any parent item (as defined in DFARS 252.211-7003(a)) that contains a serially managed embedded subassembly, component, or part.

8.2.6.5. When the Government's unit acquisition cost is less than $5,000 and the requiring activity determines that permanent identification is required.

8.2.6.6. The PM may apply for exception to contractor application of IUID as described in DFARS2.11.274-2(b).

8.3. Preparing the IUID Implementation Plan. IUID Program Implementation Plans apply to all programs that result in the delivery of tangible personal property items to the Department of Defense, including deliveries received as part of service contracts. A template for IUID implementation plans that includes detailed guidance for each section can be found at Attachment 4. In general the plan must:

8.3.1. Incorporate IUID requirements for all new end items meeting the IUID criteria identified in AFI 63-101. Identify the items and the plan to mark and register the items. Initial plans may not be able to include a detailed list of items that meet the criteria, but the PM should be able to identify expected categories and have a plan/schedule to ensure all items requiring marking are identified.

8.3.2. Address IUID requirements for legacy items. Legacy items are DOD owned items that have been produced and deployed for use, or that have been produced and placed in inventory or storage pending issue for use, to include:

8.3.2.1. Retrofit plans for 2015 completion for in-service items.

8.3.2.2. Inventory items and embedded items.

8.3.3. Incorporate IUID requirements for all embedded items that meet the IUID criteria, including all serially managed embedded items.

8.3.4. Apply IUID requirements to Contracted Logistics Support Agreements. Specify how DFARS clause 252.211-7003 is being applied to include marking and registering of spares, repaired items and other items managed or procured under CLS.

8.3.5. Identify IUID requirements for Foreign Military Sales and Security Assistance Programs.

8.3.6. Support Performance Based Logistics objectives for total asset visibility, life cycle inventory management, and serialized item management.

8.3.7. Integrate IUID in configuration and document management.

8.3.8. Address organic manufacturing.

8.3.9. Address Automatic Identification Technology (AIT) infrastructure requirements, to include:

8.3.9.1. Maintenance and supply support,

8.3.9.2. Organic manufacturing, and

8.3.9.3. Deployable assets.

8.3.10. Address compatibility with and impact to Automated Information Systems (AIS). Include:

8.3.10.1. Program-specific information.

8.3.10.2. Cross-program/cross-service information systems.

8.3.11. Identify the capability requirements necessary to accommodate IUID data for the identified assets if the system is AIS used for the management of property.

8.3.12. Be consistent with financial accounting and property management objectives.

8.4. Coordination Process for UID Implementation Plans

8.4.1. The PM prepares the plan in coordination with industry, sustainment, and local ACE personnel.

8.4.2. Prior to final PEO/DAO signature coordination, coordinate plans with AFMC/LSO (SNT/IUID project office), SAF/AQXA, and AF/A4ID to ensure standardization and aid in identification of cross-cutting implementation activities.

8.4.3. After obtaining PEO signature, ACAT I, IA, and non-delegated programs should work with their PEM to obtain SAE coordination (ACAT 1D/1AM) or approval (ACAT 1C, 1AC or non-delegated II). Following SAE signature, ACAT 1D and IAM program plans will be forwarded by the PEM to OUSD (AT&L) or ASD(NII) for approval.

8.4.3.1. Fact-of-life changes, such as updates to schedule, IUID item lists and status updates, do not require a re-coordination of the IUID Implementation Plan unless they drive a significant change in the approved strategies or resources required for implementation. Updates to existing plans do not need to change to revised templates or formats, but should be reviewed to ensure all new statutory or regulatory requirements are addressed.

8.4.3.2. All approved or updated IUID Implementation plans should be forwarded to SAF/AQXA (via workflow) for information and recording. ACAT ID plans will also be forwarded to OUSD (AT&L).

8.5. Registration and Implementation. For new development programs the marking and registration of the items in the IUD registry is normally accomplished by the contractor through implementation of DFARS clause 252.211-7003, *Item Identification and Valuation*. However, it is still the responsibility of the PM to ensure all items are marked and registered correctly, this includes verification that the data submitted to the IUID registry is accurate and usable for future asset management purposes. Some consideration for the PM to ensure correct and complete registration and marking are:

8.5.1. Ensure the Contract Line Item Number (CLIN) and Contract Data Requirements List (CDRL) structure supports IUID. Separate CLINs or SubCLINs for items that require marking make it easier to determine value and register at delivery. Requiring a CDRL to identify IUID items and/or embedded items provides a tracking mechanism and promotes early IUID planning by the contractor.

8.5.2. Understand when and how the contractor is going to mark items. Make sure they are aware of the ISO standard and DOD guidance on marking. Look for the activity in the IMP/IMS and request status as a part of routine reporting.

8.5.2.1. Understand how the contractor is going to register items. Preferred method is to use Wide Area Workflow (WAWF) and submit the IUID information at the time of acceptance (completion of the electronic Form DD250, *Material Inspection and Receiving Report*). The PM should ensure that the person responsible for accepting the delivery is aware of what should be in the IUID section of WAWF. Assign an IUID lead and make sure they are aware of common mistakes (like using a subcontract number instead of the government contract number or failure to follow the DOD standard.)

Chapter 9

SYSTEM/PROGRAM TRANSFER PROCEDURES

9.1. Purpose and Overview. This chapter further explains the system/program transfer process and responsibilities prescribed in AFI 63-101, *Acquisition and Sustainment Life Cycle Management*. It describes a collaborative process designed to ensure a seamless (within the ILCM community) and transparent (to the user) transition of weapon system and program management responsibilities from an acquisition portfolio (located primarily at Air Force Product Centers) to a sustainment portfolio (located primarily at Air Logistics Centers (ALC)). This chapter outlines the process and criteria for assessing the readiness of a given weapon system or acquisition program to transition, details the steps for accomplishing the transfer action, and describes the roles and responsibilities of parties involved in the transfer process.

9.2. Background and Framework. Every Air Force weapon system has a System Program Manager (SPM) who is directly responsible for managing the development and sustainment needs of the system[1] throughout its lifecycle. In most cases, weapon system and program management responsibilities initially reside with a SPM at a product center. The SPM is usually supported by a System Sustainment Manager (SSM) at a sustainment activity (usually at an ALC) who assists the SPM by implementing and managing the support infrastructure necessary to sustain the product throughout its service life. As a weapon system acquisition program nears the end of its production phase and the gaining sustainment activity incrementally establishes its weapon system support organization and infrastructure, the SPM will initiate actions to transfer system/program management responsibilities from his/her product center to a designated logistics center or, for some space systems, a sustainment organization at the product center.

9.2.1. **Sustainment Transfer Point.** The Sustainment Transfer Point (STP) is the point in time when a weapon system formally transitions from acquisition to sustainment, and overall system/program management responsibilities are officially transferred from a PEO/DAO's acquisition portfolio to an ALC/CC portfolio or other sustainment organization. Department of Defense Instruction 5000.02, *Operation of the Defense Acquisition System***,** prescribes the following overarching requirements for establishing a STP:

In order to transition from a PEO to a commander of a systems, logistics, or materiel command, a program or increment of capability shall, at a minimum, have passed Initial Operational Capability (IOC), have achieved full-rate production, be certified as interoperable within the intended operational environment, and be supportable as planned.[2]

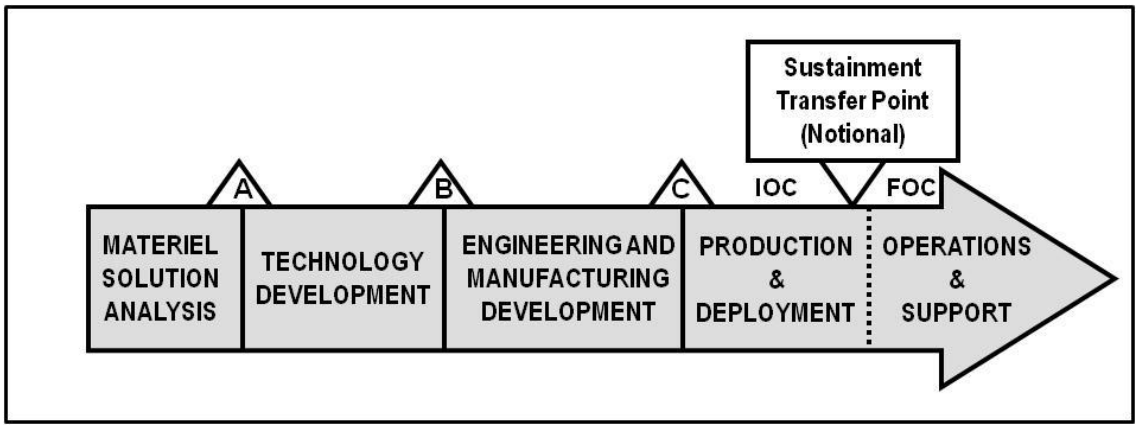
9.2.1.1. Based on this overarching guidance, the STP will notionally fall near the end of a program's production and deployment phase, as graphically depicted in **Figure 9.1** For evolutionary acquisition programs with multiple increments, the determination of a single STP during the production and deployment phase of the last increment, or use of a phased approach, is based on the individual program and needs to be consistent with the overall LCMP. However, only one responsible and qualified PM can be identified for each

[1] For the purpose of this guide, "system" and "product" are generic terms used to describe the article(s) being acquired and fielded by product and logistics centers.
[2] Per DODI 5000.02, paragraph E10.3 (e).

program at any point in time. A phased approach should be considered only if each increment is a separate program or if the acquisition strategy and transfer plan clearly identifies and documents a single authority for the remainder of the development.

9.2.1.2. The PM will identify a target STP no later than MS C and document it in the LCMP. Once approved, the PM needs to coordinate any change to the STP with the MDA and the gaining ALC/CC (or equivalent for other sustainment organization), and notify AFMC/CS, AFMC/A4, and AFMC/A8.

Figure 9.1. Sustainment Transfer Point (notional, non-space)



9.2.2. System/Program Transfer Assessment Criteria. As directed in AFI 63-101, during the production and deployment phase, the SPM conducts analyses to determine the feasibility of achieving the STP specified in the LCMP. To assist SPMs in this regard, the following system/program transfer assessment criteria provide an analytical framework to develop system/program transfer plans and support transfer decision making. These criteria encompass and expand the DODI 5000.02 requirements stated above, and provide a foundation for further detailed analysis and discussion of system/program readiness to transition from a the acquisition portfolio to the sustainment portfolio.

Table 9.1. System/Program Transfer Assessment Criteria

Assessment Criteria	Considerations
System Technical Maturity	1) Has the system achieved IOC and been deemed interoperable in its intended operational environment? 2) Have all deficiencies identified during developmental and operational testing (DT&E, IOT&E, FOT&E, or FDE) been satisfactorily resolved so that there are no remaining substantial or severe impacts to the operational mission? 3) Will ongoing or planned system development activities (e.g., post-production modifications) substantially change the system's performance characteristics or supportability requirements?
System Production Status	1) Is the program nearing the end of, or has it completed, full-rate production?[1] 2) Are additional production contracts planned or anticipated? 3) Have a significant percentage of production articles been delivered to the operational command(s)?
System Supportability	1) Have (or will) the relevant product support elements been (or be) deemed ready[2] to support the system at the planned STP?
Program Management Status[3]	1) Is the preponderance of system/program management effort being expended on acquisition/product development tasks or sustainment/product support tasks? Has the production configuration been baselined? 2) Is the system/program management environment stable? Are there outstanding contractual issues? 3) Are significant system/program leadership changes underway or envisioned near the planned STP?
Program Funding Status[3]	1) Is the preponderance of system/program funding being expended on acquisition/product development tasks or sustainment/product support tasks? 2) Is significant investment still required to field or mature the planned system sustainment infrastructure? 3) Are sufficient funds available or programmed to support the system as planned after transfer?

Assessment Criteria	Considerations
External Program Factors	• Are any planned sustainment support service contracts projected to exceed $100M in total contract value? Have they been designated "special interest" contracts by SAF/AQ?[4] • Would any other technology or product development programs be negatively impacted if the system/program were transferred? • Are there any other internal or external special interests that may preclude or be negatively impacted by system/program transfer?

[1] In this context, "production" applies to the articles intended for employment by USAF organizations. In some cases, a system's production line may continue beyond the run for USAF articles, e.g., foreign military sales.

[2] The 12 Product Support Elements are further described in Chapter 3 and prescribed in AFI 63-101. Additionally, the *Independent Logistics Assessment Handbook* provides specific evaluation criteria that may be useful in determining a system's sustainment posture and readiness for transfer of management responsibilities.

[3] Do not consider activities outside the scope of the USAF program

[4] If the answer to either of these questions is "yes", these services must be managed by the PEO for Combat and Mission Support (AFPEO/CM)

9.3. System/Program Transfer Process. The following description depicts the process by which weapon system and program management responsibilities will be transferred from a product center to a logistics center.

9.3.1. Prepare Transfer Support Plan.

9.3.1.1. The system/program transfer process begins with the SPM. Consistent with meeting the STP identified in the LCMP, the SPM will develop a Transfer Support Plan (TSP) to document the actions, responsibilities, and timelines necessary to transfer weapon system/program management responsibilities to the designated ALC/sustainment activity at a planned STP. This is usually accomplished as early as possible during the production and deployment phase (post-Milestone C). Four years prior to the target transfer date is a best practice for the SPM to begin development of the STP, with a goal of having an approved STP three years prior to target transfer date. The exact timing depends on the specific needs and actions required to transfer the program. The SPM leads the TSP preparation effort, and is supported by the SSM and other applicable functional organizations at the gaining sustainment organization. The SPM should also solicit support from the operating command(s) as necessary to develop the TSP. The TSP should be drafted with ample time for approval and completion of any other work required prior to transfer.

9.3.1.2. The SPM will develop a TSP to fit the system's unique management environment and satisfy long-term system sustainment requirements. While the TSP will focus on system/product sustainment responsibilities, the TSP should not be limited to logistical support matters only. It should also reflect post-transfer organizational roles

and responsibilities, manpower considerations, and funding requirements for the gaining ALC/sustainment activity, residual system development and acquisition responsibilities for the losing product center (e.g., establishing a Developmental System Manager to execute system upgrades/modifications), and system sustainment responsibilities for the operating command(s). The TSP should also incorporate any unresolved issues and/or action plans associated with the system/program transfer assessment considerations outlined in **paragraph 9.2.4**

9.3.1.3. The SPM will coordinate the TSP as necessary to solicit comments and resolve any outstanding issues that may preclude a successful system/program transfer. Once the TSP is developed, the SPM will forward it to the PEO/DAO and the gaining ALC Commander (or equivalent for other sustainment activities) for approval. If necessary, the SPM will also forward any unresolved system/program transfer issues to the PEO/DAO for resolution.

9.3.2. Approve Transfer Support Plan. The PEO/DAO and the gaining ALC Commander (ALC/CC or equivalent for other sustainment activities) will jointly review the TSP and approve it by affixing their signatures to the document. Both the PEO/DAO and the gaining Commander must approve the TSP for system/program transfer to occur. If either the PEO/DAO or the gaining Commander does not approve the TSP, it will be returned to the SPM for continued development and resolution of issues. Approval of the TSP does not mean that concurrence to transfer the weapon system and/or program management responsibilities has been given by leadership. It is a best practice to have a fully approved TSP in place three years prior to the target transfer date. This ensures there is adequate time for all actions required of both the losing and gaining organization to be completed prior to transfer.

9.3.3. Transfer Support Plan Executive Review. Once the TSP is approved, the PEO will forward an Executive Summary of the TSP to the AFMC Commander (AFMC/CC) and the Service Acquisition Executive (SAE) for their review and concurrence to transfer the weapon system and/or program management responsibilities from the product center to the designated ALC/sustainment activity at the planned STP. If either the AFMC/CC or the SAE non-concurs with the TSP Executive Summary, the program will remain in the PEO's/DAO's acquisition portfolio and the TSP will be updated as necessary or as directed by this executive review. Once approved, the PM needs to coordinate any change to the STP with the MDA and the gaining ALC/CC (or equivalent for other sustainment organization), and notify AFMC/CS, AFMC/A4, and AFMC/A8.

9.3.4. Update Program Management Directive. Once the AFMC/CC and the SAE have concurred with the TSP, the applicable HAF Program Element Monitor (PEM) should consider updating the system's Program Management Directive (PMD) if required to support TSP execution. See HOI 63-1, *Headquarters Air Force Guidance for Preparing Program Management Directives (PMD)* for additional information.

9.3.5. Transfer System/Program. Once the TSP has been signed, transition activities prescribed in the TSP should flow per the timeline(s) contained in the plan. The PEO/DAO and product center SPM will continue to manage and report on system/program activities until such time as they formally transfer system/program management responsibilities to the

gaining logistics center. If a "show-stopper" occurs prior to the planned transfer date, the SPM will take the lead to resolve it.

9.3.6. Execute Post-Transfer Actions. Once the formal system/program transfer has occurred, the SPM at the gaining ALC/sustainment activity will update applicable information systems and databases, including System Metric and Reporting Tool (SMART), and notify HQ AFMC of any issues or system/program management changes resulting from the transfer. After system/program transfer has occurred, any new acquisition and sustainment activities (e.g., system upgrades/ modifications) that involve investment funding (i.e., RDT&E and/or procurement funds) and meet the DOD 5000. series definition of an acquisition program, will be managed as acquisition programs IAW the program management procedures prescribed in AFI 63-101. Such activities will be managed within an acquisition portfolio and program management responsibilities will be assigned IAW AFI 63-101. Management of modification programs will be conducted IAW AFI 63-1101, *Modification Program Management [to be replaced by AFI 63-131, Modification Program Management]*.

9.4. Additional Information.

9.4.1. Additional information regarding TSP preparation, content, and format can be found at **https://afkm.wpafb.af.mil/ASPs/docman/DOCMain.asp?Tab=0&FolderID=OO-LG-PE-O1-19&Filter=OO-LG-PE-O1**

Chapter 10

FIELDING PROCEDURES

10.1. Purpose and Overview. This chapter further explains the materiel fielding process and responsibilities directed in Chapter 3 of AFI 63-101, *Acquisition and Sustainment Life Cycle Management*. It describes a collaborative process designed to ensure the seamless and transparent transition of Air Force materiel[3] from product development and manufacturing entities to operational users in the field. This chapter provides planning criteria and considerations for developing materiel fielding strategies and plans, and it describes a process for coordinating and conducting materiel deliveries to operational units.

10.2. Background and Framework. The principal objective of every Air Force acquisition program is to field an operationally effective and logistically supportable product[1] to the organization(s) that identified the need for the materiel. As the product is being developed and produced, program managers (PMs) must concurrently undertake activities to ensure the product makes a "smooth landing" at its intended user's operating location. This chapter is designed to help PMs in this regard, and to:

10.2.1. Ensure sufficient planning is conducted in advance of anticipated materiel delivery dates, allowing both the materiel developer and the materiel receiver (i.e., the user) to identify, understand, and resolve issues associated with the materiel.

10.2.2. Ensure sufficient time is available to develop the infrastructure necessary to operate and sustain the materiel, including the operations, maintenance, and mission support personnel who will employ, repair, and support the materiel in the field.

10.3. Materiel Fielding Process Overview. The materiel fielding process can be characterized as: s*upported and supporting commands collaboratively planning and executing the delivery and beddown of an operationally effective and suitable platform or system, or a major system modification/upgrade, from a total system capability perspective, that is sustainable over its planned lifecycle.* This multi-dimensional process requires close and frequent coordination between the acquisition, sustainment, and operational communities in order to field materiel that meets users' needs.

10.4. Materiel Fielding Planning and Assessment Criteria. The materiel fielding process overlays a foundation of planning and analysis criteria that serves to frame potential issues and enable the timely delivery of materiel to field organizations. The following materiel fielding planning and assessment criteria may provide PMs with "conversation starters" that could lead to the identification of potential materiel fielding issues for their program. They may also be used as a framework for PMs to develop program-specific materiel fielding strategies and plans for their weapon system or product.

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[3] For the purpose of this chapter, "materiel" and "product" are generic terms used to describe articles that are developed, manufactured, and delivered by product and logistics centers to operational commands. This "materiel" may include new or modified equipment, supplies, weapons, or entire weapon systems such as aircraft.

Table 10.1. Materiel Fielding Planning and Assessment Criteria

Planning & Assessment Criteria	Considerations
Materiel System/ Product Overview	• Who are the principal participants involved in developing, manufacturing, delivering, operating, and sustaining the materiel to be fielded? • USAF; DOD; US Government; industry; foreign interests • How will the materiel be used in the field? • Ex: operational employment concepts; deployment/forward basing scenarios; mission frequency/utilization rates
Materiel Fielding Methodology	1. What actions must be accomplished prior to initiating delivery of the materiel? Do these requirements change over time? 1. Ex: product acceptance testing; operational site and/or depot activation tasks; interim contractor support agreements 1. How will the materiel get from the manufacturing facility(ies) or product acceptance site(s) to the user's beddown location(s)? Who will deliver the materiel and by what method? 1. Ex: USAF flight crews; contractor personnel; commercial shipping company 1. Who will accept and inspect the materiel at the user's beddown location(s) or the original equipment manufacturer??
Materiel Fielding Schedule	1. How many systems/products are to be delivered and at what interval? Does this delivery schedule change over time? 2. Where/to what organization(s) will the materiel be delivered? • Does the user have a priority order for delivery of the materiel?
Materiel Support Concepts	
Sustainment Concepts	• What sustainment concepts are associated with the materiel? Do these concepts change over time? • Ex: levels of maintenance (organizational, intermediate, depot); sources of repair; sustainment partnering relationships (government-government, government-contractor); use of interim contractor support and/or contractor logistics support • Are there any performance based logistics requirements that must be met prior to delivering the materiel? Do these requirements change over time? (Example: RAMS, product performance agreements, etc.)

Planning & Assessment Criteria	Considerations
Manpower/ Personnel Requirements	• How many operations, maintenance, and mission support personnel will be needed to operate, sustain, and support the materiel? Who will provide them? What skill sets/certifications will they require? Will these requirements change over time, or based on the number of systems/products delivered? • Will contractor personnel operate or sustain the materiel? In combat environments as well as at home station? Does their involvement change over time?
Training	• How many, and to what level or standard must the operations, maintenance, and/or mission support personnel be trained prior to, or after the materiel is delivered? • Who will develop courseware materials and administer the requisite training? When will the training be provided? • Are there any training support systems/devices (e.g., flight simulators) that accompany the materiel? When must these systems be fielded in relation to the planned materiel delivery schedule?
Technical Publications	1. Are validated and verified technical manuals required prior to materiel deliveries? What manuals (e.g., flight, maintenance) are necessary at what point in time? • Are there any other forms of technical information or documentation necessary to operate or sustain the materiel in the field? When must these artifacts be delivered? Ex: engineering drawings; software licenses/user guides.
Support Equipment	• What types of, and how many pieces of support equipment must be delivered prior to, or along with the materiel? Ex: USAF/DOD-common; system peculiar; contractor-provided tools and test equip.. • Are there any other types of government-furnished and/or contractor-furnished equipment or property that must be delivered prior to, or along with the materiel?
Supply Support	1. What types of, and how many spare parts must be delivered prior to, or along with the materiel? Ex: initial spares; replenishment spares, deployment kits 2. How and where will the spare parts be stored and delivered? Ex: at the user's beddown location; in organic USAF/DOD depots; in a contactor-operated spares site.

Planning & Assessment Criteria	Considerations
Packaging, Handling, Storage, & Transportation	• Are there any unique PHS&T requirements associated with the materiel? Must these products or capabilities be delivered prior to, or along with the materiel? • How will "total asset visibility" requirements associated with the materiel be assured?
Computer Resources/Support	• Are there any operations or logistics data collection, analysis, or production systems associated with the materiel? Must they be delivered prior to or along with the materiel? 1. Ex: mission planning systems; command and control systems; logistics management systems • Are there any USAF or DOD electronic databases that need to be modified or created in order to deliver and support the materiel? 1. Ex: SMART
Facilities & Environment	• What operations, maintenance, and mission support facilities are necessary to house, operate, and/or sustain the materiel at the user's operation location(s)? When must these facilities be provided in relation to the materiel fielding schedule? 1. Ex: aircraft hangars and parking ramps; environmentally controlled storage or repair facilities; hazardous materiel/ explosive storage areas • Are the user's existing facilities sufficient? Are modifications to existing facilities necessary? Do new facilities need to be constructed? When will these actions take place relative to the planned materiel fielding schedule? • Will environmental impact assessments be performed, and/or mitigation procedures undertaken prior to delivery of the materiel? Are there any new, unique, or recurring environmental protection requirements associated with the materiel?
Ancillary Systems, Equipment, & Supplies	• Are there any systems or equipment this materiel must interface to, or be interoperable with? (including communication or C2) If so, what is the fielding plan for these products? Are/will these systems be in the proper location(s) and quantities necessary to provide the requisite operational or sustainment interfaces? • What other products are necessary to support operation and/or sustainment of the materiel? Ex: petroleum, oil, lubricant products; avionics systems or components; weapons; ammunition

Planning & Assessment Criteria	Considerations
Materiel Defect Reporting	1. How will materiel defects noted during or after delivery to the user be reported? (i.e., IAW T.O. 00-35D-54, *USAF Deficiency Reporting, Investigation, and Resolution*). Who will process and adjudicate these deficiency reports? Who will determine if these materiel defects warrant stopping or slowing the materiel delivery schedule?
Materiel Safety & Occupational Health	• Have the materiel's safety hazards been identified and satisfactorily mitigated? Are there any new or unique system safety requirements associated with the materiel which must be delivered along with the system/product? • Are there any potential adverse operational/occupational health risks or other readiness impacts associated with the materiel? Have/will these risks be satisfactorily resolved prior to delivery?
Materiel Security	• Are there any unique materiel controls or accountability procedures that must accompany the product during and/or after delivery? • Are there any physical or electronic security requirements necessary to store, handle, or limit access to the materiel?
Materiel Post-Production Support	• Who will maintain configuration control of the materiel during and after delivery? Will this responsibility transfer at some point after deliveries have begun or been completed? • Will/how will the materiel be modified or upgraded after delivery? Who will perform this work? How will the upgraded materiel be fielded?
Materiel Disposal	• Are there any existing systems or equipment, to include communications and information network assets, to be retired or relocated as a function of system/product deliveries? Are these activities synchronized with the delivery of the new materiel? • When and how will the new materiel be disposed of after it has completed its service life? Are there any de-militarization procedures, electronic media sanitization procedures, product disposal equipment, etc. that must accompany delivery of the materiel?

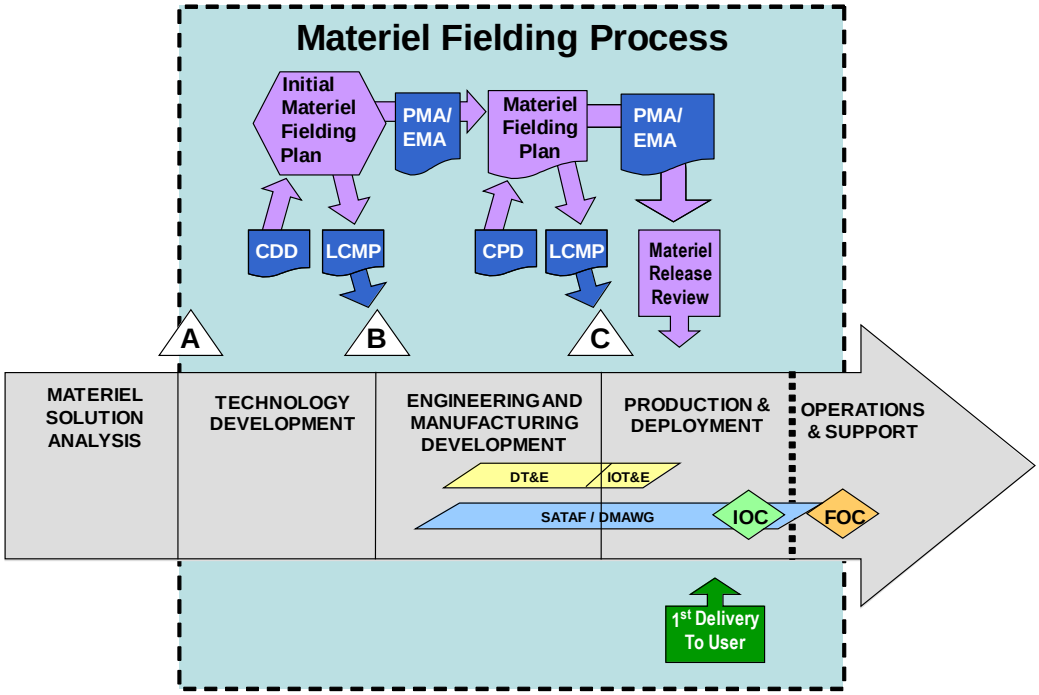
10.5. Materiel Fielding Process. Though every acquisition program will have unique materiel fielding considerations and challenges, PMs should design their programs to satisfy the following three overarching and fundamental requirements inherent to the materiel fielding process. **Figure 10.1** depicts (notionally) how these requirements might overlay the defense acquisition framework.

10.5.1. The need to develop comprehensive and coherent materiel fielding plans.

10.5.2. The need to coordinate materiel fielding issues, action plans, responsibilities, and schedules with the materiel's intended user(s).

10.5.3. The need to conduct a thorough assessment and review of the materiel's readiness for delivery to the user(s).

Figure 10.1. Material Fielding Process (Notional).



10.6. Technology Development Phase. As shown in the illustration above, the materiel fielding process could begin in earnest at Milestone (MS) A, once the materiel solution(s) resulting from the Materiel Solution Analysis phase has been determined. Toward the end of the Technology Development phase, the user will produce a Capability Development Document (CDD) and maintenance or support CONOPS that should describe the user's intended operational employment concept(s), beddown considerations, and maintenance/support concept(s) for the materiel being developed. In preparation for MS B, PMs should use the CDD as the basis for developing an initial Materiel Fielding Plan (MFP) that will serve as a "fielding roadmap" for the upcoming EMD phase and beyond. At MS B, the MFP should outline the materiel fielding-related objectives and issues to be examined, as well as any specific action plans, responsibilities, and timelines for materiel fielding-related activities to be conducted during the EMD phase. While each program will have unique materiel fielding objectives and challenges, during this phase PMs should prepare a MFP to document *how* and *when* they intend to explore the materiel fielding planning and assessment criteria discussed in **paragraph 10.4** with emphasis on long-lead issues such as:

10.6.1. Potential materiel basing and employment scenarios at the user's home station, and at forward/austere operating sites if so indicated in the user's operational concept.

10.6.2. Materiel support requirements at home station and in deployment scenarios, including the potential "logistics footprint" that may be necessary to support the materiel at forward or austere operating bases, potential sources of product support, and "50/50" considerations.

10.6.3. The potential impact of technologies that may lessen the sustainment burden and logistics footprint for home station or deployed operations—for example: embedded diagnostics, automated failure reporting, and other similar maintenance enablers that might reduce the logistics tail associated with the materiel.

10.6.4. Potential environmental impacts/issues, potential facility and infrastructure issues, or any other materiel fielding concern that may involve complex planning activities and/or lengthy remediation actions.

10.7. Milestone B Decision. As directed in AFI 63-101, PMs must include a "Materiel Fielding" section in all Life Cycle Management Plans (LCMPs) produced for Milestone B (MS B) and any subsequent program decision points. In the MS B LCMP, PMs should summarize their projected materiel fielding methodologies and timelines, and discuss the materiel fielding-related activities to be conducted during the EMD phase—for example: Site Activation Task Force (SATAF) and Depot Maintenance Activation Working Group (DMAWG) activities, responsibilities, and timelines. At the PM's discretion and with MDA approval, the MFP may be a stand-alone document, an annex to the program LCMP, or embedded within the LCMP itself.

10.7.1. Additionally, if appropriate, PMs may also recommend materiel fielding-related actions or decision criteria for inclusion in the MS B Acquisition Decision Memorandum (ADM).

10.7.2. Finally, PMs must also include a "Materiel Fielding" section in all Program Management Agreement/Expectation Management Agreements (PMA/EMA) executed subsequent to MS B. This portion of the PMA/EMA should reflect any materiel fielding-related issues, responsibilities, and timelines that require user input and/or involvement and are not documented elsewhere.

10.8. Engineering and Manufacturing Development (EMD) Phase. During the EMD phase, PMs may form a materiel fielding IPT to assist them with materiel fielding planning and related activities. While such an IPT would typically consist of action officers and team leads, PMs may, if the situation warrants, consider forming a General Officer Steering Group (GOSG) when strategic level program issues might preclude successful deployment of the materiel to the field.

10.8.1. If formed, materiel fielding IPTs should include representatives from the:

10.8.1.1. Product development organization(s).

10.8.1.2. Product sustainment organization(s).

10.8.1.3. Using/operating command(s) including representatives from the National Guard Bureau and HQ Air Force Reserve Command if applicable.

10.8.1.4. Prime contractor(s) and key materiel vendors such as engine or avionics suppliers.

10.8.1.5. Product training/training system providers, including government and contractor organizations.

10.8.1.6. Product test organizations, including the responsible test organization (RTO), operational test agency (OTA), and contractor test team members.

10.8.1.7. If appropriate, PMs may use SATAF and/or DMAWG teams to fulfill the need for a materiel fielding IPT.

10.8.2. By the end of the EMD phase, PMs should update the Materiel Fielding Plan (MFP) to detail the specific actions, timelines, and organizational responsibilities necessary to transfer the materiel from the product development or manufacturing entity to the operational user. The final MFP should build upon the initial MFP produced at MS B, and incorporate any new or modified requirements contained in the user's Capability Production Document (CPD) and Maintenance or Support CONOPS that have bearing on materiel fielding matters. Specifically, the MFP should identify any materiel fielding-related actions necessary to satisfy initial user/cadre training needs, Initial Operational Capability (IOC) requirements, and Full Operational Capability (FOC) requirements. The MFP should also reflect materiel fielding-related recommendations from Developmental Test and Evaluation (DT&E) conducted by the RTO, and any Operational Assessments (OA) or Military Utility Assessments (MUA) conducted by the OTA.

10.8.3. The MFP should include any pertinent information contained in the lead MAJCOMs site activation plan for each site that is to receive the weapon system or product. The MFP should also incorporate considerations outlined in MAJCOM level guides and instructions.

10.9. Milestone C Decision. As directed in AFI 63-101, PMs must include a materiel fielding plan in the program LCMP for MS C.

10.9.1. At their discretion, PMs may publish a stand-alone MFP, or embed the MFP in the LCMP. If a stand-alone MFP is prepared, the PM will attach it as an annex to the MS C LCMP.

10.9.2. If appropriate, PMs may recommend materiel fielding-related actions or decision criteria for inclusion in the MS C ADM.

10.9.3. PMs include fielding considerations during any update to the PMA/EMA. Considerations should include any user-defined system/product acceptance criteria that must be met prior to delivery of the materiel to the user's operating base(s).

10.10. Production and Deployment Phase. During the production and deployment phase, PM's should focus on meeting the materiel delivery and acceptance requirements contained in the LCMP and the PMA. For all Acquisition Category (ACAT) programs, once a PM is satisfied the program has, or is on track to achieve these requirements, he/she will consider conducting a Materiel Release Review (MRR) with the program's Milestone Decision Authority (MDA).

10.10.1. The MRR is a review event that precedes delivery of the materiel to the operational user. The PM initiates the MRR process by completing a materiel release decision package and forwarding it to the MDA (SAE for ACAT ID and IAM). This package will nominally include:

10.10.1.1. A "Materiel Fielding Decision" memorandum for MDA (SAE for ACAT ID and IAM) signature. This memorandum will formally document the SAE/MDA's decision to authorize the materiel to be fielded. This memorandum may also convey any conditions, limitations, or restrictions the MDA wishes to place on fielding activities or

timelines. Additionally, it may set conditions or establish responsibilities for subsequent materiel fielding actions.

10.10.1.2. A copy of the PM's MFP, either as a stand-alone document or as incorporated in the most recent LCMP, and a copy of the materiel fielding section from the most recent PMA/EMA.

10.10.1.3. Any reports, briefings, or other artifacts that may be necessary to support the PM's assessment that materiel fielding requirements contained in the MFP/LCMP and PMA/EMA have been achieved, or are on track to complete as required. These artifacts may include:

10.10.1.3.1. Interim/final test results or other assessments that describe the system/product's operational effectiveness and operational suitability as measured against the user's KPPs and KSAs. .

10.10.1.3.2. Materiel certifications or similar statements of assurance, such as system safety certifications, air worthiness certifications, weapon employment certifications, environmental impact certifications, and/or occupational health certifications.

10.10.1.3.3. Materiel deficiency reports and corrective action plans.

10.10.2. At his/her discretion, the MDA may convene a formal MRR meeting to discuss materiel fielding matters with the program management team and the user(s), or he/she may conduct a "paper MRR" if there are no significant issues with the materiel or its fielding plan.

10.11. Types of Materiel Releases. When deciding to release materiel to field units, the MDA may consider authorizing materiel releases according to the following criteria:

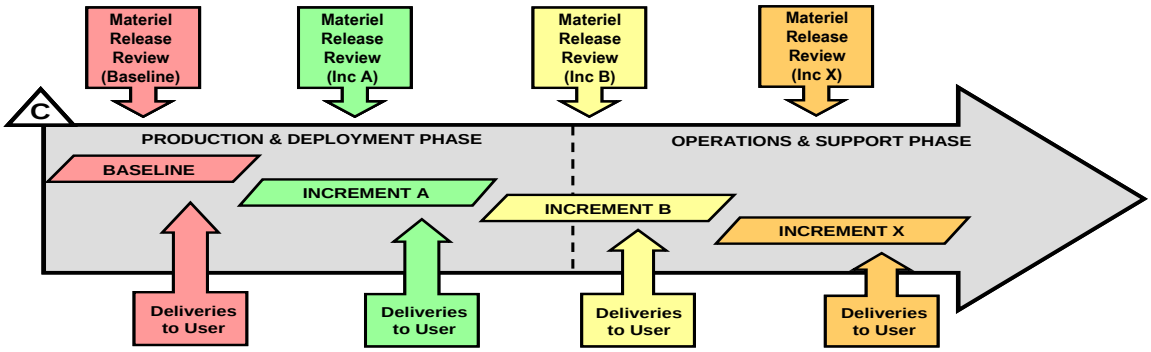
10.11.1. Full Release. A full release is warranted when the materiel delivery and acceptance criteria contained in the MFP/LCMP and PMA/EMA can be met unconditionally, or with risk mitigation procedures that are acceptable to the using command(s). When designating a system or product for full release, the MDA authorizes all subsequent materiel deliveries to proceed in accordance with the MFP/LCMP and user agreements, without any further MDA notification or approval.

10.11.2. Limited/Conditional Release. A limited/conditional release is warranted when the materiel delivery and acceptance criteria contained in the MFP/LCMP and PMA can only be partially met, or met with restrictions that would prevent or limit some aspect of the user's operations and/or maintenance concept. In this case, the MDA will authorize materiel deliveries to begin, but may limit the quantity of materiel to be delivered or slow down the planned materiel delivery schedule to accommodate materiel "get well" plans. Additionally, the MDA may establish additional reporting requirements and/or decision points that must be cleared before subsequent materiel deliveries can occur.

10.11.3. Interim/Training Release. An interim/training release authorizes materiel deliveries for the purpose of conducting initial AETC or unit training only. In this case, the materiel may be sufficiently effective and supportable for initial system/product training purposes, but not so for "real world" operations as described in the user's CPD. In this case, materiel releases will only be authorized as necessary to support an AETC or user system/product training concept/plan.

10.12. Incremental Materiel Releases. PMs may choose to employ an incremental materiel review concept for programs following an evolutionary acquisition strategy. In this case, MRRs may be conducted for the product baseline and each subsequent increment, as depicted in the following illustration. Incremental materiel releases may be of any type described in **paragraph 10.11** above. For example, using the notional example depicted in **Figure 10.2**, the Baseline MRR could result in an interim/training release, the Increment A MRR could be a limited/conditional release, and the MRRs for Increment B and beyond could be full releases.

Figure 10.2. Incremental Materiel Release Review Concept (Notional Example)



10.13. Special Cases. Certain acquisition activities may require unique and innovative approaches to the materiel fielding process. For example, the compressed acquisition timelines associated with Joint Urgent Operational Need, AF Combat Capability Documents, or Warfighter Rapid Acquisition Program projects may require PMs to greatly accelerate materiel fielding planning processes compared to traditional acquisition programs. Joint Capability Technology Demonstrations (JCTDs) may lead to the fielding of highly effective and urgently desired operational capabilities, but at the expense of organic logistics sustainment capabilities. Joint acquisition programs (e.g., Joint Strike Fighter) may require broader materiel fielding planning and coordination to accommodate each participating Service's unique operational requirements, support concepts, or materiel fielding processes. In each of these special cases though, PMs should nevertheless endeavor to meet the overarching materiel fielding objectives described in this chapter.

10.14. Additional Information. For additional information on matters related to the materiel fielding process, consult:

10.14.1. AFI 10-501, *Program Action Directives (PAD) Programming Plans (PPLAN)*, which contains guidance for Air Staff, major commands (MAJCOMs), and other organizations to prepare and manage PADs and PPLANs.

10.14.2. AFI 10-503, *Base Unit Beddown Program*, which provides guidance for conducting site surveys and unit beddown procedures.

10.14.3. AFI 16-403, *Updating the USAF Program Installations, Units, and Priorities and Movement of Air Force Units*, which assigns responsibility and authority for managing installations and units in the Air Force.

10.14.4. AFI 32-9001, *Acquisition of Real Property*, which provides guidance for acquiring real property.

10.14.5. AFI 32-9005, *Real Property Accountability and Reporting*, which provides guidance for maintaining real property records and reporting real property assets.

10.14.6. AFMC's "Fielding Community of Practice" website: **https://afkm.wpafb.af.mil/ASPs/CoP/OpenCoP.asp?Filter=OO-AQ-MC-04**, which contains information related to site surveys, SATAFs and PPlans, as well as materiel fielding lessons learned, best practices, examples, and document templates.

Chapter 11

WARFIGHTER RAPID ACQUISITION PROCESS

11.1. Introduction. The purpose of this chapter is to describe the basic provisions of the Headquarters Air Force (HAF) Warfighter Rapid Acquisition Process (WRAP).

11.1.1. WRAP exists to accelerate the development, thus subsequent fielding, of operational initiatives resulting from innovation. Specifically, it offers Research, Development, Test, and Evaluation funds (3600 money) to promising operational initiatives so that they may begin formal development activities during the current fiscal year, rather than waiting for Program Objective Memorandum (POM) funds which may not be available for 18 to 24 months. WRAP essentially "bridges the gap" until approved POM funding would otherwise become available. The earlier development start should lead to more rapid fielding of the desired capability.

11.1.2. WRAP is not, nor should it be confused with, the Air Force Rapid Response Process (RRP) or the Defense Acquisition Challenge Program (DAC). The RRP exists to procure and field against a shortage of existing capabilities in order to satisfy wartime needs; e.g. quickly buying more body armor for USAF transportation units destined for Iraq. Complete information on the RRP may be found in AFI 63-114, *Rapid Response Process.* The DAC Program provides increased opportunities for the introduction of innovative and cost- saving commercial technology or products into existing DOD acquisition programs. Information can be found at the DOD's Comparative Testing Office. WRAP, DAC and the RRP do, however, intentionally follow a similar streamlined process flow.

11.1.3. Air Force POM Authorities (CSAF, MAJCOMS, Field Operating Agencies, and Direct Reporting Units) may request a portion of WRAP funding to develop specific operational capabilities. The HAF assesses those requests via the process outlined below. Inherent to the successful continuation of WRAP is the ability of those programs selected to use WRAP funds to expeditiously obligate and then execute those funds. Failure to obligate and execute WRAP funding in a timely manner is adequate justification to have those unexecuted funds recalled from that program and placed at the disposal of other WRAP projects.

11.1.4. WRAP does not replace normal acquisition procedures nor does it relieve DOD 5000 series requirements, but rather accelerates funding availability to develop selected operational initiatives. WRAP is part of a larger effort to make the acquisition system more responsive to high-impact, time-sensitive needs of the warfighter and rapid technological advances.

11.2. Roles of Organizations Involved in WRAP.

11.2.1. Assistant Secretary for Acquisition (SAF/AQ). Participates through represented membership on the Integrated Process Team (IPT), Rapid Response Assessment Committee (RRAC), and Rapid Response Process Council (RRPC).

11.2.2. Deputy Assistant Secretary for Acquisition Integration (SAF/AQX).

11.2.2.1. Chairs the RRPC.

11.2.2.2. Issues the authorization for the approved WRAP Projects.

11.2.2.3. Executes the appropriate acquisition direction.

11.2.2.4. Coordinates Program Management Directives (PMD) as required.

11.2.3. Chief, Acquisition Program Integration Division (SAF/AQXR).

11.2.3.1. Chairs the WRAP IPT and RRAC.

11.2.3.2. Provides secretariat functions (scheduling, preparing briefings, etc) for the IPT.

11.2.3.3. Maintains the official files of WRAP candidate submissions, staff packages, and process activities.

11.2.3.4. Integrates individual IPT member reviews and prepares materials for the RRAC and RRPC meetings.

11.2.3.5. Appoints a Program Element Monitor (PEM) for the WRAP Program Element.

11.2.3.6. Reports WRAP results.

11.2.4. Assistant Secretary for Warfighting Integration and Chief Information Officer (SAF/XC). Participates through represented membership on the IPT, RRAC, and RRPC.

11.2.5. Assistant Secretary for Financial Management and Comptroller (SAF/FM). Participates through represented membership on the IPT, RRAC, and RRPC.

11.2.6. Deputy Chief of Staff for Installations & Logistics (AF A4/7). Participates through represented membership on the IPT, RRAC and RRPC.

11.2.7. Deputy Chief of Staff for Test and Evaluation (AF/TE). Participates through represented membership on the IPT, RRAC and RRPC.

11.2.8. Deputy Chief of Staff for Air and Space Operations (AF A3/5). Participates through represented membership on the IPT, RRAC and RRPC.

11.2.9. Deputy Chief of Staff for Plans and Programs (AF A8). Participates through represented membership on the IPT, RRAC and RRPC.

11.2.10. Assistant Chief of Staff for Strategic Deterrence & Nuclear Requirements (AF/10). Participates as an observer when requested on the IPT, RRAC, and RRPC where nuclear capabilities are addressed.

11.2.11. WRAP Integrated Process Team (IPT). The WRAP IPT is the action officer level review. It is composed of membership from SAF/AQXR (Chair), SAF/FMBI, SAF/XCDW, AF/A4LY, AF/TEP, AF/A5RD, AF/A5XCA, AF/A10 (observer when nuclear capabilities are addressed) and AF/A8PL. SAF/AQXR is the secretariat for the IPT.

11.2.12. WRAP Rapid Response Assessment Committee (RRAC). The WRAP RRAC reviews the nominations and recommends specific candidates for RRPC review. SAF/AQXR chairs the WRAP RRAC with members from SAF/XCOI, SAF/FMBI, AF/A4LY, AF/TEP, AF/A5RD, AF/A5XCA, AF/A10 (observer when nuclear capabilities are addressed), and AF/A8PL.

11.2.13. WRAP Rapid Response Process Council (RRPC). The RRPC is responsible for the approval and authorization to release funding to WRAP sponsored initiatives. SAF/AQX Chairs the RRPC with the following Directors or Deputy Assistant Secretaries (or their representatives): SAF/XCO, SAF/FMB, AF/A4L, AF/TEP, AF/A5R, AF/A5X, AF/A10 (observer when nuclear capabilities are addressed), and AF/A8P.

11.3. Warfighter Rapid Acquisition Process.

11.3.1. Acquisition Strategy. The intent of WRAP is to provide RDT&E (3600) funding earlier than the normal acquisition/POM process provides. Normal acquisition program requirements still apply. Theoretically, if a project starts up earlier, it will be delivered to the warfighter sooner. Therefore, the overall WRAP objective is to efficiently accelerate the delivery of capability to the warfighters. The acquisition strategy is expected to be mature enough to enable contractual obligation of WRAP funding within 90 calendar days of receipt. Additionally, the Program Manager will provide a periodic report to SAF/AQXR as to the current status of the WRAP funded project, to include the funding obligated and expended to date as well as the determination to execute the remaining WRAP funding (if applicable) and discuss any issues that reflect project technical success and/or programmatic issues. The format and timing for this report will be provided by SAF/AQXR and posted on the (**https://wwwd.my.af.mil/afknprod/ASPs/CoP/EntryCoP.asp?Filter=OO-AQ-AF-15**) on the Air Force Portal.

11.3.2. Project Nomination. To compete for WRAP funds, a project must be nominated by a sponsor. A sponsor is any MAJCOM, Field-Operating Agency (FOA) or Direct Reporting Unit (DRU) that has POM submittal authority. This includes the Chief of Staff of the Air Force (CSAF). The sponsoring organization's commander or authorized representative must certify that if the project is selected by WRAP, all necessary funding requirements to fully execute and sustain the project will be included in the organization's next POM submission. When nominating more than one project, sponsors need to provide a prioritized list. Any project not vetted through a sponsor, as defined above, will not be given consideration for WRAP funding.

11.3.3. Funding. WRAP funding is a bridge to the POM, not a means of circumventing the POM process. Nominating a WRAP project obligates a full funding commitment on the part of the sponsoring organization to support the project throughout its life cycle and must not become an annual unfunded priority. By the nature of the program, a project selected for funding will not compete for additional WRAP funding beyond the subsequent POM submission. Projects should not be submitted for WRAP funds in more than two consecutive years unless there has been substantial change to the project requiring a bridge to the next available POM submission. Program expectations are that WRAP funding will be obligated within 90 calendar days of receipt.

11.3.4. Timing. HAF will perform assessment cycles throughout the fiscal year as funding permits. For planning purposes, October (for the upcoming FY) and March are likely months to begin an assessment cycle. Senior leader directed out-of-cycle assessments are possible if urgency and timing warrant.

11.3.5. Process. Each sponsor will provide a project nomination package electronically. The package consists of a White Paper and Quad Chart. The templates for submittal can

be located on the WRAP CoP on the Air Force Portal using the following web site: **https://wwwd.my.af.mil/afknprod/ASPs/CoP/EntryCoP.asp?Filter=OO-AQ-AF-15**

11.3.5.1. Sponsor Nomination: Only AF organizations with POM authority may nominate a candidate. They include Air Force Chief of Staff (CSAF), Major Command Requirements (Capabilities) Directorates (MAJCOM/A5), Direct Reporting Units, or Field Operating Agencies.

11.3.5.1.1. The commander of the sponsoring organization, or authorized representative, must certify via signed letter or electronically signed email that if the project is selected, that organization will POM for all the necessary funds to fully execute and sustain the program throughout its life cycle.

11.3.5.1.2. WRAP is designed to accelerate programs that the Air Force will indeed develop and execute. It is not designed to fund further concept experimentation. Therefore, an established funding and execution plan is the main factor in determining the POM authority's intent to follow through with the program. Project nominations must include an acquisition plan that is ready for rapid execution.

11.3.5.1.3. Nomination submission. Sponsors submit their nomination(s) to SAF/AQXR in the format listed on the WRAP CoP.

11.3.5.1.4. WRAP IPT Review: The WRAP IPT assesses candidate submissions.

11.3.5.1.5. WRAP RRAC Review/Recommendation. The RRAC reviews the IPT analysis and makes a funding recommendation to the RRPC.

11.3.5.1.6. WRAP RRPC Review/Approval. The RRPC reviews the candidate nominations received from the RRAC and makes a funding decision. WRAP funds will be released upon the RRPC approval. WRAP projects that address urgent operational needs, will also have funds released pending the RRPC decision.

11.3.5.1.7. CSAF Notification. CSAF will be informed of the RRPC decision. Notification Letters to Congress will be accomplished as outlined in **paragraph 11.7**

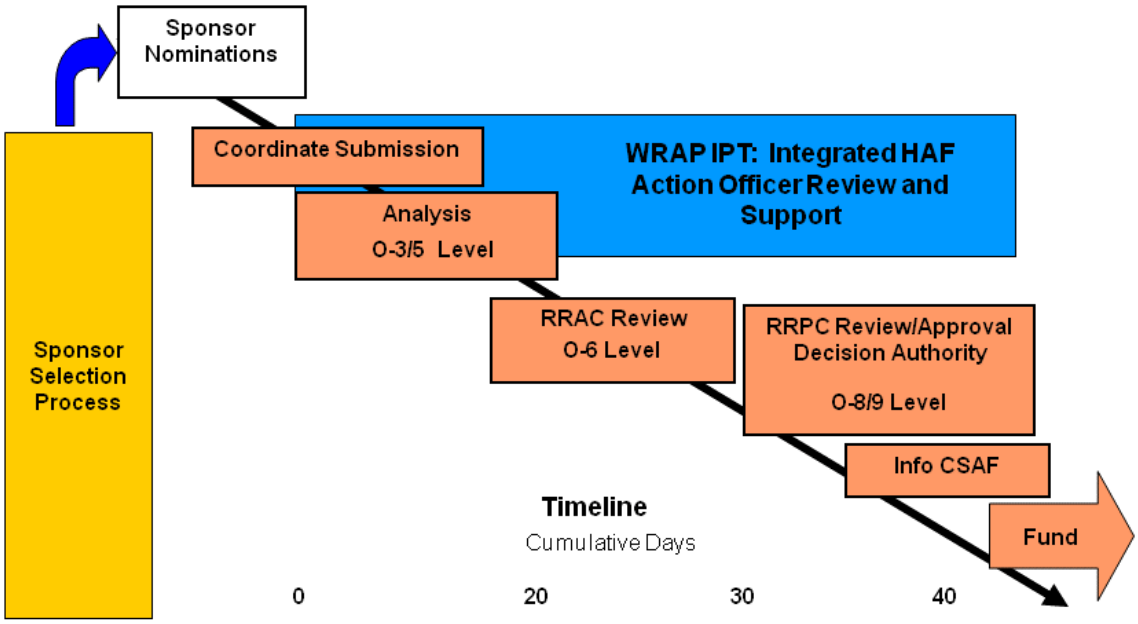
11.3.5.2. Scheduling and Timing. The process starts when a sponsor submits a nomination package. However, actual HAF assessment is generally performed on a group of several candidate packages during what is termed a cycle. HAF may perform several WRAP cycles per year. Each is comprised of the IPT and RRAC reviews, RRPC approval, and CSAF notification. For planning purposes, submissions will be due in October (for the following FY). An additional cycle may also occur in March as necessary. The actual dates are flexible and may vary. Out-of-cycle assessments are possible, but only if urgency and timing warrant. Assessment cycles will continue until the current fiscal year WRAP funds are exhausted.

11.3.5.2.1. Headquarters Review. The integrated headquarters review cycle is a rapid validation, verification, and prioritization of nominated projects and is expected to take no longer than 40 working days (see **Figure 11.1**). The review process is conducted sequentially by the WRAP IPT and RRAC. The RRPC will review and approve WRAP candidates

11.3.5.2.2. Coordination. The RRAC recommends specific WRAP candidates to the RRPC for approval. The staff package is sent directly from the RRPC co-chairs to

CSAF and HAF/ES. For expediency, HAF 2-letter representation is vested in their RRPC representative, therefore, no separate 2-letter coordination occurs. HAF 2-letter chiefs are provided information-only copies. HAF/ES then staffs an information package to HAF/CX, AF/CVA, AF/CV, and AF/CC.

Figure 11.1. WRAP Timeline Assessment Cycle.



11.4. Assessment Criteria. Each initiative will be reviewed as a business case. A strong business case can be made for projects that show significant demonstrated operational utility, leadership commitment, execution viability, sustainment plans, and/or urgency (high value of time). To fully assess each WRAP candidate, the criteria cited previously will be considered for each submission. They map to specific portions of the WRAP nomination format used for WRAP projects submittals located on the WRAP CoP on the Air Force Portal. In each submission the criteria have been designed to evaluate the initiative as if it were a stand-alone effort, however, in cases where the WRAP initiative is a component part of another system the criteria should clarify how this portion fits into the overall system. For example, an appropriate candidate would be a radar/computer display model that will enhance the processing/situational awareness within an Air Operations Center; or a radar modification to an existing weapon system that gives it a new warfighting capability.

11.4.1. Concept of Operations (CONOPS). Does the requestor identify how they will use the capability? Will the desired capability work well with other existing or projected concepts of operations?

11.4.2. Military Need and Requirements. Will the capability fulfill a valid Air Force requirement? How well? Cite requirements documents, related requirements documents, or equivalent needs statements. State which capabilities deficiencies the candidate capability will address. How recent are the requirements? WRAP is not designed to develop otherwise unfunded requirements.

11.4.3. Acquisition Strategy. Does the nomination show a viable plan to accomplish development of the capability? How will the work be accomplished (in-house, contractor, use development items for Initial Operating Capability, etc)? Is the schedule realistic?

11.4.4. Information Support Planning (ISP). These criteria concern information management, Information Assurance protection, and interoperability, to include reviewing integration and support plans, network utilization, and legal compliance such as with the Clinger-Cohen Act. Of note is what information support planning has been accomplished and what still needs to be accomplished.

11.4.5. Logistics, Training, and Associated Support Plans. Has logistics, training, and any follow-on support been identified and considered? To what extent? Have environmental, safety, and occupational health requirements been considered in budgeting of this effort?

11.4.6. Cost Estimates. Do the estimated costs seem reasonable?

11.4.7. Funding Profile. The funding profile must show all the projected costs for developing, fielding, and sustaining the capability over the next five fiscal years. The assessment will focus on the risk level associated with the sponsor's commitment to continue funding the capability after having been awarded WRAP funds. ***Note***: As reminder, WRAP can only provide for the 3600 (R&D) funding within the profile.

11.4.8. Return on investment (ROI) calculation. This is an assessment of the cost vs. benefit of the new capability. Of special note will be any realistic cost or manpower savings yielded by the new capability. Not all submissions will have quantifiable savings or capability values.

11.4.9. Risk assessment. This is an overall look at the cost, schedule, and performance risks. For performance, the most viable method of alleviating risk is via successful demonstration of the proposed technology or system in a warfighter experiment, exercise, or realistic laboratory environment.

11.5. Nomination Assessment. The appropriate Secretariat and Air Staff organizations provide members to the WRAP teams in order to review the candidates' submissions against the criteria. Participation and engagement at each review level are necessary to evaluate whether candidate submissions are ready to proceed as development programs.

11.5.1. WRAP Integrated Process Team (IPT). The WRAP IPT is the action officer level review. The IPT reviews, assesses, and resolves any discrepancies in the WRAP submissions. The IPT assesses completeness, evaluates each project based on the WRAP criteria and provides the findings to the WRAP RRAC for their evaluation. Each IPT member will:

11.5.1.1. Discuss overall assessment of the candidate program.

11.5.1.2. Provide specific assessment within their area of expertise.

11.5.1.3. Prepare their chain of command for participation in the RRAC and RRPC review and recommendation meetings.

11.5.2. WRAP Rapid Response Assessment Committee (RRAC). The WRAP RRAC reviews the nominations and recommends specific candidates for RRPC review and approval. In this review, analysis from the IPT and AF/A5X CONOPS initial

requirements/prioritization will be combined to provide a ranked order of projects for presentation to the RRPC. Based on the strength of the candidate submissions and available WRAP funding, the RRAC may forward all, some, or none of the candidate projects to the WRAP RRPC for consideration.

11.6. WRAP Rapid Response Process Council (RRPC). The RRPC is responsible for the implementation of WRAP. They provide process guidance to the RRAC and IPT, and approve WRAP projects for funding. Upon RRPC approval, SAF/AQX will provide WRAP funds to the approved initiatives' Program Manager. .

11.6.1. Upon RRPC approval, SAF/AQX will prepare a package to notify the CSAF of WRAP initiatives that will receive funding for the respective cycle.

11.6.2. Viable WRAP candidate funding requests will likely exceed the amount of available WRAP funds. Candidate sponsors must realize that the RRPC has several considerations when approving initiatives that will receive WRAP sponsorship. These considerations include, but are not limited to, available funds, candidate viability, current/projected warfighting needs, and emerging battlefield architecture.

11.6.3. Sponsors may update and re-submit a non-recommended candidate package at a later time. SAF/AQXR may advise the sponsors on the quality of their non-recommended packages in order to prepare for resubmission. However, they may not disclose details of specific RRAC or RRPC discussions.

11.7. Congressional Notification. WRAP is fully described in each annual President's Budget submission and identified by its own program element code. Funding is justified to and appropriated by Congress through the normal budget process. Notification of the approved WRAP initiatives is as follows:

11.7.1. Upon the conclusion of each WRAP assessment cycle, the WRAP PEM prepares a Congressional Notification Letter listing the approved WRAP candidates.

11.7.2. The letter is staffed through SAF/FMB and SAF/LL for delivery to the appropriate Congressional committees.

Chapter 12

LIFE CYCLE RISK MANAGEMENT

12.1. Overview of Life Cycle Risk Management.

12.1.1. **Introduction** . Without prescribing a particular methodology, DODI 5000.02 requires programs to assess and manage cost, schedule, and performance risks. AFI 63-101 identifies the minimum standardized attributes for any Air Force program's risk management effort. "Life Cycle Risk Management" (LCRM) is the Air Force term for the standardized risk management approach. This chapter provides additional guidance on implementing LCRM across the Air Force integrated life cycle management and oversight enterprise.

12.1.1.1. LCRM is *not* a new or stand-alone risk management process. LCRM leverages the existing, well accepted risk management methodologies already used by industry and DOD. These accepted methodologies are included in the *Defense Acquisition Guidebook* and are treated in expanded detail in the *Risk Management Guide for DOD Acquisition.* In addition, they are taught as a basic part of DOD and Air Force Acquisition and Sustainment training and education.

12.1.1.2. LCRM builds on these established risk management methodologies and provides the framework for standardizing the implementation of risk management across the Air Force integrated life cycle management enterprise.

12.1.1.3. LCRM is not a separate, stand-alone risk management activity. When properly implemented, LCRM uses inputs from and provides outputs to most other program planning, analysis, management, and oversight activities.

12.1.2. **LCRM Concept.** At its core, effective program management and oversight *is* risk management: the proactive management of future uncertainties to ensure that program cost, schedule, and performance objectives are achieved in every phase of the life cycle. To be effective, LCMR must be conducted throughout the lifecycle at all levels, in a proactive rather than reactive mode by an integrated team

12.1.2.1. To be effective, risk managemen*t* must be performed continuously across the integrated life cycle management framework. LCRM risk information must be preserved and "handed off" between life cycle phases.

12.1.2.2. LCRM is the process used by decision makers at all levels of program management and oversight to identify, assess, and then reduce, offset or accept risks. LCRM provides leaders and staff with a consistent and systematic methodology to identify, assess, and choose the preferred course of action for any given situation. To be effective, LCRM must become a fully integrated element of planning, executing, and overseeing a program.

12.1.2.3. LCRM must be proactive rather than reactive. When programs and program oversight do not consistently and rigorously use risk management principles and practices, what could have been manageable, potential risks become unexpected current problems (i.e. issues), driving program management and leaders to react with a more limited range of options that frequently have bigger impacts on program cost, schedule, and performance.

12.1.2.4. Risk management has often been conceived as an exclusively engineering and technical activity, functionally driven by the engineering community. LCRM is not an exclusively technical activity. It is an integrated approach to managing all of the programs cost, schedule, and performance risks. That is why within each program office, LCRM must be executed by cross-functional teams that could include cost analysts, contracting officers, intelligence specialists, sustainment planners, schedulers, sub-system managers, and other specialists in addition to engineering.

12.1.3. **LCRM Definitions.**

12.1.3.1. Risk. Risk is a measure of future uncertainties in achieving program objectives within defined cost, schedule, and performance constraints. A risk must have all of the following three components: 1) a future root cause 2) a likelihood, as assessed at the present time, of that future root cause occurring; and 3) a negative consequence, if it occurs. ***Note***: Opportunity (sometimes called "positive risk") is something that programs can also manage, but is not a part of LCRM.

12.1.3.2. Concern. A concern is a potential future event for which the cross-functional LCRM team cannot state a likelihood or consequence. A concern should be periodically monitored and re-assessed for likelihood and consequence. Once likelihood and consequence can be assessed by the team, a CONCERN becomes a RISK. The "concern list" should be a short and/or temporary list. Most potential future negative events can be assessed and should be managed as risks.

12.1.4. **Roles and Responsibilities.**

12.1.4.1. LCRM is a key enabler of risk-based program management and decision-making. Roles and responsibilities at all levels must be executed in order for LCRM to be effective.

12.1.4.2. Program Oversight. Under LCRM, standardized risk information about each program will be provided to Center leadership, SAF/AQ, and SAF/US. How leadership uses that information is critical to the successful adoption of LCRM and to the launching and sustainment of high confidence programs.

12.1.4.2.1. Information on all moderate and high program risks – in a standardized, comparable format – will be available for review as a part of program, technical, and Milestone decision reviews.

12.1.4.2.2. Discussion and analysis of this information should be a key part of reviews, and should influence decision-making, resource allocation, and management assistance.

12.1.4.2.3. Risk is an unavoidable part of any endeavor. The presence of moderate and high risks, by itself, does not signify program management failure. In fact, the proactive identification, assessment, reporting, and handling of risks are essential to program success. In order to maintain the free flow of meaningful risk information that is essential to risk based decision-making, it is important not to penalize programs for the mere presence of risk.

12.1.4.2.4. Under LCRM, formal decisions for programs to proceed (e.g. Milestone Decisions, Acquisition Strategy Panels, etc.) also constitute approval of a program's

current risk assessment and handling/mitigation plans. A Decision Authority's formal acceptance of any moderate and high residual risks (after all mitigation actions have been completed) must also be stated in approval documentation (e.g. the Acquisition Decision Memorandum).

12.1.4.3. Program Managers. Program managers are responsible for:

12.1.4.3.1. Establishing and monitoring the program's LCRM effort.

12.1.4.3.2. Approving the content of the program's Risk Management Plan RMP).

12.1.4.3.3. Constituting cross-functional risk management integrated product teams (IPTs).

12.1.4.4. Cross-functional Risk Management IPTs. Cross-functional risk management IPTs are responsible for the day-to-day execution of LCRM within program offices.

12.1.4.4.1. Risk management touches on all aspects of program management to include cost, schedule, performance, technical, product data access, technology protection, information assurance, production, sustainment, and logistics planning. Effective LCRM efforts must have representation, as necessary, from all program specialties. However, it is recognized that membership will need to be scaled to program size and life-cycle phase.

12.1.4.4.2. The RMP documents the program's cross-functional risk management IPT membership and responsibilities.

12.1.4.4.3. The IPT ensures that the program does not limit risk management to contractor activities, but also includes those risks inherent to the Government (e.g. GFE, external interfaces to other programs, etc.).

12.1.4.4.4. The IPT will also ensure that risk management efforts interface with cost analysis, schedule analysis, requirements analysis, systems engineering, and system safety efforts.

12.1.5. **Key Elements of LCRM** .

12.1.5.1. *Risk Management Guide for DOD Acquisition* is the basic guidance for executing risk management. This chapter provides additions and clarifications to the basic guidance in the DOD guide. The DOD guide and this chapter should be used together.

12.1.5.2. Five-step LCRM Process. LCRM is executed throughout the life cycle in a continuous and iterative five-step process. These steps differ slightly from the steps identified in the DOD guide. Additional Air Force-specific guidance on each of these steps is included in **Section 12.2** of this chapter. The five steps are:

12.1.5.2.1. Risk Management Planning (not considered a separate step in the DOD guide).

12.1.5.2.2. Risk Identification.

12.1.5.2.3. Risk Analysis.

12.1.5.2.4. Risk Handling/Mitigation Planning (to include documentation of interim risk acceptance).

12.1.5.2.5. Risk Mitigation Implementation and Risk Tracking (to include the formal documentation of final/residual risk acceptance).

12.1.5.3. Risk Management Plan (RMP). The RMP describes the strategy by which the program will coordinate and integrate its risk management efforts, and should be continually matured throughout the program's life cycle. It does not need to be a stand-alone document. It can be incorporated into the Life Cycle Management Plan or other appropriate planning document, and must be linked to risk management activities described in other planning documents (e.g. source selection plan, Systems Engineering Plan, etc).

12.1.5.4. Cross-functional Risk Management IPTs. As discussed previously, cross-functional risk management IPTs are critical to the successful execution of LCRM.

12.1.5.5. Standardization. To ensure consistent and rigorous LCRM execution and reporting, all programs, without deviation, must use the standard LCRM 5x5 matrix, likelihood criteria and consequence criteria to analyze program risks. All moderate and high risks must be presented using the standard LCRM 5x5 matrix as a part of program, technical, and Milestone decision reviews. Realizing that every risk may have multiple consequences (performance, cost, and schedule) which should be assessed, the matrix should depict the consequence with the most severe impact. Risk handling/mitigation plans are prepared for all moderate and high risks. Formal decisions to proceed (e.g. Milestone Decisions, Acquisition Strategy Panels, etc.) constitute approval of a program's current risk assessment and handling/mitigation plans. Formal acceptance of moderate and high residual risks (after all mitigation actions have been completed) are included in approval documentation (e.g. the Acquisition Decision Memorandum). The use of the matrix and these criteria is discussed in more detail in **Section 12.2** of this chapter.

12.1.5.6. LCRM Database. Programs must track all risks and handling/mitigation in a database that archives risk management across each program's life cycle. This is especially important to support the seamless transition of risk management between life cycle phases, responsible organizations, and prime contractors.

12.1.6. **LCRM Relationships to Other Program Management and Risk Management Activities.**

12.1.6.1. **Section 12.3** of this chapter describes in detail how LCRM uses inputs from and provides outputs to most other program planning, analysis, management, and oversight activities. LCRM differs from and connects to other existing program risk management efforts in the following ways.

12.1.6.1.1. System Safety/Mission Assurance. Mission assurance and system safety risks are assessed and managed using separate methodologies, most importantly MIL-STD-882D, the *DOD Standard Practice for System Safety*. All high and serious system safety risks must also be translated and presented on the standard LCRM 5x5 matrix IAW AFI 63-101 at all program, technical, and Milestone decision reviews or to support other key decision points. The LCRM 5x5 should display integrated

system safety, cost, schedule, and performance risks; this is important because the mitigation of system safety risks can often increase cost, schedule, and performance risks, and vice versa.

12.1.6.1.2. Operational Risk Management (ORM). LCRM and ORM, like any other risk management methodology, are based on the same general principles. However, the key elements of LCRM discussed in **paragraph 12.1.5** and elaborated elsewhere in this chapter have been tailored specifically for ACAT, pre-Milestone B, and Services Category I and II programs. ORM is suitable for programs in Sustainment, smaller Services programs, and other general risk management applications. When a system is fielded, the LCRM risk data should inform the system users' ORM efforts. When a program transitions to Sustainment, the LCRM database should form the basis for the sustainment program's ORM efforts.

12.1.6.1.3. Risk-based Source Selection. Risk-based Source Selection is accomplished IAW the FAR, DFARS, and AFFARS. LCRM risk information must be used as inputs to source selection activities. Source selection training materials are located on the SAF/ACE website.

12.1.6.1.4. Probability of Program Success (PoPS). LCRM provides data to PoPS, and PoPS can also be used to identify risks that the program should manage and mitigate using LCRM principles. Programs use PoPS to evaluate their programs according to dozens of objective criteria derived from government and industry best practices that can provide advance indication of a program's probable success or trouble. These criteria are rolled-up into 22 metrics that are reported on a windshield chart. LCRM-assessed risks, plotted on the 5x5 matrix discussed later in this chapter, are a direct input to one of the 22 PoPS metrics, "Program Risk Assessment." The incorporation of the 5x5 matrix into a program's Probability of Program Success (PoPS) assessment is explained in the *PoPS Operations Guide*. PoPS provides leading indicators of potential program issues, but it does not prescribe a methodology for handling/mitigating risks. Therefore, Cross-functional Risk Management IPTs can, as appropriate, use the program's PoPS evaluation as a source for risk identification, and use the LCRM methodology to manage those risks.

12.1.6.1.5. Technology Readiness Assessments (TRAs) and Manufacturing Readiness Assessments (MRAs). TRAs and MRAs are not, by themselves, risk management processes. Instead, they are tools for identifying and assessing risk. The LCRM risk analysis step, discussed in Section **12.2**., uses Technology Readiness Levels (TRLs) and Manufacturing Readiness Levels (MRLs) to evaluate and assess technology and manufacturing risks.

12.1.6.1.6. Risk Identification: Integration & -Ilities (RI3). RI3 is an integrated approach for identifying technology risks in pre-Milestone A activities. At its core is a list of questions that can be used to aid with technology risk identification. The methodology and the question list are incorporated in the *Risk Identification: Integration & -Ilities (RI3) Guidebook* available from the Air Force Center for Systems Engineering (**http://www.afit.edu/cse/page.cfm?page=164&sub=95**). "Ilities" and "ility" in the guidebook refer to characteristics of a unit or a technical discipline that is typically associated with the support, operation, and maintenance

of said unit. This can also include items that do not end with "ility," such as integration, training and human factors. A complete discussion is referenced in the guidebook.

12.2. Five-Step Life Cycle Risk Management Process Model.

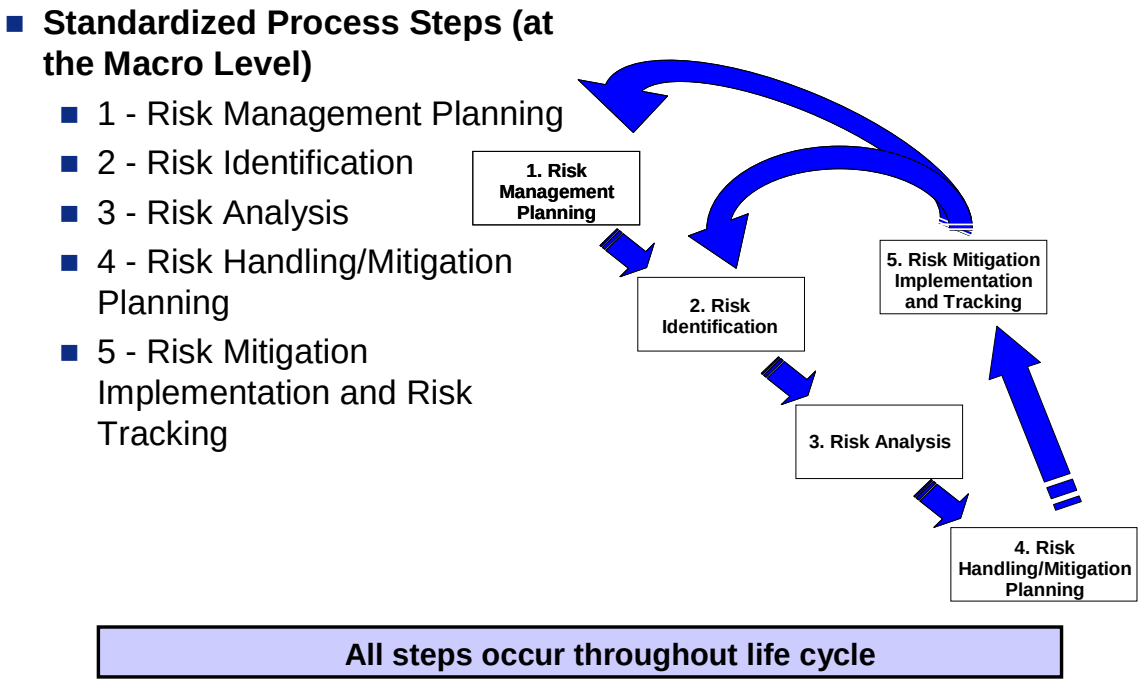
12.2.1. Introduction

12.2.1.1. Proper risk management of any activity, whether tied to Air Force acquisition or any other endeavor, uses basic and universally recognized steps to execute the process. These steps involve: planning, identifying risks, analyzing those risks to determine their importance, determining how to handle or mitigate those risks, implementing mitigation actions and tracking to determine if the mitigation actions are effective.

12.2.1.2. These steps should be conducted continuously throughout the acquisition life-cycle in an iterative manner. Simply identifying a risk and taking mitigation actions should not end the process regarding that risk. A program team must continue to track their mitigations actions, determine if the root cause still remains (i.e. repeat risk identification), analyze the likelihood and consequence again to determine potential programmatic impacts still existing, revise risk mitigations plans if needed, implement those plans, and then return to tracking again. Until a risk is eliminated or sufficiently mitigated to an acceptable level, this process is repeated.

12.2.1.3. The AF LCRM process model reflects these continuous and iterative steps as illustrated in **Figure 12.1** As stated earlier, the *Risk Management Guide for DOD Acquisition* serves as the basic guidance for risk management and must be used with this chapter. There are slight differences between the AF LCRM process model and the process model presented in the DOD guide. The remainder of this section addresses the five steps in the AF LCRM process model and those differences. Much of the content of the DOD guide is identical for the AF LCRM process, though, and this chapter does not repeat that content. This chapter focuses on additions, clarifications, and points of emphasis only.

Figure 12.1. AF LCRM Process.



12.2.2. **Risk Management Planning—Step 1**

12.2.2.1. Risk management planning is the foundation of the LCRM process and key to successful program execution. It links a program's risk management effort to program planning by answering "who, what, where, when, and how" risk management will be performed. The product of risk management planning is a Risk Management Plan.

12.2.2.2. Risk Management Plan (RMP).

12.2.2.2.1. The PM prepares a Risk Management Plan as summarized in the *Risk Management Guide for DOD Acquisition*.

12.2.2.2.2. The RMP explains the strategy by which the program will coordinate and integrate its LCRM effort. The RMP is a strategic document providing an overarching plan. Risk mitigation plans are separately developed to address individual risks and are tactical in nature.

12.2.2.2.3. As previously stated, the RMP does not need to be a stand-alone document. It is recommended that the RMP be incorporated into the LCMP or other appropriate planning document, and linked to risk management activities described in other planning documents as necessary. Centers/Wings/Groups may develop organizational RMPs addressing strategy common across the organization with Program unique strategy addressed within the LCMP or other planning document

12.2.2.2.4. RMP Content. The *Risk Management Guide for DOD Acquisition* provides an example format summary for the RMP. The RMP should also describe a database for PM and IPT use in tracking risks, handling/mitigation actions, and decisions regarding risks.

12.2.2.2.4.1. The database is intended to provide a mechanism for archiving LCRM activities across each program's life cycle to support transition of risk management between life cycle phases, responsible organizations, and contractors. It also provides a source for "lessons learned" that can be passed to subsequent programs.

12.2.2.2.4.2. The database format can vary with program size and complexity. Smaller programs may determine that a simple spreadsheet suffices, while larger programs may need a more rigorous and capable system.

12.2.2.2.4.3. AFMC/EN has available a commercial risk management tool with database capability. Prior to expending resources for development or purchase of another risk management tool, contact AFMC/EN to determine this tool's suitability for a specific program.

12.2.2.2.4.4. For standardization across the Air Force, all ACAT, pre-Milestone B, and Services Category I and II programs are required to use the LCRM 5x5 matrix, likelihood criteria, and consequence criteria discussed in Risk Analysis (Step 3) per AFI 63-101. These are reflected in the RMP.

12.2.2.2.5. To further assist with RMP development, consider the following:

12.2.2.2.5.1. Does it explain the purpose, scope, ground rules and assumptions, processes, success criteria, and constraints pertaining to the program LCRM process?

12.2.2.2.5.2. Does it describe how the LCRM process integrates and relates to other program management activities?

12.2.2.2.5.3. Does it explain LCRM roles and responsibilities and the cross-functional IPT; describe customer and supplier interactions with respect to LCRM?

12.2.2.2.5.4. Does it address how team members will be trained to apply LCRM?

12.2.2.2.5.5. Does it describe methods, tools, and metrics?

12.2.2.2.5.6. Does it include a process for identification of risk acceptance criteria?

12.2.2.2.5.7. Does it describe how risk information will be communicated both internally to the program and throughout the execution chain?

12.2.2.2.5.8. Does it specify the format and data elements for tracking risks; document how the list will be maintained; how configuration control will be maintained; who it will be shared with; and how often it will be reviewed/updated?

12.2.2.2.5.9. Does it address a methodology for potential program de-scoping if sufficient risk mitigation cannot be accomplished?

12.2.2.2.6. RMP Updates. Unlike the remaining steps in the LCRM process model, risk management planning is not conducted on a continuous basis with constant updates. As a strategic document, though, the RMP should still be updated

periodically and matured throughout each program's life cycle as it crosses phases at Milestones. Other events that may lead to RMP updates include:

12.2.2.2.6.1. Changes in acquisition strategy or support strategy,

12.2.2.2.6.2. Significant changes in success criteria, program architecture, or design,

12.2.2.2.6.3. Results and findings from event-based technical reviews, and

12.2.2.2.6.4. Program Objective Memorandum (POM) submissions.

12.2.3. **Risk Identification—Step 2**

12.2.3.1. With the RMP in place, the next step in the LCRM process initiates execution of the plan: Risk Identification.

12.2.3.2. Risk Identification is the action of examining a program or project to determine "What can go wrong?"

12.2.3.3. Risk Identification should be performed continuously.

12.2.3.4. Risk Identification focuses on identifying the "root cause": the "if X" in the statement "If *X* occurs, then *Y* results."

12.2.3.5. Risk Identification Sequence. It is best performed by decomposing the program or project into the lowest level of activities, elements, or processes reasonable for that phase of the life cycle, and then asking "What can go wrong?" and "Why?" (to determine root cause).

12.2.3.5.1. Decompose the program or project using the Work Breakdown Schedule (WBS), Integrated Master Schedule (IMS) or Integrated Master Plan (IMP), sub-processes, or other means of identifying discrete efforts for the program or project.

12.2.3.5.2. Examine each discrete effort in terms of risk sources or areas,

12.2.3.5.3. Determine what could be expected to go wrong, and then

12.2.3.5.4. Ask "why" multiple times, digging deeper into the WBS/IMS/etc. until a root cause(s) is determined.

12.2.3.6. For each risk identified, clearly assign ownership and responsibility tied to the program or project structure (IPT) and linked to discrete efforts within the WBS/IMS/etc.

12.2.3.7. Sources of Risk. The *Risk Management Guide for DOD Acquisition* includes a list of typical risk sources. Additional sources of risk for consideration are:

12.2.3.7.1. Changes in Government and contractor leadership and key personnel,

12.2.3.7.2. Changes in assigned or planned resources,

12.2.3.7.3. Transition activities between life cycle phases and/or organizations,

12.2.3.7.4. Concurrency with other interrelated programs (dependent on either input or output).

12.2.3.8. Risk Identification Tools. The following tools or processes should be considered to assist with risk identification:

12.2.3.8.1. Lessons Learned archives (contact your local Acquisition Center of Excellence (ACE)).

12.2.3.8.2. Probability of Program Success (PoPS) tool and the System Metric and Reporting Tool (SMART).

12.2.3.8.3. Systems Engineering Assessment Model (SEAM).

12.2.3.8.4. Logistics Health Assessments (LHAs).

12.2.3.8.5. Technology Readiness Assessments (TRAs).

12.2.3.8.6. Manufacturing Readiness Assessments (MRAs).

12.2.3.8.7. Risk Identification: Integration & -Ilities (RI3).

12.2.3.8.8. Other assessment activities.

12.2.3.9. Risk Identification Output. The product of risk identification is a list of root causes.

12.2.3.9.1. All root causes must be documented and tracked in a database as described earlier.

12.2.4. **Risk Analysis—Step 3.**

12.2.4.1. Using the list of root causes, Risk Analysis assesses the degree of impact and relative importance of these, as risks, to the program or project.

12.2.4.2. Risk Analysis is the action of refining each risk in terms of its likelihood, consequences, and relationship (priority) to other risks to determine "How big is the risk?"

12.2.4.2.1. Likelihood is an estimation of probability that a root cause will occur.

12.2.4.2.2. Consequence is an assessment of the worst credible potential result of a risk expressed in terms of cost, schedule, and performance impact. This formulates the "then Y" part of the statement: "If X occurs, then Y results."

12.2.4.2.3. Plotting the likelihood and consequence assessments on the LCRM 5x5 matrix provides a relative priority of risks based on potential impact to a program or project.

12.2.4.3. Risk Analysis should be performed continuously as new risks are identified, but should also be re-accomplished periodically to assess if the likelihood and/or consequence have changed for a previously identified risk.

12.2.4.4. Risk Analysis Sequence. Three basic activities are involved in Risk Analysis:

12.2.4.4.1. Assign a probability or likelihood of occurrence for each root cause.

12.2.4.4.2. Assess the consequences for each risk in terms of cost, schedule and performance impact using the standard criteria in **Tables 12.2** through **12.4**

12.2.4.4.3. Plot the likelihood and consequence for each risk on the LCRM 5x5 matrix to depict its potential magnitude and relationship to other risks.

12.2.4.4.3.1. It is typical that risks have cost, schedule and performance consequences. When this occurs, each consequence should be assessed and tracked; however, only the most severe (highest) consequence associated with a risk will be placed on the matrix for program reviews.

12.2.4.4.3.2. If a likelihood or consequence cannot be reasonably assessed, then it should not be reported as a risk on the LCRM 5x5 matrix. It may be separately reported as a "concern" and monitored for change and/or determination of likelihood and consequence.
Note: Risks should not be confused with issues. A risk, whether or not previously identified, that has occurred is an issue (i.e. problem).

12.2.4.5. Methods of analyzing risk include, but are not limited to, the following:

12.2.4.5.1. Individual or group expert judgment.

12.2.4.5.2. Analysis of historical data.

12.2.4.5.3. Uncertainty analysis of cost, schedule, and performance projections.

12.2.4.5.4. Probabilistic Risk Assessments.

12.2.4.5.5. Fault Tree Analysis and Failure Modes and Effects Analysis.

12.2.4.5.6. Comparison to similar systems or programs.

12.2.4.6. LCRM 5x5 Risk Matrix. The LCRM 5x5 matrix (**Figure 12.2**) is adopted from the *Risk Management Guide for DOD Acquisition* as the standard for displaying AF programmatic risks. Programs are not allowed to modify the matrix scale or color coding (e.g. no 5x8 or 4x6 matrix, no color changes to individual blocks of the 5x5 matrix).

12.2.4.6.1. The LCRM likelihood criteria and consequence criteria are more specific than criteria in the DOD guide to assist program offices and decision makers with improved consistency in risk assessments and reporting.

12.2.4.6.1.1. PMs may develop additional consequence criteria if needed, but must describe these in the RMP.

12.2.4.6.2. A risk is considered "high" when the intersecting point of the likelihood and consequence of a risk on the matrix falls in a red square, "moderate" when falling in a yellow square, and "low" when falling into a green square.

12.2.4.6.3. The LCRM 5x5 matrix is incorporated into the Probability of Program Success (PoPS) tool, and in the ASP/AFRB mandatory templates maintained by SAF/ACE for SAE briefings.

12.2.4.6.4. As prescribed in AFI 63-101, mission assurance and system safety risks are managed using separate methodologies (e.g. MIL-STD-882D, *DOD Standard Practice for System Safety)*. Risks identified using the MIL-STD-882D (or latest edition) are translated using **Table 3.1**, Translation of MIL-STD-882D to the OSD Risk Management Guide Matrix, for inclusion on the LCRM 5x5 matrix.

Figure 12.2. LCRM Risk Matrix

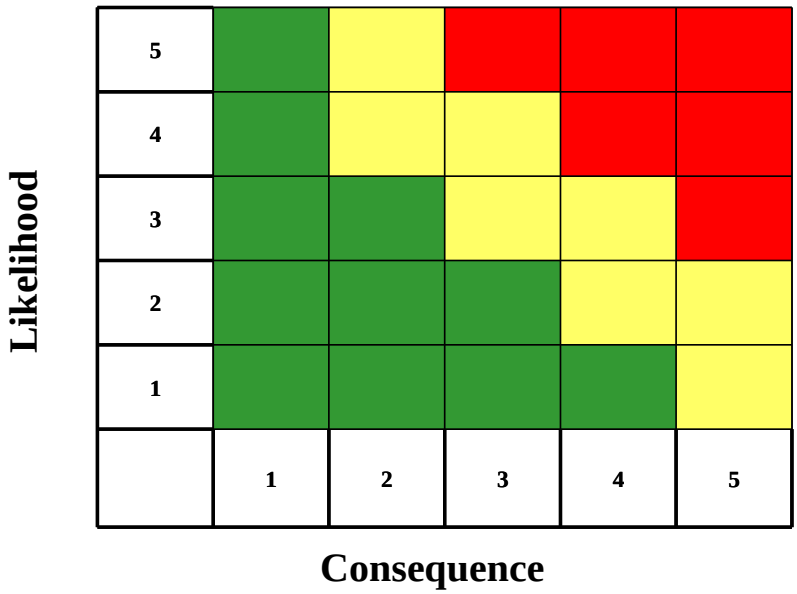


Table 12.1. Likelihood Criteria

LEVEL	LIKELIHOOD	PROBABILITY OF OCCURRENCE
5	Near Certainty	81%-99 %
4	Highly Likely	61%-80%
3	Likely	41%-60%
2	Low Likelihood	21%-40%
1	Not Likely	5%-20%

Table 12.2. Standard AF Consequence Criteria – Performance

Level	Standard AF Consequence Criteria - Performance
1	Minimal consequence to technical performance but no overall impact to the program success. A successful outcome is not dependent on this issue; the technical performance goals or technical design margins will still be met.
2	Minor reduction in technical performance or supportability, can be tolerated with little impact on program success. Technical performance will be below the goal or technical design margins will be reduced, but within acceptable limits.
3	Moderate shortfall in technical performance or supportability with limited impact on program success. Technical performance will be below the goal, but approaching unacceptable limits; or, technical design margins are significantly reduced and jeopardize achieving the system performance threshold values.
4	Significant degradation in technical performance or major shortfall in supportability with a moderate impact on program success. Technical performance is unacceptably below the goal; or, no technical design margins available and system performance will be below threshold values.
5	Severe degradation in technical/supportability threshold performance; will jeopardize program success; or will cause one of the triggers listed below (**Note 1**)

Note 1: Any root cause that, when evaluated by the cross-functional team, has a likelihood of generating one of the following consequences must be rated at Consequence Level 5 in Performance:

1. Will not meet Key Performance Parameter (KPP) Threshold
2. CTE will not be at Technology Readiness Level (TRL) 4 at MS/KDP A
3. Critical Technology Element (CTE) will not be at TRL 6 at MS/KDP B
4. CTE will not be at TRL 7 at MS/KDP C
5. CTE will not be at TRL 8 at the Full-rate Production Decision point
6. Manufacturing Readiness Level (MRL)* will not be at 8 by MS C
7. MRL* will not be at 9 by Full-rate Production Decision point
8. System availability threshold will not be met

* MRLs will be calculated in accordance with the *DOD Manufacturing Readiness Assessment Deskbook.*

Table 12.3. Standard AF Consequence Criteria – Schedule

LEVEL	Standard AF Consequence Criteria – Schedule
1	Negligible schedule slip
2	Schedule slip, but able to meet key dates (e.g. PDR, CDR, FRP, FOC) and has no significant impact to slack on critical path
3	Schedule slip that impacts ability to meet key dates (e.g. PDR, CDR, FRP, FOC) and/or significantly decreases slack on critical path
4	Will require change to program or project critical path.
5	Cannot meet key program or project milestones.

Table 12.4. Standard AF Consequence Criteria – Cost

LEVEL	Standard AF Consequence Criteria – Cost (A-B refers to MS)
1	For A-B Programs: 5% or less increase from MS A approved cost estimate For Post-B & Other Programs: limited to <=1% increase in Program Acquisition Unit Cost (PAUC) or Average Procurement Unit Cost (APUC) from current baseline estimate, or last approved program cost estimate
2	For A-B Programs: > 5% to 10% increase from MS A approved estimate For Post-B & Other Programs: <=1% increase in PAUC/APUC from current baseline estimate, or last approved program cost estimate, with potential for further cost increase
3	For A-B Programs: >10% to 15% increase from MS A approved estimate For Post-B & Other Programs: >1% but <5% increase in PAUC/APUC from current baseline estimate, or last approved program cost estimate
4	For A-B Programs: >15% to 20% increase from MS A approved estimate For Post-B & Other Programs: 5% but <10% increase in PAUC/APUC from current baseline estimate, or last approved program cost estimate
5	For A-B Programs: >20% increase from MS A approved cost estimate For Post-B & Other Programs: >=10% increase in PAUC/APUC from current baseline estimate (danger zone for significant cost growth and Nunn-McCurdy breach), or last approved program cost estimate

12.2.4.7. Risk Interdependencies. During Risk Identification and Risk Analysis, it is important that PMs and IPTs address and communicate risk interdependencies. Risks and handling/mitigation actions may affect other risks within the same program or project, or affect other (external) programs (in the same AF portfolio, in another AF portfolio, or in a portfolio of another Service). Identifying, documenting, and communicating risks across these relationships is especially critical when associated with a Systems of Systems or a Family of Systems. PMs and IPTs will also find that prime contractor involvement is key to this area of communication success.

12.2.4.8. Risk Analysis Output. The products of Risk Analysis are assessments of the likelihood and consequences for each risk plotted on the LCRM matrix.

12.2.4.8.1. All moderate and high risks must be presented on the matrix as a part of program, technical, and Milestone decisions.

12.2.4.8.2. Analysis results must be documented and tracked in a database as described earlier.

12.2.5. **Risk Handling/Mitigation Planning—Step 4.**

12.2.5.1. After risks are identified and analyzed, the next step is determining and documenting an appropriate action for each risk. Options for addressing risks include:

12.2.5.1.1. Accept (assuming the level of risk and continuing with the current program or project plan).

12.2.5.1.2. Monitor (taking no immediate action, but watch for changes).

12.2.5.1.3. Research (collect additional information needed for a decision or to reduce uncertainty surrounding risk estimates).

12.2.5.1.4. Transfer (shift the root cause elsewhere).

12.2.5.1.5. Mitigate (apply methods aimed at eliminating the risk, or reducing the likelihood and/or consequence of the risk).

12.2.5.2. **NOTE** : The LCRM process model expands the title of this step from “Risk Mitigation Planning” in the *Risk Management Guide for DOD Acquisition* to “Risk Handling/Mitigation Planning” to recognize that most of these options address handling risk in a manner other than mitigating (i.e. eliminating or reducing) it. This also emphasizes that in some cases it may be appropriate to “handle” a risk through acceptance or transferring the risk, for example, rather than mitigation actions which may prove more costly than worthwhile.

12.2.5.3. Risk handling/mitigation plans are prepared for all moderate and high risks.

12.2.5.4. Formal decisions to proceed (e.g. Milestone Decisions, Acquisition Strategy Panels, etc.) will constitute approval of the current risk assessments and handling/mitigation plans for all moderate and high risks. Therefore, it is imperative that the Decision Authority be aware of all moderate and high risks, and the respective handling/mitigation plans.

12.2.5.4.1. For programs or projects with a high number of moderate risks in addition to high risks that cannot be briefed due to time constraints, the Decision Authority

may elect to rely on staff independent of the program/project office for recommendations regarding approval of risk/handling plans for moderate risks. As previously stated, though, all moderate and high risks must be presented to decision makers on the LCRM 5x5 matrix to ensure their awareness of these programmatic risks during program, technical, Milestone reviews.

12.2.5.5. Risk Handling/Mitigation Plan Content. The *Risk Management Guide for DOD Acquisition* provides the recommended content for Risk Mitigation Plans. In general, Risk Mitigation Plans describe actions to eliminate or reduce the identified risks, as well as risk measures, indicators, and trigger levels use in the tracking of the risks and the effectiveness of their mitigation actions. These plans also include the cost and schedule information required for implementation.

12.2.5.6. Risk Handling/Mitigation Planning Output. The product of this step is documentation of decisions to accept/transfer any moderate or high risks, or a Risk Mitigation Plan for every moderate and high risk that lays out the approach to eliminate or reduce the risk to an acceptable level.

12.2.5.6.1. Acceptances and planning actions must be documented in a database as described earlier.

12.2.6. **Risk Mitigation Implementation and Tracking—Step 5.**

12.2.6.1. Completion of Risk Mitigation Planning allows the PM to begin the next step: Risk Mitigation Implementation and Tracking. ***Note***: The LCRM process model combines two key activities, Risk Mitigation Plan Implementation and Risk Tracking, in the *Risk Management Guide for DOD Acquisition* into this single step. Both sections of the DOD guide, though, should be followed as basic guidance for AF activities.

12.2.6.2. Risk tracking provides the insight on which to draw conclusions about the effectiveness of the Risk Mitigation Plan and actions.

12.2.6.3. Risk tracking involves collecting, updating, organizing and analyzing risk data and reporting risk trends to determine if particular risks decreased, remained the same, or increased over time.

12.2.6.3.1. To effectively track risks actually requires re-accomplishment of the Risk Analysis step to assess changes in likelihood and/or consequence. In turn, this may drive changes to the Risk Handling/Mitigation Plan for a particular risk; or, if reported trends collectively indicate a different strategy for risk management is appropriate, changes to the overall Risk Management Plan. Hence, the rationale for describing the LCRM process as continuous and iterative.

12.2.6.4. The frequency for checking tracking results and triggers should be such that adequate time remains to react to adverse trends.

12.2.6.5. Following mitigation implementation, decisions to accept or transfer, rather than further mitigate, any moderate or high risks are included in approval documentation (e.g. Acquisition Decision Memorandum), and documented in the Program Management Agreement/Expectation Management Agreement (PMA/EMA) per AFI 63-101.

12.2.6.5.1. Acceptance of system safety risks must still comply with DODI 5000.02, which dictates specific levels of approval regardless of the ACAT level.

12.2.6.6. Updated information from risk tracking can significantly impact programmatic decisions and plans, and must be communicated within the program/project team and to decision makers. This should be accomplished via existing channels (e.g. reviews, decision points, etc.) without creating a separate risk reporting process for staff oversight.

12.3. LCRM Application to Acquisition Life Cycle Phases

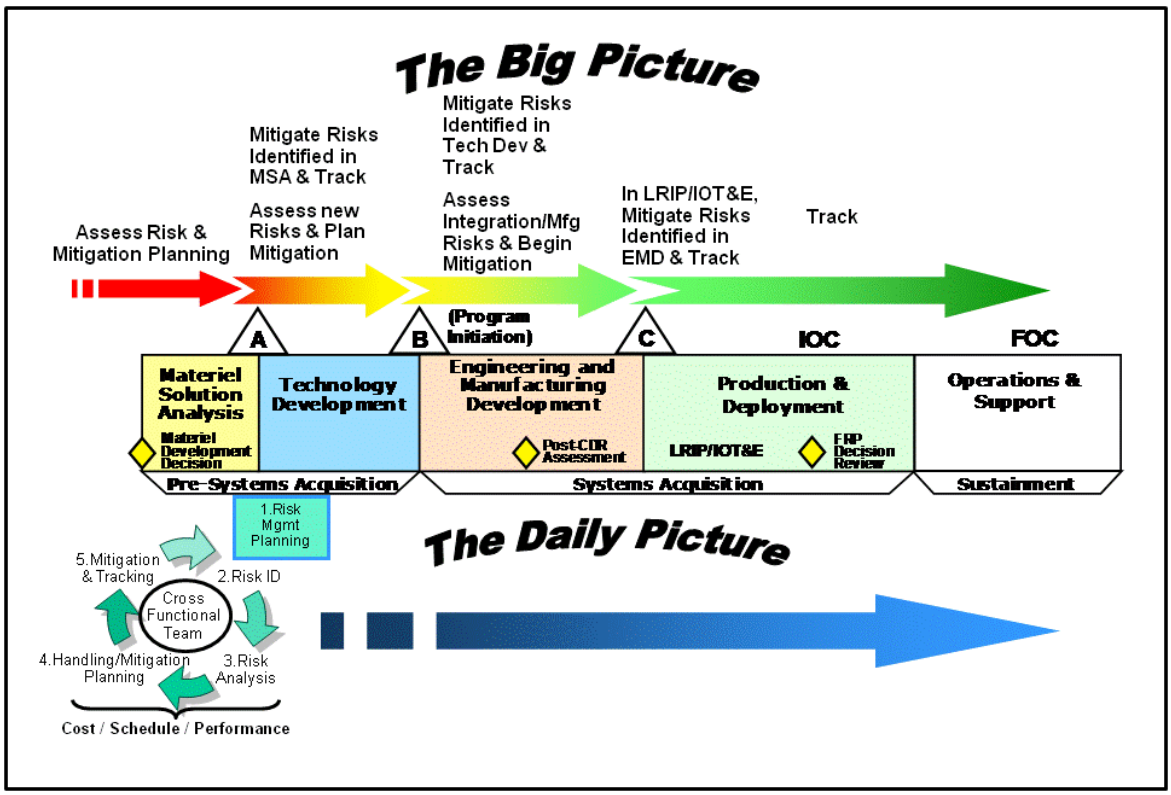
12.3.1. **Introduction**

12.3.1.1. Risk management is the proactive form of acquisition life cycle management. To remain proactive, risk management must be performed continuously across the acquisition framework. It must be a core responsibility of every team member performed on a daily basis. A program team that only assesses risks or determines status of mitigation actions just prior to milestone reviews, or only to meet periodic reporting requirements will likely discover that these risks have migrated into issues (i.e. current problems); driving the program team into a reactive mode with a subsequent loss of control.

12.3.1.2. As previously stated, the LCRM process is continuous and iterative. This "daily" process feeds into all key aspects of acquisition management from the formal entry point into the acquisition process, the Materiel Development Decision (MDD) that begins the Materiel Solution Analysis (MSA) phase, through the Operations & Support phase into final disposition. Conducted properly, risk management drives down risks and uncertainty as a team progresses through the acquisition framework to a point of mitigation and/or acceptance of risks. This relationship is depicted in **Figure 12.3** (LCRM OV-1).

12.3.1.3. Viewing the "big picture," operational risks generate capability requirements that often lead to materiel solutions to satisfy these requirements. During the MSA phase, cost, schedule and performance risks associated with each potential materiel solution must be identified and assessed to determine the best strategy for the Technology Development phase. The primary purpose of the Technology Development phase is to reduce technology risk (i.e. mitigate the risks identified during the MSA) and to assess manufacturing and integration risks before proceeding into Engineering and Manufacturing Development (EMD). Mitigation actions for these manufacturing and integration risks are then initiated during EMD and completed (verified) in Low-Rate Initial Production (LRIP) and Initial Operational Test & Evaluation (IOT&E). Upon successful completion, a decision to proceed into Full-Rate Production can be made with considerably lower risk remaining for Production and Deployment as well as for Operations and Support. Even from the initial assessment of potential materiel solutions during the MSA phase, it is crucial that the team look as far forward as possible to identify risks across the life cycle out through sustainment and eventual disposal activities.

Figure 12.3. LCRM in the Acquisition Management Framework (OV-1)



12.3.1.4. The following sections look at top-level LCRM application in each of the primary phases of the acquisition framework. Flow-charts depicting key activities in each phase along and LCRM applications demonstrate that proper risk management affects every major acquisition activity. This is not intended to specify every LCRM action, but to emphasize that the LCRM thread is woven throughout the acquisition life cycle framework and should affect all acquisition strategies and decisions.

12.3.2. **LCRM in the Materiel Solution Analysis Phase**

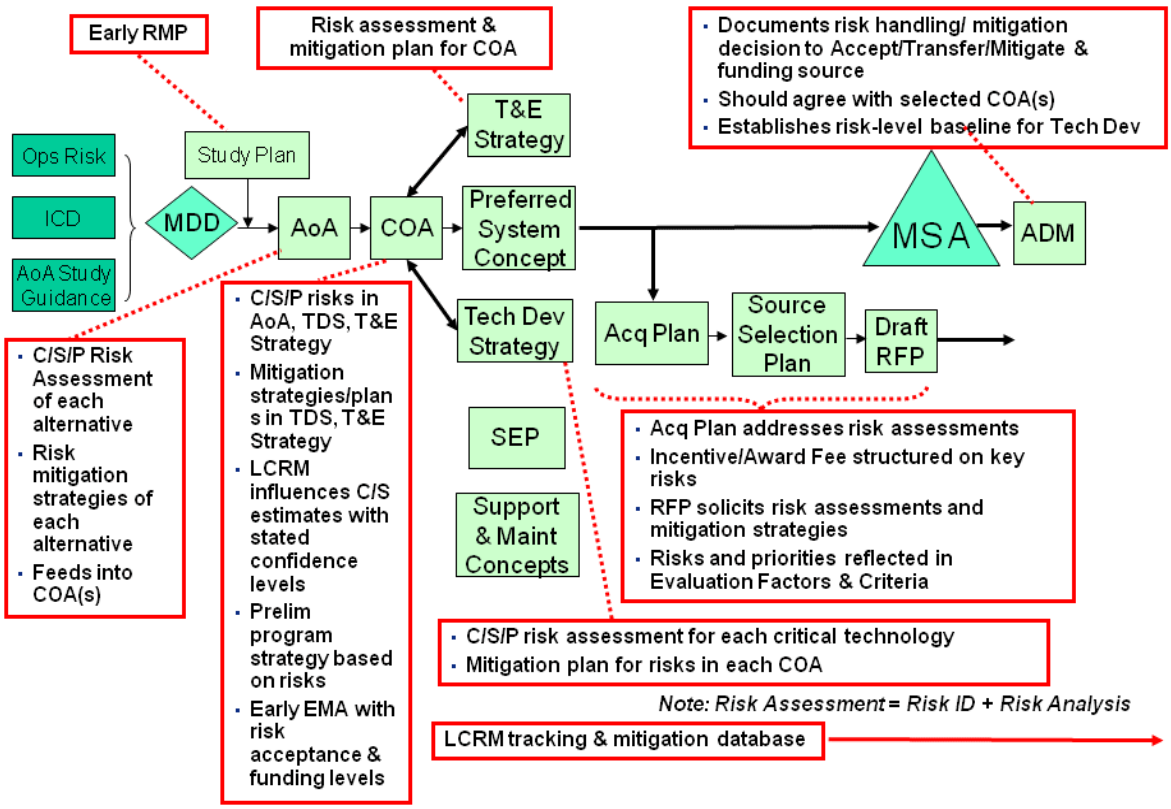
12.3.2.1. Phase Description. The MSA phase assesses potential materiel solutions. It begins with the Materiel Development Decision (MDD), the formal entry point into the acquisition process that is mandatory for all programs. At MDD, the MDA approves the Analysis of Alternatives (AoA) study guidance and determines the acquisition phase of entry for the program. The subsequent AoA assesses potential materiel solutions against the capability needs stated in the ICD. The MSA phase ends with presentation of a preferred system concept(s) accompanied by a proposed Technology Development Strategy for the concept(s) to the MDA at Milestone A.

12.3.2.2. Primary risk management objectives during this phase include:

12.3.2.2.1. Application of the LCRM process during the AoA, or equivalent, to contribute to the selection of the preferred materiel solution(s).

12.3.2.2.2. Identification of key risk drivers to set the stage for effective risk reduction in technology development, production, operations, and sustainment.

Figure 12.4. Materiel Solution Analysis Phase (MDD – Milestone A)



12.3.2.3. **Figure 12.4** displays a basic sequence of key activities during the MSA phase. LCRM applications associated with these key activities are summarized below.

12.3.2.3.1. AoA Study Plan. Although not labeled a Risk Management Plan, the AoA Study Plan should form a preliminary RMP in that it lays out a strategy for identification of potential areas of risk pertinent to the AoA.

12.3.2.3.2. AoA should:

12.3.2.3.2.1. Assesses the cost, schedule and performance risks associated with CTEs for each alternative; and formulates preliminary mitigation strategies for each.

12.3.2.3.2.2. Provide preliminary cost and schedule estimates informed by risk assessments with confidence levels that account for uncertainty.

12.3.2.3.2.3. Feed into the Courses of Actions (CoAs) process.

12.3.2.3.3. CoAs should:

12.3.2.3.3.1. Ensure MAJCOM and MDA agreement on program expectations and risks for specified cost, schedule, and performance goals.

12.3.2.3.3.2. Serve as the basis for the Acquisition Strategy, TDS, T&E Strategy, LCMP and PMA/EMA;

12.3.2.3.3.3. Reflect risk mitigation strategies and plans from the TDS, T&E Strategy, and early Support & Maintenance concepts.

12.3.2.3.4. TDS should:

12.3.2.3.4.1. Assess cost, schedule, and performance risks for each critical technology and establishes mitigation plans;

12.3.2.3.4.2. Once approved, form the basis for technology risk reduction efforts in the Technology Development phase and provide for competing prototypes to reduce technical risk.

12.3.2.3.5. Test & Evaluation (T&E) Strategy should:

12.3.2.3.5.1. Document the T&E approach for Technology Development to verify that risks were, first, correctly identified (T&E may identify additional risks previously unrealized) and, second, sufficiently mitigated.

12.3.2.3.5.2. Provide a critical aspect of the RMP for the Technology Development phase.

12.3.2.3.6. Acquisition Plan/Source Selection Plan/Draft Request for Proposals. Results of the risk efforts in the preceding activities must be reflected in these key activities leading to a MS decision to proceed into the next acquisition phase. ***Note***: Per DODI 5000.02, final RFPs for the Technology Development Phase can not be released until the MDA has approved the TDS. Just a few examples of their application include:

12.3.2.3.6.1. Acquisition Plans addressing risks as part of objectives and focus areas.

12.3.2.3.6.2. High risk areas used to determine discriminators for source selections, and risks and priorities reflected in Evaluation Factors and Criteria.

12.3.2.3.6.3. Requiring offerors to address high risks and mitigation strategies in proposals.

12.3.2.3.6.4. Structuring contract type, incentives and award fees on key risks.

12.3.2.3.7. Acquisition Decision Memorandum (ADM). The ADM must document all decisions to accept any moderate or high risks within the selected AoA solution.

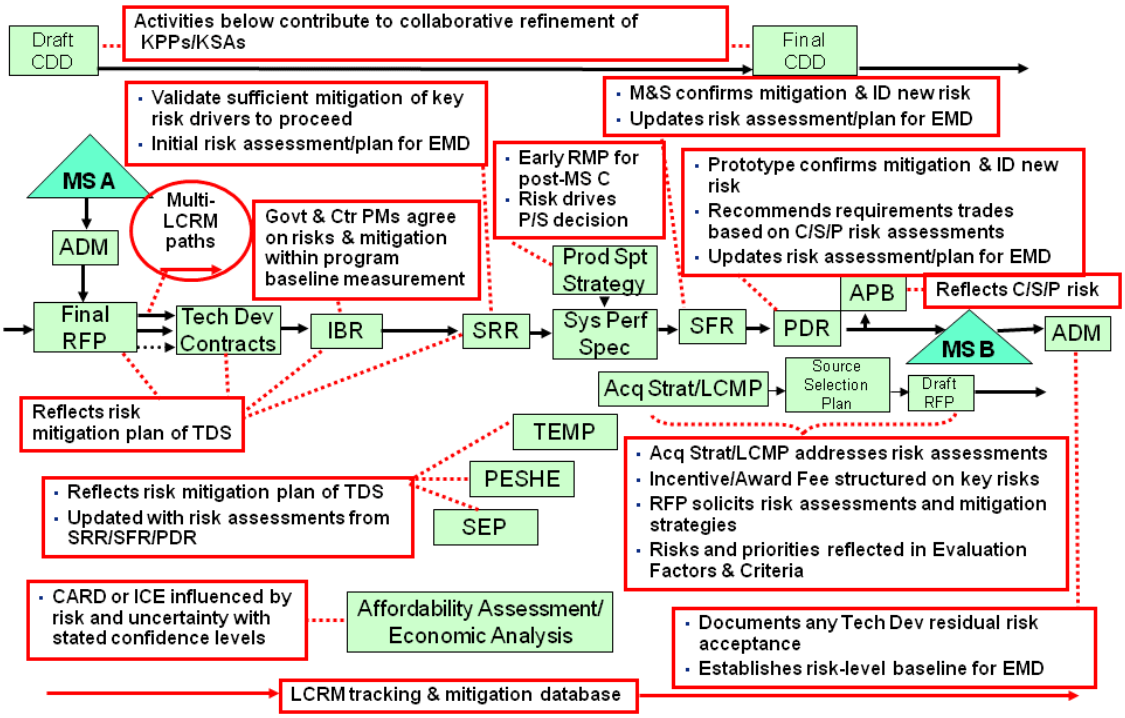
12.3.3. LCRM in the Technology Development Phase

12.3.3.1. Phase Description. The purpose of the Technology Development (TD) phase is to reduce technology risk, determine the appropriate set of technologies to be integrated into a full system, demonstrate CTEs on prototypes, and complete a preliminary design. This phase begins after MS A approval of a materiel solution and the TDS, as documented in an ADM. The TD phase may conclude when an affordable program or increment of militarily-useful capability has been identified and demonstrated in a relevant environment, manufacturing risks are assessed, a Preliminary Design Review (PDR) has been conducted, and a system or increment can be developed for production within a short timeframe.

12.3.3.2. Primary risk management objectives during this phase include:

12.3.3.2.1. Continuous and iterative application of the LCRM process to the technology discovery and development process to support the affordability assessment, manufacturing risk assessments, PDR, and the MS B decision.

Figure 12.5. Technology Development Phase (Milestone A to Milestone B)



12.3.3.3. **Figure 12.5** displays a basic sequence of key activities during the TD phase. It should be noted that much of this sequence is repeated for each competitive prototype as indicated by "Multiple LCRM paths" after issuance of the final RFP. LCRM applications associated with these key activities are summarized below.

12.3.3.3.1. Final RFP and TD Contracts should clearly link to the risk mitigation plans in the approved TDS.

12.3.3.3.2. Integrated Baseline Review (IBR) should:

12.3.3.3.2.1. Link to the risk mitigation plans in the TDS.

12.3.3.3.2.2. Result in the assessment of risk within the program measurement baseline.

12.3.3.3.2.3. Demonstrate agreement between the Government and Contractor PMs on risks and mitigations.

12.3.3.3.3. System Requirements Reviews (SRRs) should:

12.3.3.3.3.1. Clearly link to the risk mitigation plans in the TDS.

12.3.3.3.3.2. Validate sufficient mitigation of key risk drivers to allow the program to continue with confidence.

12.3.3.3.4. Product Support Strategy should:

12.3.3.3.4.1. Clearly link to the risk mitigation plans in the TDS.

12.3.3.3.4.2. Provide early formulation of the RMP for post MS-C.

12.3.3.3.5. System Functional Review (SFR) should:

12.3.3.3.5.1. Use Modeling & Simulation to confirm mitigation actions and identify new risks.

12.3.3.3.5.2. Ensure the program schedule can be executed given known cost and technical risks.

12.3.3.3.5.3. Provide information for updating risk assessments and planning for EMD (i.e. ensure that risks are known and manageable for development).

12.3.3.3.6. Preliminary Design Review (PDR) should:

12.3.3.3.6.1. Determine risk mitigation status following competitive prototyping and identify remaining design, integration, and manufacturing risks.

12.3.3.3.6.2. Recommend potential trade-space in requirements based on cost, schedule, and performance risk assessments.

12.3.3.3.6.3. Ensure the program schedule can be executed given known cost and technical risks.

12.3.3.3.6.4. Ensure that risks are known and manageable for developmental and operational testing.

12.3.3.3.6.5. Provide information for updating risk assessments and planning for EMD.

12.3.3.3.7. Cost Analysis Requirements Document (CARD) or Independent Cost Estimate (ICE) should be heavily influenced by risks and uncertainty analysis, and account for uncertainty to identify a confidence level.

12.3.3.3.8. TEMP/PESHE/SEP should:

12.3.3.3.8.1. Clearly link to the risk mitigation plans in the TDS.

12.3.3.3.8.2. Incorporate updates based on risk assessments reported during the SRR/SFR/PDR.

12.3.3.3.9. Capability Development Document (CDD) should incorporate results of the LCRM process accomplished throughout the TD phase to refine Key Performance Parameters (KPPs) and Key System Attributes (KSAs).

12.3.3.3.10. LCMP/Source Selection Plan/Draft RFP.

12.3.3.3.11. Acquisition Program Baseline (APB) should incorporate results of the LCRM process accomplished throughout the TD phase and account for risks and uncertainty in developing the program cost and schedule estimates.

12.3.3.3.12. ADM. The ADM must document all decisions to accept any moderate or high risks.

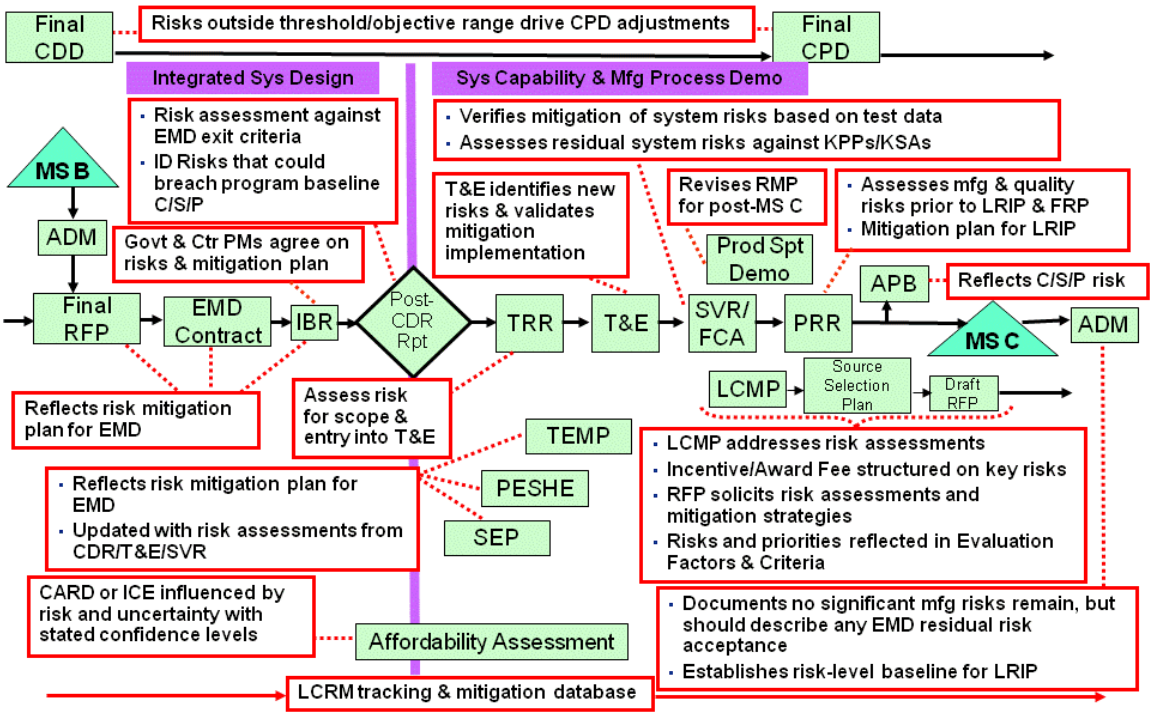
12.3.4. **LCRM in the Engineering and Manufacturing Development Phase.**

12.3.4.1. Phase Description. Beginning at MS B, the Engineering and Manufacturing Development (EMD) phase has two major efforts: Integrated System Design and System Capability & Manufacturing Process Demonstration divided by a Post-Critical Design Review (CDR) assessment. Integrated System Design defines system and system-of-systems functionality and interfaces, completes a detailed design, and reduces system-level risk. System Capability& Manufacturing Process Demonstration demonstrates system operability consistent with KPPs and that production can be supported by manufacturing processes.

12.3.4.2. Primary risk management objectives during this phase include:

12.3.4.2.1. Continuous and iterative application of the LCRM process throughout the EMD Phase to support IBRs, an Integrated Master Schedule (IMS) accounting for risk assessment and risk mitigation planning, a Life Cycle Cost Estimate including risk and uncertainty, CDR, Production Readiness Review (PRR), and the MS C decision.

Figure 12.6. Engineering and Manufacturing Development Phase (Milestone B to Milestone C)



12.3.4.3. **Figure 12.6** displays the basic sequence of key activities during the EMD phase. LCRM applications associated with these key activities are summarized below.

12.3.4.3.1. Final RFP and EMD Contract should be constructed to clearly link to the updated RMP and risk mitigation plans following PDR in the Technology Development phase. ***Note***: The Final RFP can not be released until MDA approval of the Acquisition Strategy.

12.3.4.3.2. IBR should:

12.3.4.3.2.1. Reflect risk mitigation plans established during the Technology Development phase to reduce system-level risk.

12.3.4.3.2.2. Demonstrate agreement between the Government and Contractor PMs on risks and mitigations.

12.3.4.3.3. Post-CDR Assessment should:

12.3.4.3.3.1. Ensure the system can meet performance requirements within cost and schedule constraints and associated risk and uncertainty to prevent a breach in the program baseline.

12.3.4.3.3.2. Provide an updated risk assessment for EMD for updates to the TEMP, PESHE, SEP, CARD, ICE, etc.

12.3.4.3.3.3. Provide risk assessment inputs to the Product Support Strategy and Plan to include environment, safety and occupational health risks.

12.3.4.3.3.4. Ensure that risks are known and manageable for developmental and operational testing.

12.3.4.3.4. Test Readiness Review (TRR) should assess risk levels for scope and entry into T&E.

12.3.4.3.5. T&E should:

12.3.4.3.5.1. Provide a critical tool for indentifying risks.

12.3.4.3.5.2. Validate risk mitigation planning and implementation, and feed new risks into the LCRM process and inclusion in the TEMP.

12.3.4.3.6. System Verification Review (SVR) and Functional Configuration Audit (FCA) should:

12.3.4.3.6.1. Assess residual system level risks and validate mitigation actions taken on previously identified risks to ensure the system production configuration will meet KPPs and KSAs.

12.3.4.3.6.2. Verify mitigation of system risks based on T&E data.

12.3.4.3.7. Production Readiness Review (PRR) should:

12.3.4.3.7.1. Assess manufacturing and quality risk for entry into Low Rate Initial Production (LRIP) and Full Rate Production (FRP).

12.3.4.3.7.2. Provide mitigation plans for remaining manufacturing risks prior to LRIP.

12.3.4.3.8. LCMP/Source Selection Plan/Draft RFP. See 12.2.3.6.

12.3.4.3.9. Capability Production Document (CPD) should incorporate results of the LCRM process accomplished throughout the EMD phase to refine KPPs and KSAs.

12.3.4.3.10. APB should be updated to include remaining cost, schedule and performance risk implications in the baseline.

12.3.4.3.11. ADM should document that no significant manufacturing risks remain prior to entry into LRIP, and rationale for acceptance of any moderate or high risks.

12.3.5. **LCRM in the Production and Deployment Phase.**

12.3.5.1. Phase Description. Following MS C approval, the Production and Deployment phase is initiated with entry into LRIP for major programs or into a limited deployment for MAIS or software intensive programs to ensure manufacturing development is complete, to provide a limited quantity for Initial Operational Test & Evaluation (IOT&E) and Live Fire Test & Evaluation (if required), and to allow an orderly ramp-up into Full Rate Production (FRP). LRIP and software limited deployments along with IOT&E/LFT&E are the last major risk mitigation activities before a program fully commits to large scale production and deployment.

12.3.5.2. Primary risk objectives during this phase include:

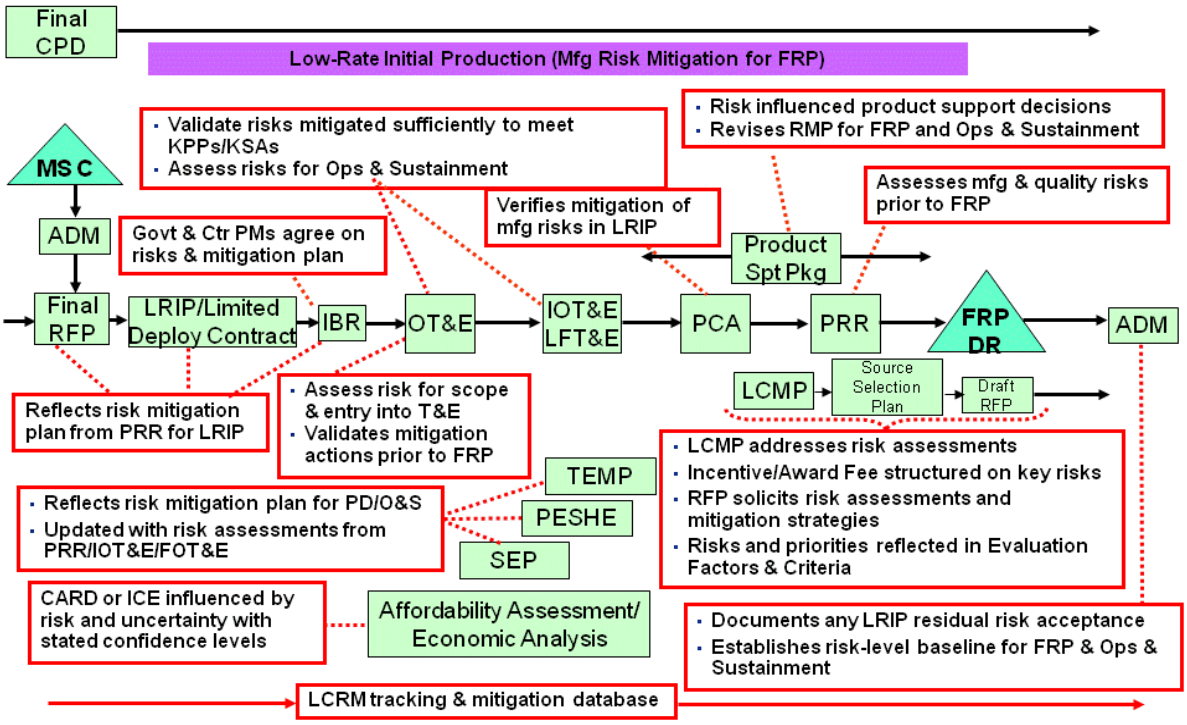
12.3.5.2.1. Continuous and iterative application of the LCRM process throughout the LRIP, FRP, and deployment to achieve operational capability and sustainability needs specified in the CPD.

12.3.5.2.2. LCRM inputs to the production and OSS&E baselines and other program processes/documentation (e.g. CARD, ICE, LCMP, SEP, TEMP, PESHE, Product Support Strategy and Plan, Information Assurance Plan, Program Protection Plan, Site Activation Plan, Disposal Plan, etc.).

12.3.5.2.3. Although risks, mitigation actions, and decisions must be tracked in a database throughout the acquisition life cycle and communicated as program responsibilities transition between personnel and organizations, an effective hand-off of risk information is critical when programs transition from production to sustainment.

12.3.5.3. **Figure 12.7** displays a basic sequence of key activities during the Production and Deployment phase. LCRM applications associated with these key activities are summarized below.

Figure 12.7. Production and Deployment Phase (Milestone C to Full Rate Production).



12.3.5.4. Final RFP and Production Contract for LRIP/Limited Deployment should be constructed to clearly link to the updated RMP and risk mitigation plans following PRR during the EMD phase.

12.3.5.5. IBR should:

12.3.5.5.1. Reflect risk mitigation plans established during PRR in the EMD phase to reduce remaining manufacturing and sustainment risk.

12.3.5.5.2. Demonstrate agreement between the Government and Contractor PMs on risks and mitigations remaining before and after LRIP.

12.3.5.6. Operational Test Readiness Review (OTRR) should:

12.3.5.6.1. Validate that risks are sufficiently mitigated to enter Operational T&E.

12.3.5.6.2. Validates risk mitigation actions prior to FRP.

12.3.5.7. IOT&E/FOT&E should:

12.3.5.7.1. Validate that risks are sufficiently mitigated to meet KPPs/KSAs.

12.3.5.7.2. Assess risks for the Operations & Sustainment phase and provide updated assessments for the TEMP, PESHE, SEP, CARD, ICE, Product Support Package, etc.

12.3.5.8. Physical Configuration Audit (PCA) and Production Readiness Review (PRR) should verify mitigation of manufacturing risks during LRIP and substantiate no remaining manufacturing risks for the FRP Decision Review.

12.3.5.9. ADM should document that no significant manufacturing risks remain prior to entry into FRP, and rationale for acceptance of any moderate or high risks.

12.3.6. **LCRM in the Operations & Support Phase.**

12.3.6.1. Phase Description. The Operations and Support (O&S) phase consists of two major efforts: Life-Cycle Sustainment and Disposal. Risk assessment and risk mitigation planning for Life-Cycle Sustainment and Disposal should begin during the Materiel Solution Analysis phase and continue as the key activities mature from concepts to detailed plans and actions.

12.3.6.2. Primary risk objectives during this phase include:

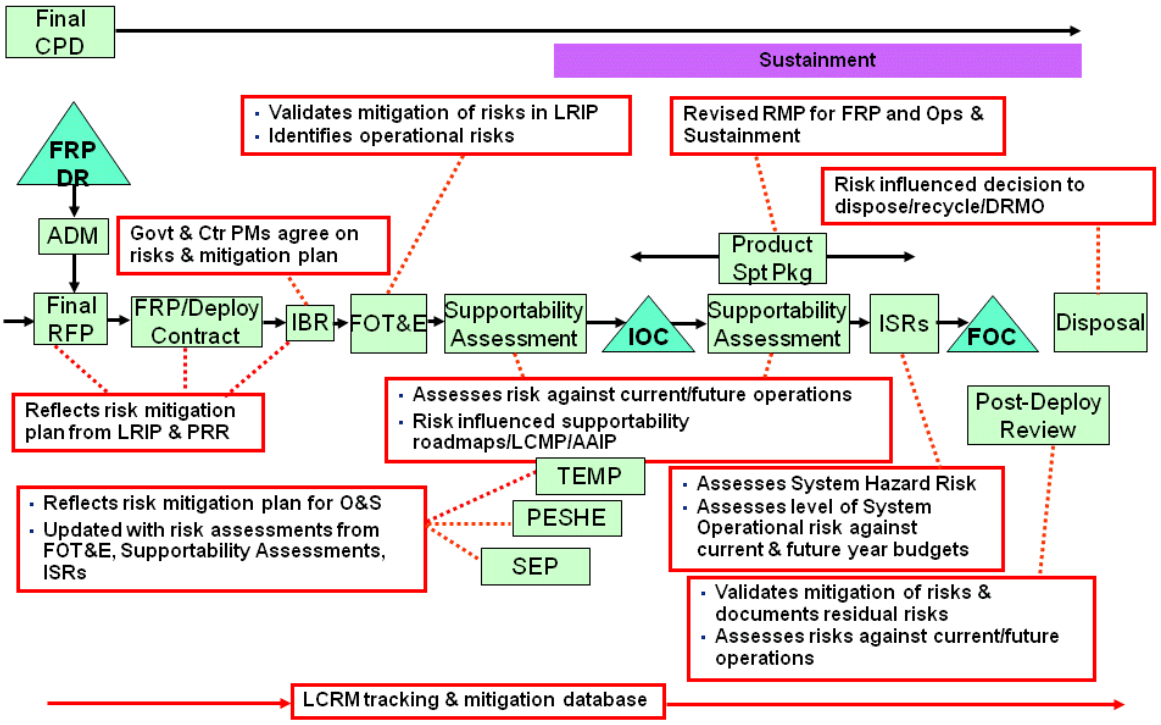
12.3.6.2.1. Continuous and iterative application of the LCRM process throughout FRP, deployment, and O&S to achieve operational capability and sustainability needs specified in the CPD.

12.3.6.2.2. LCRM inputs to the final production and OSS&E baselines and other program processes/documentation (e.g. LCMP, SEP, TEMP, PESHE, Product Support Strategy and Plan, Information Assurance Plan, Program Protection Plan, Site Activation Plan, Disposal Plan, etc.).

12.3.6.2.3. Effective communication of status of all risks between the SSM and DSM.

12.3.6.2.4. Ensure that ORM influences and informs programmatic risk management.

Figure 12.8. Operations and Support Phase (Life Cycle Sustainment to Disposal).



12.3.6.3. **Figure 12.8** displays the basic sequence of key activities during the O&S phase. LCRM applications associated with these key activities are summarized below.

12.3.6.3.1. Final RFP and Production Contract for FRP/Deployment should be constructed to clearly link to the updated RMP and risk mitigation plans following PRR and LRIP.

12.3.6.3.2. IBR should:

12.3.6.3.2.1. Reflect risk mitigation plans established during PRR.

12.3.6.3.2.2. Demonstrate agreement between the Government and Contractor PMs on risks and mitigations remaining before and after FRP.

12.3.6.3.3. Follow-On Test & Evaluation (FOT&E) and Force Development Evaluation (FDE) should validate mitigation of any remaining risks in LRIP and identify any remaining operational risks.

12.3.6.3.4. Supportability Assessment should assess risks against current and future operations. Sustainment risks warranting particular attention include obsolescence, aging trends, unintended usage profiles, surveillance, and maintenance activities.

12.3.6.3.5. Product Support Strategy should provide inputs to update the RMP for FRP and O&S.

12.3.6.3.6. In-Service Review (ISR) should;

12.3.6.3.6.1. Provide an overall System Hazard Risk Assessment.

12.3.6.3.6.2. Quantify and relate future levels of System Operational Risk and System Readiness to future year O&S and procurement budgets.

12.3.6.3.6.3. Post-Deployment Review should validate mitigation of risks and document any remaining residual risks.

12.3.6.3.7. Disposal decisions (e.g. destroy, recycle, DRMO, etc.) should be informed by risk assessments for each alternative.

Chapter 13

PROGRAM TERMINATION

13.1. RESERVED (C hapter 14 will provide procedural guidance and criteria for Program Termination. Chapter will be developed and staffed separately and included through the interim change process.)

Chapter 14

POLICY COORDINATION, REVIEW, AND WAIVERS

14.1. Integrated Life Cycle Management Publication Coordination. Major Command (MAJCOM) Commanders are requested to convene a high performance team (HPT)-based process for the review and coordination of official ILCM Air Force departmental publications (e.g. AFPDs, AFIs, AFMANs, and AFPAMS). These publications are the authoritative voice of the Headquarters Air Force (HAF) and document how ILCM requirements established by law, the President, the Secretary of Defense (SECDEF), and the SECAF are to be fulfilled.

14.1.1. The HPT consists of the appropriate subject matter expertise relevant to the content of the publication under review. The purpose of the HPT is to facilitate AFI 33-360, *Publications and Forms Management*, technical/functional staffing in order to develop a timely, adjudicated, consolidated and integrated position on behalf of the MAJCOM Commander. Additionally, the HPT will review the publication with regards to higher authority (e.g. public law, statute, DOD issuances), HAF senior leadership direction, and the ability to implement a standardized process across the MAJCOM. The HPT will provide recommendations and supporting rationale for all comments to increase the quality of the ILCM publication.

14.1.2. MAJCOM Commanders will assign a lead office responsible for staffing, identification of relevant subject matter experts and process owners to support the HPT, and act as the single point of contact between the MAJCOM and the HAF publication OPR. MAJCOM Commanders can designate a lower-level office to provide the response and sign off on the coordination form, but are responsible for ensuring the correct offices within their organization review the publication.

14.2. Waivers. Waivers from guidance must be based on a programmatic course of action approved by the Service Acquisition Executive (SAE) or Milestone Decision Authority (MDA) through the program's governance chain of authority and documented in the appropriate program documentation. Notification must be made to Headquarters Air Force (HAF) in accordance with AFPD 63-1/20-1.

14.3. Changes. Refer recommended changes and questions about this publication to SAF/AQXA using the AF Form 847, *Recommendation for Change of Publication*; route AF Form 847s from the field through MAJCOM publications/forms managers.

14.4. Information Collection, Records, and Forms.

14.4.1. No information collections are created by this publication.

14.4.2. Program records created as a result of processes prescribed in this publication are maintained in accordance with AFMAN 33-363, *Management of Records*, and disposed of in accordance with the AF Records Disposition Schedule (RDS) located at **https://www.my.af.mil/gcss-af61a/afrims/afrims/rims.cfm**.

14.4.3. Prescribed and Adopted Forms.

14.4.4. Adopted Forms.

DD Form 1415-1 *Reprogramming Action Form*

DD Form 250, *Material Inspection and Receiving Report*

DD Form 2888, *Critical Acquisition Position Service Agreement*

DD Form 2889, *Critical Acquisition Position Service Agreement Key Leadership Position*

AF Form 847, *Recommendation for Change of Publication*.

14.4.5. Prescribed Forms.

No forms are prescribed by this publication.

DAVID M. VAN BUREN
Acting Assistant Secretary of the Air Force
(Acquisition)

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

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DOD 4120.24-M, *Defense Standardization Program (DSP) Policies and Procedures*, 27 Sep 2007

DOD 4140.1-R, *Supply Chain Material Management Regulation*, 23 May 2003

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AFPD 10-9, *Lead Command Designations and Responsibilities for Weapon Systems*, 8 Mar 2007

AFPD 63-1/20-1, *Acquisition and Sustainment Life Cycle Management*, 3 Apr 09

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AFI 16-403, *Updating the USAF Program Installations, Units, and Priorities and Movement of Air Force Units*, 3 Jun 1994

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AFI 33-118, *Electromagnetic Spectrum Management*, 18 Jul 2005

AFI 33-360, *Publications and Forms Management,* 18 May 2006

AFI 36-2201, *Training Development, Delivery, and Evaluation*, (date varies by volume)

AFI 36-2251, *Management of Air Force Training Systems,* 20 Mar 2003

AFI 38-201, *Determining Manpower Requirements*, 30 Dec 2003

AFI 63-101, *Acquisition and Sustainment Life Cycle Management,* 17 Apr 2009

AFI 63-103, *Joint Air Force-National Nuclear Security Administration (AF-NNSA) Nuclear Weapons Life Cycle Management*, 24 Sep 2008

AFI 63-114, *Rapid Response Process*, 12 Jun 2008

AFI 63-602, *Defense Production Act Title I – Defense Priorities and Allocations System*, 18 Dec 2003

AFI 63-603, *Defense Production Act Title III Program*, 17 Dec 2003

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AFI 63-1201, *Life Cycle Systems Engineering*, 23 Jul 2007

AFI 63-1401, *Aircraft Information Program,* 6 Feb 2001, *[to be replaced by AFI 63-133, Aircraft Information Program]*

AFI 65-501, *Economic Analysis*,

AFI 65-509, *Business Case Analysis,* 19 Sep 2008

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AFMAN 23-110, *USAF Supply Manual*, 1 Apr 2009

AFMAN 33-363, *Management of Records*, 1 Mar 2008

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NORAD Instruction (NI) 10-3, *Mission Integrity, Change Control Management, and Test Control for the ITW/AA System*, 3 Apr 2006

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Risk Management Guide for DOD Acquisition, Aug 2006

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Acronyms

ACAT—Acquisition Category

ACE—Acquisition Center of Excellence

ADM—Acquisition Decision Memorandum

AETC—Air Education and Training Command

AF— (United States) Air Force

AF/A2—Deputy Chief of Staff, Intelligence

AF/A3/5—Deputy Chief of Staff, Operations, Plans & Requirements

AF/A4/7—Deputy Chief of Staff, Logistics, Installations, and Mission Support

AF/A6—Chief of Warfighting Integration and Chief Information Officer (CIO) (also identified as SAF/XC)AF/A8—Deputy Chief of Staff for Plans and Programs

AF/A10—Assistant Chief of Staff, Strategic Deterrence & Nuclear Integration

AFAE—Air Force Acquisition Executive

AFFARS—Air Force Federal Acquisition Regulation Supplement

AFI—Air Force Instruction

AFIT—Air Force Institute of Technology

AFKN—AFMC Knowledge Now

AFMC—Air Force Materiel Command

AFOTEC—Air Force Operational Test and Evaluation Center

AFPAM—Air Force Pamphlet

AFPD—Air Force Policy Directive

AFRC—Air Force Reserve Command

AFRL—Air Force Research Laboratory

AILCES—Acquisition Intelligence Lifecycle Cost Estimating Structure

AIP—Aircraft Information Program

AIS—Automated Information System

AIT—Automatic Identification Technology

ALC—Air Logistics Center

ALC/CC—Air Logistics Center Commander

AoA—Analysis of Alternatives

APAT—Acquisition Process Architecture Team

APB—Acquisition Program Baseline

APML—Acquisition Program Master List

AS—Acquisition Sustainment

ASAF (A)—Assistant Secretary of the Air Force (Acquisition)

ASD (NII)—Assistant Secretary of Defense, Networks and Information Integration

ASP—Acquisition Strategy Panel

AT&L—Acquisition, Technology, and Logistics

BCA—Business Case Analysis

BCL—Business Capability Lifecycle

BOM—Bill of Materials

C4I—Command, Control, Communication, Computer and Intelligence

CAAS—Contracted Advisory and Assistance Services

CAIV—Cost As an Independent Variable

CAM—Centralized Asset Management

CARD—Cost Analysis Requirements Description

CBA—Cost Benefit Analysis

CBM+—Conditioned Based Maintenance Plus

CC—Combat Coded or Commander

CCA—Clinger Cohen Act

CDD—Capability Development Document

CDR—Critical Design Review

CDRL—Contract Data Requirements List

CLIN—Contract Line Item Number

CLS—Contractor Logistics Support

CM—Configuration Management

CMRS—Collaboration and Measurements Requirements Summary

CONOPs—Concept of Operations

CoP—Community of Practice

CPD—Capability Production Document

CPER—Capabilities Program Execution Review

CPFF—Cost Plus Fixed Fee

CPI—Critical Program Information

CPIN—Computer Program Identification Number

CSAF—Chief of Staff of the Air Force

CSB—Configuration Steering Board

CTA—Capability Threat Assessments

CTE—Critical Technology Elements

DAC—Defense Acquisition Challenge Program

DAE—Defense Acquisition Executive

DAF—Department of the Air Force

DAG—Defense Acquisition Guidebook

DAO—Designated Acquisition Official

DAU—Defense Acquisition University

DBSMC—Defense Business System Management Committee

DCMA—Defense Contract Management Agency

DEPSECDEF—Deputy Secretary of Defense

DIACAP—DOD Information Assurance Certification and Accreditation Process

DISN—Defense Information Switching Network

DLA—Defense Logistics Agency

DMAWG—Depot Maintenance Activation Working Group

DMI—Depot Maintenance Interservice

DMSMS—Diminishing Manufacturing Sources and Material Shortages

DODD—Department of Defense Directive

DODI—Department of Defense Instruction

DOTMLPF—Doctrine, Organization, Training, Material, Leadership, and Education

DPEO—Deputy Program Executive Officer

DRMO—Defense Reutilization Marketing Office

DRU—Direct Reporting Unit

DSOR—Depot Source of Repair

D&SWS—Develop and Sustain Warfighting Systems

DT&E—Developmental Test and Evaluation

EA—Economic Analysis

EADR—Evolutionary Acquisition Decision Reviews

EMA—Expectations Management Agreement

EMD—Engineering and Manufacturing Development

EOA—Early Operational Assessment

ERAM—Enterprise Risk Assessment Methodology

ESOH—Environmental, Safety and Occupational Health

FAR—Federal Acquisition Regulation

FCA—Functional Configuration Audit

FDE—Force Development Evaluation

FFP—Firm Fixed Price

FFRDC—Federally Funded Research and Development Centers

FIP—Federal Information Processing

FOA—Field Operating Agency

FOC—Full Operational Capability

FRP—Full Rate Production

FTO—Full Trade-off

FYDP—Future Years' Defense Program

GFE—Government Furnished Equipment

GFP—Government Furnished Property

GOSG—General Officer Steering Group

HAF—Headquarters Air Force (The Secretariats and Air Staff)

HQ AETC—Headquarters, Air Education and Training Command

HQ AFMC—Headquarters, Air Force Materiel Command

HQ AFMC/A4—Directorate of Logistics and Sustainment, Air Force Material Command

HSI—Human Systems Integration

IA—Information Assurance

IBR—Integrated Baseline Review

ICD—Initial Capabilities Document

ICE—Independent Cost Estimate

ICS—Interim Contract Support

IIPT—Integrating IPT

ILCM—Integrated Life Cycle Management

IMDS—Integrated Maintenance Data System

IMP—Integrated Master Plan

IMPACTS—Integrated Manpower Personnel and Comprehensive Training and Safety

IMS—Integrated Master Schedule

IOC—Initial Operational Capability

IOT&E—Initial Operational Test and Evaluation

IPS—Integrated Program Summary

IPT—Integrated Product Team

IRAD—Independent Research and Development

IRB—Integrated Review Board

IRSP—In-place Readiness Spares package

ISA—International Standardization Agreement

ISO—International Standards Organization

ISP—Information Support Plan

ISR—In-Service Review

IT—Information Technology

ITV—In Transit Visibility

IUID—Item Unique Identification

IV&V—Independent Verification and Validation

JCALS—Joint Computer-Aided Acquisition and Logistic Support

JCIDS—Joint Capability Integration and Development System

JCTD—Joint Capability Technology Demonstration

KDP—Key Decision Point

KPP—Key Performance Parameters

KSA—Key System Attributes

LCCE—Life Cycle Cost Estimate

LCMP—Life Cycle Management Plan

LCSP—Life Cycle Support Plan

LHA—Logistics Health Assessments

LPTA—Lowest Price Technically Acceptable

LRCM—Life Cycle Risk Management

LRIP—Low Rate Initial Production

M&S—Modeling and Simulation

MAIS—Major Automated Information System

MAJCOM—Major Command

MAR—Monthly Acquisition Report

MER—Manpower Estimate Reports

MDA—Milestone Decision Authority

MDAP—Major Defense Acquisition Program

MDD—Materiel Development Decision or Maintenance Data Documentation

MEV—Military Equipment Valuation

MFP—Materiel Fielding Plan

MFOQA—Military Flight Operations Quality Assurance

MLV—Memory Loader Verifiers

MOA—Memorandum of Agreement

MOSA—Modular Open Systems Approach

MOU—Memorandum of Understanding

MRA—Manufacturing Readiness Assessments

MRR—Materiel Release Review

MS—Milestone

MSA—Materiel Solution Analysis

MSG—3—Maintenance Steering Group III

MUA—Military Utility Assessments

NEPA—National Environmental Policy Act

NEW—Net Explosive Weight

NSS—National Security Space

NSS—National Security System

OA—Operational Assessment

OIPT—Overarching IPT

ORM—Operational Risk Management

O&S—Operations and Support

OSD—Office Secretary of Defense

OSS&E—Operational Safety, Suitability, and Effectiveness

OTA—Operational Test Agency

OT&E—Operational Test and Evaluation

OTRR—Operational Test Readiness Review

PAD—Program Action Directive

PBA—Performance Based Agreement

PBL—Performance Based Logistics

PCA—Physical Configuration Audit

PDR—Preliminary Design Review

PE—Program Element

PESHE—Programmatic Environment, Safety, and Occupational Health

PEG—Program Executive Group

PEM—Program Element Monitor

PEO—Program Executive Officer

PGM—Product Group Manager

PHS&T—Packaging, Handling, Storage, and Transportation

PIR—Post Implementation Review

PM—Program Manager

PMA—Program Management Agreement

PMD—Program Management Directive

POC—Point of Contact

POM—Program Objective Memorandum

PoPS—Probability of Program Success

PPLANS—Programming Plans

PPP—Program Protection Plan

PPT—Performance Price Trade-off

PRR—Production Readiness Review

PSMP—Product Support Management Plan

R&M—Reliability and Maintainability

RAMS—Reliability, Availability Maintainability and Supportability

RCA—Regulatory Contracting Approval

RCATS—Regulatory Contracting Approvals Tracking System

RCM—Reliability Centered Maintenance

RDS—Records Disposition Schedule

REMIS—Reliability and Maintainability Information System

RFID—Radio Frequency Identification

RFP—Request for Proposal

RI3—Risk Identification: Integration & -Ilities

RMP—Risk Management Plan

RRAC—Rapid Response Assessment Committee

RRP—Rapid Response Process

RRPC—Rapid Response Process Council

RSP—Readiness Spares Package

RTO—Responsible Test Organization

RTOC—Reduction in Total Ownership Cost

SAE—Service Acquisition Executive

SAF/ACE—Air Force Acquisition Center of Excellence

SAF/AQ—Assistant Secretary of the Air Force (Acquisition)

SAF/AQC—Deputy Assistant Secretary (Contracting)

SAF/AQX—Deputy Assistant Secretary for Acquisition Integration

SAF/FMB—Deputy Assistant Secretary (Budget)

SAF/GCQ—Deputy General Counsel (Acquisition)

SAF/US—Under Secretary of the Air Force

SATAF—Site Activation Task Force

SCIF—Secret Compartmentalized Information Facility

SE—Systems Engineering

SEAM—Systems Engineering Assessment Model

SE/ATS—Support Equipment / Automatic Test System

SEP—Systems Engineering Plan

SETA—Systems Engineering and Technical Assistance

SFR—System Functional Review

SIM—Serialized Item Management

SMART—System Metric and Reporting Tool

SMCA—Single Manager for Conventional Ammunition

SORAP—Source of Repair Assignment Process

SPM—System Program Manager

SPML—Sustainment Program Master List

SRR—System Requirements Review

SSM—System Sustainment Manager

SSP—Source Selection Plan

SSS—Staff Summary Sheet

STA—System Threat Analysis

STAR—System Threat Assessment Report

STP—Sustainment Transfer Plan

SVR—System Verification Review

T&E—Test and Evaluation

TCTO—Time Compliance Technical Order

TD—Technology Development

TDS—Technology Development Strategy

TEI—Text Element Identifiers

TEMP—Test and Evaluation Master Plan

TES—Test and Evaluation Strategy

TO—Technical Order

TPM—Technical Performance Measures

TPT—Training Planning Team

TRA—Technical Readiness Assessment

TRL—Technology Readiness Level

TRR—Test Readiness Review

TSP—Transfer Support Plan

TSRA—Training System Requirements Analysis

TTP—Technology Transition Plan

UID—Unique Identification

UII—Unique Item Identifiers

USC—United States Code

USD(AT&L)—Under Secretary of Defense, Acquisition, Technology, and Logistics

WIPT—Working-level IPT

WRAP—Warfighters Rapid Acquisition Process

WSIP—Weapon System Integrity Programs

Terms

Note:—reference AFI-63101 for terms related to this publication.

Websites—***Note****: Some websites and Communities of Practice (CoP) require Air Force Portal sign-on or membership to gain access.*

United States Code (main search page): **http://www.gpoaccess.gov/uscode/index.html**

DOD Issuances: **http://www.dtic.mil/whs/directives/index.html**

Defense Acquisition Guidebook (formerly DOD 5000.2-R): **https://akss.dau.mil/dag/**

Federal Acquisition Regulation:
http://farsite.hill.af.mil/reghtml/regs/far2afmcfars/fardfars/far/Far1toc.htm#TopOfPage

AFFARS **http://farsite.hill.af.mil/vfaffar1.htm**

Acquisition Community Connection: **https://acc.dau.mil**

Air Force e-Publishing website: **http://www.e-publishing.af.mil/**

Air Force Privacy Office: **af.foiapa@pentagon.af.mil**

Air Force Records Disposition Schedule (RDS): **https://www.my.af.mil/gcss-af61a/afrims/afrims/rims.cfm**

AF EVM IPT CoP website: **https://afkm.wpafb.af.mil/ASPs/CoP/ClosedCoP.asp?Filter=OO-FM-IP-EV**

AF IT Investment Review Guide:
https://wwwd.my.af.mil/afknprod/ASPs/docman/DOCMain.asp?Tab=0&FolderID=OO-SC-AF-27-36-3-6-1-1&Filter=OO-SC-AF-27

AFPEO/CM website: **https://www.my.af.mil/gcss-af/afp40/USAF/ep/globalTab.do?command=function&pageId=681742&channelPageId=-1968762&parentCategoryId=-1968762**

Anti-Tamper OPR: mailto: **USAFATServiceLead@pentagon.af.mil**

Business Transformation Agency website: **http://www.defenselink.mil/bta/products/bea.html**

CIPS CoP: **https://afkm.wpafb.af.mil/ASPs/CoP/OpenCoP.asp?Filter=AN-SC-00-11**

CSWS Community of Practice website:
https://wwwd.my.af.mil/afknprod/ASPs/CoP/OpenCoP.asp?Filter=OO-LG-AF-22

Defense Acquisition Guidebook: **https://akss.dau.mil/dag/DoD5000.asp?view=document**

Defense Logistics Information Service Commercial and Government Entity (CAGE) Code:
http://www.dlis.dla.mil/cage_welcome.asp

DFARS: **http://www.acq.osd.mil/dpap/dars/dfarspgi/current/index.html**

DISR website: **https://disronline.disa.mil**

DOD Anti-Tamper website: **http://at.dod.mil/**

DOD ATS Executive Directorate: **http://www.acq.osd.mil/ats**

DOD Contracts Incentives Guide:
https://learn.dau.mil/CourseWare/801321_2/module_1/docs/incentivesguide-0201.htm

DOD Corrosion and Prevention Guidebook (Home - CorrDefense):
http://www.corrdefense.org/

DOD Diminishing Manufacturing Sources and Material Shortages (DMSMS) Guidebook:
http://www.dmsms.org/

DOD Financial Management Regulation (FMR):
http://www.defenselink.mil/comptroller/fmr/index.html

DOD Guide to Uniquely Identifying Items:
http://www.acq.osd.mil/dpap/UID/attachments/DoDUIDGuide.pdf

DOD Information Technology Standards Registry (DISR) on-line website:
https://disronline.disa.mil/a/DISR/DISR_dev_ipv6.jsp

DOD Item Unique Identification of Government Property Guidebook:
http://www.acq.osd.mil/dpap/pdi/uid/guides.html

DSOR Community of Practice:
https://afkm.wpafb.af.mil/ASPs/CoP/EntryCoP.asp?Filter=OO-LG-MC-10

Earned Value Management Implementation Guide: **http://www.acq.osd.mil/pm/**

HQ AFMC Automatic Identification Technology COP:
https://afkm.wpafb.af.mil/ASPs/CoP/OpenCoP.asp?Filter=OO-LG-AI-T2

Information Support Plan CoP: **https://wwwd.my.af.mil/afknprod/ASPs/CoP/OpenCoP.asp?Filter=OO-AQ-AF-18**

IT Lean Guidebook: **https://wwwd.my.af.mil/afknprod/ASPs/CoP/OpenCoP.asp?Filter=OO-SC-AF-47**

JCTD webpage: **http://www.acq.osd.mil/jctd/index.htm**

LCMP Community of Practice (CoP): **https://wwwd.my.af.mil/afknprod/ASPs/CoP/OpenCoP.asp?Filter=OO-AQ-AF-51**

Military Engineering Data Asset Locator System (MEDALS): **https://www.dlis.dla.mil/medals/**

Office of Management and Budget Circular A-11, Part 7: **http://www.whitehouse.gov/omb/circulars/a11/current_year/part7.pdf**

OSD's Military Equipment Website: **http://www.acq.osd.mil/me/**

OSD Item Unique Identification Website: **http://www.acq.osd.mil/dpap/pdi/uid/index.html**

Risk Identification: Integration & -Ilities (RI3) Guidebook available from the Air Force Center for Systems Engineering: **http://www.afit.edu/cse/page.cfm?page=164&sub=95**

Risk Management Guide for DOD Acquisition: **http://www.acq.osd.mil/sse/docs/2006RMGuide4Aug06finalversion.pdf**

SAF/FM New Start Homepage (on AF Portal): **https://www.my.af.mil/gcss-af/afp40/USAF/ep/browse.do?programId=407864&pageId=1073762823&channelPageId=-351617&parentCategoryId=-351659**

SAF/AQX-ACE website: **https://www.my.af.mil/gcss-af/USAF/ep/browse.do?programId=1442689&channelPageId=-2055590&parentCategoryId=-2076886**

SAF/AQX-ACE ASP secretariat website: **https://www.my.af.mil/gcss-af/USAF/ep/browse.do?categoryId=-2076904&parentCategoryId=-2055594&channelPageId=-2055590**

Wide Area Workflow (WAWF) process: **https://wawf.eb.mil/**

Attachment 2

PROGRAM MANAGEMENT AGREEMENT/EXPECTATION MANAGEMENT AGREEMENT TEMPLATE

(Notional format for programs developing or modifying their PMA/EMA, actual format at the discretion of the Program Office)

Program Management Agreement/Expectation Management Agreement

dd Month 20YY

for the

ABC Program

The PM will ensure the PMA/EMA contains, and the annual review addresses, at a minimum the following:

1. Program Approach.

1.1. Identify achievable and measurable annual plan for next year to include acquisition, fielding, and sustainment. The plan must be fully resourced.

1.2. Summarize other programmatic expectations identified and agreed to by the PM and user as significant but not found in the capability document.

2. Cost, schedule, and performance.

2.1. Identify issues related to program execution against requirements identified in the current increment of the JCIDS document. (e.g., KPP/KSA shortfalls, agreement by PM-lead command to allow reduction in KPP/KSA)

2.2. Identify cost expectation issues (e.g., program cost projections exceeding existing cost estimates),

2.3. Identify changes to funding expectations for successful program execution (e.g., disconnects between programmed budget and funding needs, lead command agreements to assist with obtaining additional funds).

2.4. Identify program schedule issues (e.g., projected program schedule exceeding current plan, agreement of user to accept system by a certain date).

2.5. Summarize other issues related to program execution compared against the APB and any existing PMA/EMA (e.g., PM-user agreement that no longer valid).

3. Program Documents (identify significant changes to program documentation).

4. Identify Test and Evaluation (T&E) Program issues (e.g., agreement to deviate from plan to accelerate program, identified additional unplanned tests).

5. Document trade-off decisions made for areas identified with medium to high levels of risk (e.g., accepting critical safety risk).

6. Document any mutually agreed-to changes in expectations relating to the support strategy and sustainment activities.

7. Identify areas of disagreement between the PM and the Lead Command or other stakeholders (if none so state).

8. Program Manager's Tenure: See attached tenure agreement." Attach DD Form 2888, for PMs designated as Critical Acquisition Positions (CAPs), or DD Form 2889 for PMs designated by the SAE as Key Leadership Position CAPs.

9. Executability statement ("After completing discussions on the status of the ABC program we agree that the program is fully executable based on the program funding profile found in XYZ, the requirements documented in XYZ, and any changes, additional agreements, or exceptions identified in this PMA/EMA.")

SIGNED

JOHN SMITH
Lt Colonel, USAF
Program Manager, ABC Program

SIGNED

JOHN L. DOE
General, USAF
PEO

SIGNED

JANE L. SMITH
General, USAF
MAJCOM (User)

SIGNED

JANE DOE
Assistant Secretary of the Air Force
(Acquisition)
Attachment:

PM Tenure Agreement (DD Form 2888 or 2889)

Attachment 3

ITEM UNIQUE IDENTIFICATION IMPLEMENTATION PLAN TEMPLATE

*(**Note**: Remove italics prior to submission)*

Program System Name:	Program Element:
Program Manager	PEO/DAO
Date of Plan	ACAT
Point of Contact	

1. System Description: *Briefly describe the military system, its mission, and its position in the acquisition life cycle. Explain the system and its point in the Program Development Life Cycle and current acquisition timeline. Explain the integrated components required to obtain the objective. Identify the overarching program if this system roles up to support a broader mission capability. This description should provide background on what the focus of IUID implementation will be for when the reader reviews other sections such as priorities, schedules and resource requirements.*

2. References:

2.1. *Include applicable DOD Instructions, Directive and publications on Unique Identification (UID), Item Unique Identification (IUID), and Serialized Item Management (SIM).*

2.2 *Include OSD IUID policy and guidance (see OSD IUID website at www.acq.osd.mil/dpap/pdi/uid/index.html).*

2.3. *Include applicable Air Force policy and publications on IUID, SIM and Serial Number Tracking (SNT) (see the Air Force SNT/UID Community of Practice on Knowledge Now).*

2.4. *Identify other IUID implementation plans for weapon systems, maintenance depots, contractor logistic support, Defence Logistics Agency, or other organizations that support this plan.*

3. Exemptions, Exceptions and Approval Source: *Exemptions are intended to preserve DOD resources by not uniquely identifying items that will be out of inventory by 31 December 2010. Exemptions remove the UII creation, registration and physical marking requirements from all instances of an item. Exceptions are intended to alleviate the requirement on contractors to uniquely identify critical items needed to support contingency operations and should not be requested for resource or workload limitations.* ***This does not remove the UII creation, registration, and physical marking requirement from being performed by the Air Force.***

3.1. *For exemptions, identify in Appendix A by NSN and part number, or manufacturer Contractor and Government Entity (CAGE) code and part number for non-stocklisted items, all items that are being submitted for exemptions as part of the plan. To qualify, the item must no longer be procured, stocked in inventory, and/or used in weapon systems owned by the Air Force, Army, Navy, or Marine Corps by 31 December 2010. Identify the attrition strategy being*

used as defined within AFMC Instruction 23-121, when complete attrition of the item population from inventory and use is expected, and state current asset balances for the NSN to include items in inventory and operational use.

3.2. *For exceptions, see DFARS 211.274-2 for the process to request exceptions. In Appendix B, identify by National Stock Number (NSN) and part number, or manufacturer CAGE and part number for non-stocklisted items, all items where DFARS 211.274-2 has been invoked to support contingency operations. Identify the approval authority for each exception processed. Briefly state the strategy to ensure these items are uniquely identified and physically marked with a UII.*

3.3. *If not anticipating an exemption or exception, so state*

4. Describe the overall IUID Implementation Strategy:

4.1. Parts-Marking – *Describe the overall strategy to physically uniquely identify items that will be marked (including embedded and deployable items); describe how items will be marked (label, direct mark, etc.) and who will mark them.*

4.1.1. Current and future contracts – *Identify all contracts used by the program resulting in the delivery of items to the Air Force through new procurement and/or service contracts such as, but not limited to, contract repair, contract logistics support, performance based logistics, etc. (can be a separate appendix if necessary). State if DFARS Clause 252.211-7003 has been incorporated into the contract(s). If the DFARS clause has not been incorporated, state an anticipated date when the DFARS clause will be incorporated. If applicable, provide rationale for each contract where modification to include the DFARS Clause 252.211-7003 is considered infeasible.*

4.1.2. Legacy and depot-manufactured items – *Identify all items by NSN and part number, or manufacturer CAGE and part number for non-stocklisted items, used by the program that meet the IUID criteria (can be a separate appendix if necessary). Identify the Source(s) of Supply according to the Federal Logistics Information System (FLIS), the Source(s) of Repair, and indicate if engineering analysis to determine how/where to physically mark the item has been completed. Also indicate if technical orders for the item have been updated.*

4.1.3. Serialization and UII registration – *Describe implementation plans for serialization and registration of UIIs for the following methods of executing parts-marking:*

4.1.3.1. New procurements and contract repair – *accomplished by the manufacturer or repair contractor.*

4.1.3.2. Organic repair and depot-manufactured items –*current standardization requires 18S serialization and registration of items through Triad software being implemented on organic parts-marking capabilities. Reference HQ AFMC Automatic Identification Technology COP for more guidance.*

4.1.4. Technical document strategy – *To minimize the non-recurring costs for parts marking, describe processes and efforts to mitigate or minimize non-recurring engineering costs applicable to engineering drawings and technical order updates. Also describe efforts to standardize engineering and technical order document updates.*

4.1.5. Property in the Possession of Contractors (PIPC) – *State when DFARS clause 252.211-7007 will be incorporated into contracts where PIPC exists. Identify the strategy to uniquely identify and register PIPC in the IUID Registry and Air Force Equipment Management System*

(AFEMS) as applicable. If virtual UIIs will be used, state the conditions under which they will be used, and the planned trigger events for applying physical UIIs to the PIPC. Reference the DOD Guidelines for the Virtual UII to assist with identifying applicable conditions and with planning trigger events.

4.1.6. Maintenance Strategy – *Identify the maintenance strategy or strategies used to support a weapon system. Identify how IUID requirements are being incorporated into:*

Performance Based Agreements/Performance Based Logistics;

Organic Repair;

Contract Repair/Contract Depot Maintenance;

Contracted Logistics Support;

Contractor Owned and Maintained Base Supply (COMBS).

5. IUID related actions to improve or enhance business processes. – *Describe any plans to utilize the data from IUID to improve current or planned business processes such as warranty tracking, failure tracking, etc. Include activities to make use of automatic identification and data capture in property management and maintenance.*

6. List Metrics

6.1. Measures of success – *Identify metrics that the program will use to track the status of IUID implementation. Examples include:*

Number of total items requiring IUID

Percent of total items assigned a virtual UII

Engineering analysis complete

Technical Orders updated

Percent of items assigned a UII reported to the IUID Registry

Percent of items assigned a virtual UII that had been physically marked with an IUID-compliant Data Matrix

Percent of total items marked with an IUID-compliant Data Matrix

Percent of new contracts including the IUID clause

Percent of existing contracts modified for IUID requirements

6.2. Identify the exit criteria for completion of IUID implementation for the program*: Examples include:*

100% legacy items marked and in registry

100% marking equipment for new items in place and tested

Infrastructure in place at depot; personnel 100% trained

7. Provide schedule by completing Elements and Dates below: *When a date cannot be provided, an explanation of when a date can be provided.*

	Elements and Dates	**Qtr/FY Start Date**	**Qtr/FY Complete Date**
1.0	Preparation Activities		
1.1	Priorities for application of IUID and associated data transfer established (specify in paragraph 7)		
1.2	Listing of items requiring IUID completed for each application priority (1.1 application categories)		
1.3	IUID marking strategy studies and ROM estimates completed		
1.4	Cross Program/Service AIS integration strategy studies and ROM estimates completed		
1.5	Budget for IUID implementation submitted		
2.0	Implementation/Execution Activities		
2.1	Legacy contracts (issued prior to 1 Jan 2004) modified		
2.2(.1-.N)	Key Program trigger events (physical marking of items) identified		
2.3	Progress Reviews		
3.0	Capability Achieved (physical marking & ability to transfer Pedigree data to Registry)		
			Full Capability Achievement Date
3.1	All New solicitations include IUID Requirement		N/A
3.2	Legacy Contracts Modified		
3.3	Assignment of Virtual UIIs		
3.4	Property in possession of contractors (in-plant GFP – virtual)		
3.5	Items in operational use		
3.6	Items in inventory (ICPs, Supply Depots etc)		
3.7	Depot maintenance & manufactured items achieved		
3.8	IUID capable AIS		

8. Established priorities for application of IUID and associated data transfer: insert priority number 1 (high), 2 (med), 3 (low).

_____New solicitations:
_____Ongoing Contracts:
_____GFP in possession of contractors:
_____Operational Fleet:
_____Assets in inventory:
_____Assets in Depot Maintenance:

9. Key trigger events for physical marking of UIIs on legacy and PIPC items: *Examples include during production, following testing, prior to shipping, by government upon delivery, etc.*

_____
_____

10. Program IUID Related Budget Information by Fiscal Year (Table 2). *Provide plan on how unfunded requirements will be addressed (POM, reduce performance requirements, etc.). If new acquisition and will be included in contract, so state. If funding requests have been submitted via POM/APOM process, state the outcome of these budgetary submissions. If budget submissions were rejected or not funded, provide the rationale.*

Program Resources	FY	FY	FY	FY	FY
Required for Infrastructure					
Required for Manpower					
Required for Training					
Total					
Funded					
Delta					

SUBMITTED:

Program Manager Name	
Title	
Signature	Date

APPROVED:

PEO/DAO Name		Other Delegated Programs
Title		
Signature	Date	
Component/Service Acquisition Executive Name		ACAT 1C Programs
Title		
Signature	Date	
OUSD (AT&L) Name		ACAT 1D Programs
Signature	Date	

Notes:

1) Coordinate plans with AFMC/LSO (SNT/IUID project office) and AF/A4ID prior to final staffing.

2) All logistics commander approved plans are to be forwarded electronically in .PDF format to AFMC/LSO (SNT/IUID project office).

3) All PEO/DAO approved plans are to be forwarded electronically in .PDF format to SAF/AQX (via workflow). ACAT 1 program plans will be forwarded by SAF/AQX to SAE and OUSD (AT&L) for approval (as required). Copies of other service-approved plans are for the record.

Attachment 4

LIFE CYCLE MANAGEMENT PLAN TEMPLATE

Note: Details on LCMP content are provided in Chapter 2 and the DAG**.**

(Cover Page)

(Approval Signature Page)

(Coordination Signature Page (Optional))

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LCMP Attachments

Life Cycle Management Chain of Authority

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Attachment 5

EXAMPLE PROGRAM MANAGER CHARTERS

Figure A5.1. Example PM Charter.

PROGRAM MANAGER

By authority of the Air Force Acquisition Executive and by the designation of the undersigned as the Program Executive Officer for insert portfolio, I hereby charter

Rank, First, Mi, Last

as the Program Manager for

Insert Program Name

in accordance with the Defense Acquisition System.

As Program Manager (PM) for insert program name, you will perform as the Air Force designated individual with responsibility for and authority to accomplish program objectives for development, production, and sustainment to meet the user's operational needs. You shall be accountable for credible cost, schedule, and performance reporting to the Milestone Decision Authority (MDA). In no case, shall there be more than two levels of review between the Program Manager and the MDA.

You will, as the responsible management official, manage your assigned program consistent with the statutes, policies and principles articulated in Department of Defense and Air Force Acquisition life cycle management directives, instructions and transformation initiatives. You are responsible, along with your strategic partners, Air Force Materiel Command, Defense Contract Management Agency, Defense Logistics Agency, and Air Force Test and Evaluation Center, for the Life Cycle Management of your program and you will actively manage, to the best of your abilities, within approved resources, program cost, performance and schedule. In addition, you will also provide assessments of program status, risk, and contractor performance.

You are hereby delegated the full-line authority of the Program Executive Officer for insert portfolio for the centralized management of your assigned program. You will be provided with timely decisions by Senior Leadership and are expected to be candid and forthcoming without fear of personal consequences. This charter remains in effect until terminated or superseded.

_____

First Middle Last
Rank, USAF
Program Executive Officer, insert portfolio

Figure A5.2. Example PEO Charter

PROGRAM EXECUTIVE OFFICER

In accordance with statute, Department of Defense,
Air Force life cycle directives and instructions
and
My Appointment, by the Secretary of the Air Force,
as the
Air Force Acquisition Executive

I hereby designate

Rank, First, Mi, Last

As the Program Executive Officer for

Portfolio Title

As Program Executive Officer, your primary responsibility shall be dedicated to executive management and successful execution of a portfolio of assigned programs. You will ensure insert PEO mission statement.

You will, as the responsible management official, provide overall direction and guidance for development, acquisition, testing, product improvement, and fielding while ensuring total ownership cost reduction. You will ensure interoperability through joint standards, open architectures and systems-of-systems concepts. Your decisions will consider and quantify impacts across the life cycle of your programs. You will establish processes that facilitate communication, cooperation, information exchange, and collective decision-making between and among organizations.

You will maintain the U.S. Air Force capability-based and life cycle objectives in managing your programs and will report directly to me on your assigned programs. In no case will there be more than two levels of review between the Program Manager and the Milestone Decision Authority (MDA). You will keep the leadership fully informed of status and report any matters that could affect the U.S. Air Force's ultimate commitment to the program.

You will place primary management emphasis and oversight on balancing cost, schedule, performance, and supportability while capitalizing on acquisition transformation initiatives. You will ensure compliance with applicable national policies and life cycle policies and directives.

You will lead and directly control assigned program managers. You will ensure that acquisition workforce career development and competency standards are actively pursued. You will also serve as an advocate to ensure the necessary force structure is in place to support acquisition career development programs.

You are hereby appointed authority as the Program Executive Officer for the management of assigned programs. Unless rescinded, this designation will remain in effect until your reassignment.

_____

Air Force Acquisition Executive

Attachment 6

SUSTAINMENT METRICS CALCULATIONS

A6.1. Introduction. This attachment provides standard calculations for selected sustainment metrics for a variety of system types including aircraft, missiles, munitions, trainers, subsystems, software, space systems, automated information systems, and ground communications-electronics. The metrics are not meant to be all inclusive and can be tailored or revised based on the needs of the program. Whenever possible, however, the calculation provided here should be used to ensure standardization. This section is based on information previously included in AFI 10-602, *Determining Mission Capability and Supportability Requirements*, which has been rescinded with directive guidance provided in AFI 63-101.

A6.2. Mandatory Sustainment Metrics. CJCSM 3170.01, *Operation of the Joint Capabilities Integration and Development System*, identifies a mandatory Key Performance Parameter (KPP) (Materiel Availability) and two mandatory supporting KSAs (Materiel Reliability and Ownership Cost) that will be developed for all JROC Interest programs involving materiel solutions. For non-JROC Interest programs, the sponsor will determine the applicability of this KPP.

A6.2.1. **Materiel Availability**. Materiel Availability is a measure of the percentage of the total inventory of a system operationally capable (ready for tasking) of performing an assigned mission at a given time, based on materiel condition. This can be expressed mathematically as (number of operational end items/total population). Materiel Availability also indicates the percentage of time that a system is operationally capable of performing an assigned mission and can be expressed as (uptime/(uptime + downtime)). Determining the optimum value for Materiel Availability requires a comprehensive analysis of the system and its planned use, including the planned operating environment, operating tempo, reliability alternatives, maintenance approaches, and supply chain solutions. Materiel Availability is primarily determined by system downtime, both planned and unplanned, requiring the early examination and determination of critical factors such as the total number of end items to be fielded and the major categories and drivers of system downtime. The Materiel Availability KPP addresses the total population of end items planned for operational use, including those temporarily in a non-operational status once placed into service (such as for depot-level maintenance). The total life-cycle timeframe, from placement into operational service through the planned end of service life, must be included. Materiel Availability, as defined in CJCSM 3170.01, measures the percentage of the entire population that is operational:

$$\text{Materiel Availability} = \frac{\text{Number of End Items Operational}\S}{\text{Total Population of End Items}}$$

§ Operational means in a materiel condition such that the end item is capable of performing an identified mission.

A6.2.2. **Materiel Reliability.** Materiel Reliability is a measure of the probability that the system will perform without failure over a specific interval. Reliability must be sufficient to support the war fighting capability needed. Materiel Reliability is generally expressed in terms of a mean time between failures (MTBF), and once operational can be measured by dividing actual operating hours by the number of failures experienced during a specific interval. Reliability may

initially be expressed as a desired failure-free interval that can be converted to MTBF for use as a KSA (e.g., 95 percent probability of completing a 12-hour mission free from mission-degrading failure; 90 percent probability of completing 5 sorties without failure). Specific criteria for defining operating hours and failure criteria must be provided together with the KSA. Single-shot systems and systems for which other units of measure are appropriate must provide supporting analysis and rationale.

Material Reliability = Mean Time Between Failure

$$\text{Material Reliability} = \frac{\text{Total Operating Hours}}{\text{Total Number of Failures}}$$

A6.2.3. **Ownership Cost.** Ownership Cost provides balance to the sustainment solution by ensuring that the operations and support (O&S) costs associated with materiel readiness are considered in making decisions. For consistency and to capitalize on existing efforts in this area, the Cost Analysis Improvement Group O&S Cost Estimating Structure will be used in support of this KSA. Only the following cost elements are required: 2.0 Unit Operations (2.1.1 (only) Energy (fuel, petroleum, oil, lubricants, electricity)); 3.0 Maintenance (All); 4.0 Sustaining Support (All except 4.1, System Specific Training); 5.0 Continuing System Improvements (All). Fuel costs will be based on the fully burdened cost of fuel. Costs are to be included regardless of funding source. The KSA value should cover the planned lifecycle timeframe, consistent with the timeframe used in the Materiel Availability KPP. Sources of reference data, cost models, parametric cost estimating relationships, and other estimating techniques or tools must be identified in supporting analysis. Programs must plan for maintaining the traceability of costs incurred to estimates and must plan for testing and evaluation. The planned approach to monitoring, collecting, and validating operating and support cost data to supporting the KSA must be provided. Ownership Cost is the sum of the O&S costs using the CAIG O&S Cost Estimating Structure Selected cost element associated with Material Readiness as follows:

A6.2.3.1. 2.0 Unit Operations (2.1.1 (only) Energy (Fuel, POL, Electricity)) plus

A6.2.3.2. 3.0 Maintenance (ALL) plus

A6.2.3.3. 4.0 Sustainment Support (All except 4.1, System Specific Training) plus

A6.2.3.4. 5.0 Continuing System Improvement (ALL).

A6.2.3.5 Although not required for the KSA (since it relates to material readiness), the PM may also want to consider other CAIG elements, such as personnel, as cost considerations when making decisions based on TOC.

Section A6A – Aircraft Systems

A6A.1. Overview. The following section defines selected mission capability and supportability measures for aircraft systems.

A6A.2. Availability and Sustainability Measures

A6A.2.1. **Mean Time Between Critical Failure (MTBCF).** Use MTBCF to measure the average time between failures of mission-essential system functions. Critical Failures occur when mission essential systems become inoperable or operate outside their specified range of

performance. MTBCF includes critical failures of all hardware and software that occur during mission and non-mission time. Express MTBCF as:

$$\text{MTBCF} = \frac{\text{Number of operating hours}}{\text{Number of critical failures}}$$

A6A.2.2. **Mission Capable (MC) Rate.** Use the MC rate to measure how long, in percent of possessed time, a system can perform at least one of its assigned missions. Base the MC rate on the sum of the fully mission capable (FMC) and partially mission capable (PMC) rates, expressed as: The overall MC requirement addresses different design missions, the expected percentages of equipment use, and the desired MC rate for each mission. FMC status indicates that an aircraft can perform all of its assigned missions. PMC status indicates that an aircraft can perform at least one, but not all of its assigned missions. A multi-mission aircraft may be PMC even if it is unable to accomplish its primary mission. Consider system operating time when determining MC rate requirements in that the more a system operates in a given period of time, the more downtime for corrective and preventative maintenance is required. The MC rate is affected by, but does not accurately account for preventative maintenance efforts.

$$\text{MC Rate} = \frac{\text{FMC hours + PMC Hours}}{\text{Possessed Hours}} \times 100$$

A6A.2.3. **Utilization Rate (UR).** Express UR as flight hours or sorties per aircraft per relevant period of time, such as a day or month, as follows:

$$\text{Daily wartime sortie UR} = \frac{\text{Average number of sorties per day}}{\text{Average number of aircraft authorized}}$$

A6A.2.4. **Essential System Repair Time per Flight Hour (ESRT/FH).** Use ESRT/FH to compare clock time needed to repair mission-essential equipment and operating time measured in flying hours. ESRT/FH addresses both corrective maintenance (CM) and preventive maintenance (PM) performed on mission-essential equipment. This measurement pertains only to full system list (FSL) equipment. Express this calculation as:

$$\text{ESRT/FH} = \frac{\text{Elapsed PM + Elapsed CM}}{\text{Flight Hours}}$$

A6A.3. Mission Reliability Measures:

A6A.3.1. **Weapon System Reliability (WSR).** Use WSR to measure the probability that a system will perform satisfactorily for a given mission time when used under specified operational conditions. Compute WSR by dividing the number of missions completed successfully by the number of missions attempted. Define “mission” in terms of start-finish criteria, factor in the effect of crew changes, and relate the success of the mission to the satisfactory performance of mission-essential items during the mission. Base WSR on a design reference mission profile to allow for translation of WSR into contractual requirements. Determine functional profiles for storage, build-up, preflight, takeoff, ingress, over-target, weapons delivery, egress, landing, and shutdown. Determine environmental profiles such as temperature, air density, humidity, vibration, shock, and corrosive agents. Determine mission

critical systems for these profiles and establish a single peacetime and wartime WSR value for each given mission. **EXCEPTION:** If the peacetime mission length differs significantly from the wartime mission length, establish two values for WSR. When more than one type of mission is specified, state the percentage of time and the desired WSR for each mission. Express this calculation for WSR as:

$$\text{WSR} = \frac{\text{Successful Missions}}{\text{Total Missions}}$$

A6A.3.2. **Break Rate (BR).** Use break rate to measure the percentage of sorties from which an aircraft returns with an inoperable mission-essential system that was previously operable. Break rate includes "Code 3" conditions, such as ground and air aborts. Calculate BR as:

$$\text{Break rate (\%)} = \frac{\text{Number of aircraft Code 3 breaks during measurement period} \times 100}{\text{Number of sorties flown during period}}$$

A6A.3.3. **Combat Rate (CR).** Use the combat rate to measure the average number of consecutively scheduled missions flown before an aircraft experiences critical failures. Combat Rate reflects the philosophy that scheduling and completing a mission are more important than changing it mid-flight because of equipment failures. Express CR as:

$$\text{Combat Rate} = \frac{\text{Number of successful sorties flown}}{\text{(Number of scheduled missions – Number of ground aborts – Number of air aborts)}}$$

A6A.3.4. **Mean Time Between Critical Failure (MTBCF).** Use MTBCF to measure the average time between failures of mission-essential system functions. Critical failures occur when mission essential systems become inoperable or operate outside their specified range of performance. MTBCF includes critical failures of all hardware and software that occur during mission and non-mission time. Express MTBCF as:

$$\text{MTBCF} = \frac{\text{Number of operating hours}}{\text{Number of critical failures}}$$

A6A.4. Logistics Reliability Measures:

A6A.4.1. **Mean Time Between Maintenance (MTBM).** Use MTBM to measure the average flying hours between scheduled and unscheduled maintenance actions. Select an appropriate MTBM parameter based on MAJCOM requirements. Current and planned information systems permit tracking of standard MTBM parameters, such as inherent malfunctions, induced malfunctions, no-defect events, total corrective events, preventive maintenance, mean time between removal, and mean time between demand. Specify peacetime and wartime values for MTBM if equipment used during these periods differ. Express MTBM for a selected type of maintenance event as:

$$\text{MTBM} = \frac{\text{Flight Hours}}{}$$

Number of Maintenance Actions (of selected type)

A6A.5. Maintainability Measures:

A6A.5.1. **Mean Downtime (MDT).** Use MDT to measure the average elapsed time between losing MC status and restoring the system to at least PMC status. Downtime includes on-equipment (and in some instances off-equipment) repair labor time; non-labor time, such as cure time for composites; maintenance and supply response time; administrative delays; and time for other activities that result in NMC status, such as training and preventive maintenance. MDT requirements must take into account field conditions, such as technical order availability and adequacy; support equipment capability and availability, supply levels, and manning (including experience level and structure of duty shifts). MDT mainly addresses unscheduled maintenance, but it can also include scheduled maintenance, such as scheduled inspections. Develop a single peacetime and wartime value for MDT. **EXCEPTION*:*** When you expect maintenance or support conditions in wartime to differ significantly from those in peacetime, describe those differences and describe separate values for MDT. Express MDT as:

$$\text{MDT} = \frac{\text{NMC Time}}{\text{Number of Downing Events}}$$

A6A.5.2. **Fix Rate (FR).** Use FR to calculate the percentage of aircraft that return as Code 3 and must be returned to MC status within a specified amount of time (for example, 70 percent in 4 hours or 85 percent in 8 hours). The FR time requirement includes direct maintenance time and downtime associated with administrative and logistics delays. Express FR as:

$$\text{Fix Rate} = \frac{\text{Number of aircraft fixed within “X” hours}}{\text{Total number of broken aircraft}}$$

A6A.5.3. **Mean Repair Time (MRT).** Use MRT to measure the average on-equipment and/or off-equipment corrective maintenance time in an operational environment. State MRT requirements for on-equipment at the system level and for off-equipment at the line replaceable unit (LRU) level. MRT starts when the technician arrives at the aircraft site for on-equipment maintenance or receives the LRU at the off-equipment repair location. MRT includes all necessary corrective maintenance actions such as preparation; LRU access; troubleshooting; removing and replacing parts; repairing, adjusting; checking functions; and curing. Do not include maintenance or supply delays in MRT calculations. Express MRT as:

$$\text{MRT (overall)} = \frac{\text{Total corrective maintenance time}}{\text{Total number of maintenance events}}$$

$$\text{MRT (on-equipment)} = \frac{\text{Total on-equipment corrective maintenance time}}{\text{Total number of on-equipment maintenance events}}$$

$$\text{MRT (off-equipment)} \quad \frac{\text{Total off-equipment corrective maintenance time}}{\text{Total number of off-equipment maintenance events}}$$

Note: MRT uses crew size in the calculation of manhours and MTTR does not use crew size in the calculation of hours.

A6A.6. Manpower Measures:

A6A.6.1. **Maintenance Man-Hours per Life Unit (MMH/LU).** MAJCOMs base their maintenance man-hours per flying hour (MMH/FH) on their specific needs. Specify MMH/FH peacetime and wartime values, since equipment usage, maintenance needs, and support concepts may differ during these periods. Current and planned maintenance information systems permit tracking of the following:

A6A.6.1.1. MMH/FH, support general work unit code (WUC 01-09)

A6A.6.1.2. MMH/FH, corrective (WUC 11-99) for inherent malfunctions, induced malfunctions, no-defect actions, or total events

A6A.6.1.3. MMH/FH, product improvement (time compliance technical order)

A6A.6.1.4. MMH/FH, preventive maintenance (time change items)

A6A.6.1.5. MMH/FH, all categories totaled

A6A.6.2. **Maintenance Personnel per Operational Unit (MP/U).** Use MP/U to measure the total number of direct maintenance personnel needed for each specified operational unit to perform direct on-equipment and off-equipment maintenance. Develop manpower projections to support specified operating and maintenance concepts, taking into consideration basing, deployment, and operational scenarios. MP/U calculations include direct on-equipment and off-equipment maintenance personnel and specialties related to direct on-equipment and off-equipment support, such as structural repair (including sheet metal and composites) and nondestructive inspection. When analyzing manpower requirements, MAJCOMs should consider and use projected MC, PMC, MRT, and MTBM rates, coupled with aircraft battle damage repair analyses to determine overall manpower needs. MP/U calculations exclude maintenance staff agencies, logistics command section operations and support personnel, powered support equipment personnel, and munitions supply and missile maintenance personnel.

A6A.7. Deployability Considerations. MAJCOMs must consider building in deployability when describing top-level mission capability and supportability requirements for aircraft systems. Address capability of the system to be deployed to the theater of operations within the constraints of the user-defined requirements.

A6A.7.1. **Deployability Footprint.** Deployability footprint is defined by the manpower, materiel, equipment, and infrastructure required to support the design reference mission profile under peacetime, wartime, or other contingency operations. As a basis of measure use, for example, equivalent pallet positions.

A6A.7.2. **Logistics Follow-on Support.** Logistics follow-on support specifies the manpower, materiel, and equipment required to sustain the design reference mission profile under peacetime, wartime, or other contingency operations. Logistics support requirements must account for manpower, materiel, and equipment directly or indirectly associated with the weapon system under consideration. Logistics requirements are included in Mission Need Statements (MNS), Concept of Operations (CONOPS), Operational Requirements Documents (ORDs), and Product Support Management Plans

Section A6B - Strategic or Tactical Ground-Launched Missiles

A6B.1. Overview. Use the following mission capability and supportability measures for strategic or tactical ground-launched missiles.

A6B.2. Availability and Sustainability Measures:

A6B.2.1. **Mission Capable (MC) Rate.** Use MC rate to calculate the percentage of possessed time that a weapon system can perform its assigned mission. MC rate is defined as the combination of the fully mission capable (FMC) and partially mission capable (PMC) rates. It can be obtained using the status reporting system defined in AFI 21-103, *Equipment Inventory, Status and Utilization Reporting*. MC rate is equal to the number of alert hours divided by the number of possessed hours (PH). Express MC as:

$$\text{MC rate} = \text{Alert hours/PH} = \text{FMC rate} + \text{PMC rate}$$

Note: Since these systems offer little or no repeat mission capability, calculate a single MC requirement for both peacetime and wartime.

A6B.3**. Mission Reliability Measures:**

A6B.3.1. **Weapon System Reliability (WSR).** Use WSR to measure the probability that a given system in MC status will successfully complete its designated mission or function. Operational commands base WSR on their specific requirements. For intercontinental ballistic missile (ICBM) systems, WSR gives the probability that an ICBM, launched in reaction to a valid execution order, will deliver a warhead that will detonate as planned in the target area. Express WSR as:

$$\text{WSR} = \text{SAR} \times \text{LR} \times \text{COMP} \times \text{IFR} \times \text{RSR}$$

A6B.3.1.1. Strategic alert reliability (SAR) represents the probability that a deployed missile can react to a valid launch order. It is based on the ratio of FMC missile hours to total missile hours available.

A6B.3.1.2. Communications reliability (COMR) represents the probability that a combat crew in the deployed force will receive a transmitted launch order. It does not consider enemy action.

A6B.3.1.3. Launch reliability (LR) represents the probability that an MC missile will launch as planned and that the ancillary equipment functions properly. It does not take into account enemy action.

A6B.3.1.4. Inflight reliability (IFR) represents the probability that a launched missile will properly signal a re-entry vehicle and place it in the correct ballistic trajectory so that it impacts in the target area.

A6B.3.1.5. Re-entry subsystem reliability (RSR) represents the probability that a properly positioned re-entry subsystem will successfully deploy a re-entry vehicle so that it detonates a warhead in the target area

A6B.3.2. **Mean Time Between Maintenance (MTBM).** Use MTBM to measure the average life units between maintenance events, as the using command defines them. Use PH as the time base for missiles. PHs may include time in which the system is not operating or is in a storage or dormant condition. Current and planned maintenance information systems permit tracking of several MTBM parameters including inherent malfunctions, induced malfunctions, no-defect events, total corrective events, preventive maintenance, and mean time between removal (MTBR). Specify the same peacetime and wartime value for MTBM and MTBR, if possible, using a standard term. Use an appropriate MTBM or MTBR parameter based on specific MAJCOM needs.

A6B.4. Maintainability Measures:

A6B.4.1. **Mean Downtime (MDT).** Use MDT to measure the average elapsed time between losing MC status and restoring the system to at least PMC status. Downtime continues until maintenance personnel return the system to at least PMC status. Downtime includes maintenance and supply response, administrative delays, actual on-equipment repair, and activities that result in not mission capable (NMC) status, such as training and preventive maintenance. When computing MDT, also consider TO availability and adequacy, support equipment capability and availability, supply levels, manning, experience levels, and shift structure. Specify a single peacetime and wartime MDT value. ***Note***: Do not confuse MDT, which describes an operational environment, with mean time to repair (MTTR) which is used as a contractual term.

A6B.4.2. **Mean Repair Time (MRT).** Use MRT to measure the average on-equipment and/or off-equipment corrective maintenance time in an operational environment. State MRT needs for on-equipment at the system level and off-equipment at the line replaceable unit (LRU) level. MRT starts when the technician arrives at the missile site for on-equipment maintenance or receives the LRU at the off-equipment repair location. The time includes all maintenance done to correct the malfunction, including preparing for tests, troubleshooting, removing and replacing parts, repairing, adjusting, and conducting functional checks. ***EXCEPTION:*** Do not include maintenance or supply delays in MRT calculations. ***Note***: Do not confuse MRT, an operational term, with MTTR, which is used as a contractual term. Express MRT as:

$$\text{MRT (overall)} = \frac{\text{Total corrective maintenance time}}{\text{Total number of maintenance events}}$$

$$\text{MRT (on-equipment)} = \frac{\text{Total on-equipment corrective maintenance time}}{\text{Total number of on-equipment maintenance events}}$$

$$\text{MRT (off-equipment)} \quad \frac{\text{Total off-equipment corrective maintenance time}}{\text{Total number of off-equipment maintenance events}}$$

A6B.5. Manpower Measures:

A6B.5.1. **Maintenance Man-Hours per Life Unit (MMH/LU).** Use MMH/LU to measure the average man-hours per life unit needed to maintain a system. Base missile time on PHs, in most cases. Current and planned maintenance information systems permit tracking of the following:

A6B.5.1.1. MMH/PH, support, general (WUC 01-09)

A6B.5.1.2. MMH/PH, corrective (WUC 11-99) for inherent malfunctions, induced malfunctions, no-defect actions, or total events

A6B.5.1.3. MMH/PH, product improvement (TCTO)

A6B.5.1.4. MMH/PH, preventive maintenance (time change items)

A6B.5.1.5. MMH/PH, total of the above categories establish a single required peacetime and wartime value. Use an appropriate MMH/LU based on specific MAJCOM needs. PH is commonly used, but other life units may be more appropriate for different systems.

A6B.5.2. **Maintenance Personnel per Operational Unit (MP/U).** Use MP/U to calculate the number of maintenance personnel needed to support an operational unit under specified operating and maintenance concepts. Develop manpower projections to support operating and maintenance concepts.

A6B.5.2.1. ***EXCEPTION:*** Do not include depot-level personnel and other manpower excluded by AFI 38-201, *Determining Manpower Requirements*, when calculating MP/U. Specify peacetime and wartime levels of manning for Air Reserve Component (ARC) maintenance organizations. Peacetime MP/U reflects the number of full-time personnel needed to support daily peacetime flying operations. Wartime MP/U includes full-time and traditional reservists and is normally identical to the MB/U established by the gaining MAJCOM for a similar unit.

Section A6C - Air Launched Missiles and Munitions

A6C.1. Air Launched Missiles and Munitions. Use the following mission capability and supportability measures for air-launched missiles and munitions.

A6C.2. Availability and Sustainability Measures:

A6C.2.1 **Missile/Munitions Availability**. Missile/munitions availability is the percentage of total owned inventory capable of performing its intended mission. Calculate availability as the quotient of serviceable inventory divided by total owned inventory quantity. Unserviceable missiles/munitions include both those in the inventory in an unserviceable condition code and those that may be in depot for any type of maintenance action. Specify a single (both peacetime and wartime) value of availability, as requirement.

Note: MC rate can be used as an alternate measure of missile/munitions availability. MC rate may be more appropriate for systems that are inspected periodically and have maintenance data tracked in a maintenance data reporting system.

A6C.2.2. **Mission Capable (MC) Rate.** Use MC rate to measure the percentage of possessed time that a system can perform any of its assigned missions. Establish required MC values for specific missions at the wartime utilization or sortie rate. Calculate the MC rate as the sum of FMC and PMC rates as follows:

$$\text{MC rate} = ((\text{FMC hours} + \text{PMC hours}) / \text{Possessed hours}) \times 100$$

A6C.2.3. **Storage Reliability**. Use storage reliability to calculate (at a wing level) the percentage of possessed or authorized missiles/munitions that can perform their intended functions. Storage reliability is defined as the probability assets pulled from storage are

operationally ready by passing any technical order required pre-use visual and/or electronic inspections.

A6C.3. Mission and Logistics Reliability Measures:

A6C.3.1. **Weapon System Reliability (WSR).** Use WSR to measure the probability that an available or MC weapon system will successfully complete its designed mission or function. When defining "mission," take into account storage, alert, captive-carry, launch, and flight of the item. Calculate the value of WSR by dividing the number of successfully completed missions by the number of attempted missions. Success of the mission should relate performance to design capability. For most munitions, there may only be one mission, and thus a need for only one WSR value. Peacetime missions for missiles may significantly differ from wartime missions. In such cases, develop a WSR value for each mission. If platform environments differ dramatically, either provide a WSR value for the harshest environment or develop WSR values for each environment or pylon.

A6C.3.2. **Mean Time Between Maintenance (MTBM).** Use MTBM to calculate the average life units between maintenance events, as defined by the operational command. Apply MTBM to those items that operate or are active during times other than actual free flight. If reported, use captive-carry and ground operating hours as the time base for applicable items; otherwise, use PHs. PHs include time in which the system is not operating or is in a storage or dormant condition. Current and planned maintenance information systems permit tracking of several standard MTBM parameters, including inherent malfunctions, induced malfunctions, no-defect events, total corrective events, preventive maintenance, and mean time between removal (MTBR).

A6C.4. Maintainability Measures:

A6C.4.1. **Mean Downtime (MDT).** Use MDT to measure the average elapsed time between losing MC status and restoring the system to at least PMC status. Downtime includes maintenance and supply response, administrative delays, actual on-equipment repair activities that result in not mission capable (NMC) status, such as training and preventive maintenance. When calculating MDT, also consider TO availability and adequacy, support equipment capability and availability, supply levels, manning, experience levels, and shift structure. ***Note***: MDT describes an operational environment; it is not the same as the contractual term, mean time to repair (MTTR).

A6C.4.2. **Mean Repair Time (MRT).** Use MRT to measure the average on-equipment and/or off-equipment corrective maintenance time in an operational environment. State MRT requirements for on-equipment at the system level and off-equipment at the LRU level. MRT starts when the technician arrives at the system or equipment for on-equipment maintenance or receives the LRU at the off-equipment repair location. The time includes all actions taken to correct the malfunction, such as preparing tests, troubleshooting, removing and replacing parts, repairing, adjusting, and conducting functional checks. Express MRT as:

$$\text{MRT (overall)} = \frac{\text{Total corrective maintenance time}}{\text{Total number of maintenance events}}$$

$$\text{MRT (on-equipment)} = \text{Total on-equipment corrective maintenance time}$$

Total number of on-equipment maintenance events

$$\text{MRT (off-equipment)} \quad \frac{\text{Total off-equipment corrective maintenance time}}{\text{Total number of off-equipment maintenance events}}$$

EXCEPTION: Do not include maintenance or supply delays when calculating MRT.

Note: Do not confuse the operational term MRT with the contractual term MTTR.

A6C.5. Manpower Measures:

A6C.5.1. **Maintenance Man-Hours per Life Unit (MMH/LU).** Use MMH/LU to calculate the average man-hours per life unit needed to maintain a system. Use the MTBM life units as the time base for maintenance man-hours. Operational commands define MMH/LU according to their specific needs. Current and planned maintenance data collection and processing systems use PHs as the time base and permit tracking of several standard MMH/PH terms. Establish a single required peacetime and wartime MMH/LU value. Use an appropriate MMH/LU measure based on specific MAJCOM needs. PH is commonly used, but other life units may be more appropriate in some cases.

A6C.6. Deployability Considerations. MAJCOMs must consider building in deployability when describing top-level requirements for air-launched missiles and munitions. Address capability of the system to be deployed to the theater of operations within the constraints of the user-defined requirements.

A6C.6.1. **Deployment Footprint.** See **A6A.7.1**

A6C.6.2. **Logistics Follow-on Support.** See **A6A.7.2**

Section D - Trainers and Support Equipment

A6D.1. Trainers and Support Equipment. This category includes the equipment needed to operate and maintain a weapon system, such as trainers and training equipment, all mobile and fixed equipment, and ground segment equipment for ground-launched missile systems.

A6D.2. Availability and Sustainability Measures:

A6D.2.1. **Mission Capable (MC) Rate.** Use MC rates to calculate the percentage of possessed time that equipment can perform any of its assigned missions. Calculate the value of MC by using the sum of fully mission capable (FMC) and partially mission capable (PMC) rates. Express MC as:

$$\text{MC} = \frac{\text{FMC Hours + PMC Hours}}{\text{Possessed Hours}} \times 100$$

A6D.2.2. **Materiel Availability** (formerly referred to as Uptime Ratio (UTR)). Use MA to calculate the percentage of time that operational equipment can satisfy critical mission needs relative to the designated operational capability (DOC). Express all times in clock hours. MA is similar to MC rate except that system status depends on current use of the system as well as the

DOC. For example, a system with several DOC missions can be MC if at least one of those missions can be accomplished. However, if an immediate need exists for a mission capability that is "down" while other mission capabilities are "up", the overall system is considered to be "down." Express MA as:

$$MA = \frac{\text{Total operating hours} - \text{Total downtime hour}}{\text{Total operating hours}}$$

A6D.2.3. **Utilization Rate (UR).** Use UR to calculate the average life units used or missions attempted per system during a specified interval of calendar time. Establish required peacetime and wartime UR values. Express this term as a ratio of planned or actual operating hours to PHs for a given calendar period. For example:

$$UR = \frac{\text{Operating hours}}{PH}$$

A6D.3. Reliability Measures:

A6D.3.1. **Mean Time Between Critical Failure (MTBCF).** Use MTBCF to measure the average time between failures of mission essential system functions. For ground electronic systems, MTBCF equals the total equipment operating time in hours, divided by the number of mission essential system failures. MTBCF includes all critical hardware and software failures that occur during mission and non-mission time. Express MTBCF as:

$$MTBCF = \frac{\text{Number of operating hours}}{\text{Number of critical failures}}$$

A6D.3.2. **Mean Time Between Maintenance (MTBM).** Use MTBM to calculate the average life units between maintenance events. Use the operating hours, if reported, as the time base for applicable items; otherwise, use PHs. Apply MTBM to items in active operation for long periods of time. Current and planned maintenance information systems permit tracking of several standard MTBM measures, including inherent malfunctions, induced malfunctions, no-defect events, total corrective events, preventive maintenance, and mean time between removal (MTBR). Use the appropriate MTBM or MTBR measure based on specific MAJCOM needs.

A6D.4. Maintainability Measures:

A6D.4.1. **Mean Downtime (MDT).** Use MDT to measure the average elapsed time between losing MC status and restoring the system to at least PMC status. Downtime includes maintenance and supply response, administrative delays, actual on-equipment repair, and activities that results in not mission capable (NMC) status, such as training or preventive maintenance. When computing MDT, also consider TO availability and adequacy, support equipment capability and availability, supply levels, manning, experience levels, and shift structure.

A6D.4.2. **Mean Repair Time (MRT).** Use MRT to measure the average on-equipment and/or off-equipment corrective maintenance time in an operational environment. State MRT requirements for on-equipment at the system level and off-equipment at the assembly, subassembly, module, or circuit card assembly level. MRT starts when the technician arrives at

the system or equipment for on-equipment maintenance or receives the assembly, subassembly, module, or circuit card assembly at the off-equipment repair location. The time includes all maintenance done to correct the malfunction, including test preparation, troubleshooting, removing and replacing parts, repairing, adjusting, and conducting functional checks. Express MRT as:

$$\text{MRT (overall)} = \frac{\text{Total corrective maintenance time}}{\text{Total number of maintenance events}}$$

$$\text{MRT (on-equipment)} = \frac{\text{Total on-equipment corrective maintenance time}}{\text{Total number of on-equipment maintenance events}}$$

$$\text{MRT (off-equipment)} \quad \frac{\text{Total off-equipment corrective maintenance time}}{\text{Total number of off-equipment maintenance events}}$$

EXCEPTION*:* MRT does not include maintenance or supply delays.

Note: Do not confuse the operational term MRT with the contractual term MTTR.

A6D.5. Manpower Measures:

A6D.5.1**. Maintenance Man-Hours per Life Unit (MMH/LU).** Use MMH/LU to measure the average man-hours per life unit needed to maintain a system. Use an appropriate MMH/LU term based on specific MAJCOM needs. Use PHs as the time base for ground electronic systems. Current and planned maintenance information systems permit tracking of several standard MMH/PH terms (see **A3.5.1.**)

A6D.5.2. **Maintenance Personnel per Operational Unit (MP/U).** Develop manpower projections to support operating and maintenance concepts.

EXCEPTION*:* When calculating MP/U, do not include depot level and other personnel that are excluded from maintenance planning factors by AFI 38-201.

A6D.6. Deployability Considerations. MAJCOMs must consider building in deployability describing top-level requirements for trainers and support equipment systems. Address capability of the system to be deployed to the theater of operations within the constraints of the user-defined requirements.

A6D.6.1. **Deployment footprint.** See **A6A.7.1.**

A6D.6.2. **Logistics Follow-on Support.** See **A6A.7.2.**

Section A6E - Subsystems, Line Replaceable Units, And Modules

A6E.1. Overview. Use the following mission capability and supportability measures for subsystems, line replaceable units, and modules.

A6E.2. Availability and Sustainability Measures:

A6E.2.1**. Operational Availability (A_o).** Use A_o to measure the percentage of time that a subsystem, line replaceable unit (LRU), or line replaceable module (LRM) can satisfactorily perform in an operational environment. A_o for subsystems, LRUs, and LRMS is similar to the MC rate for aircraft, communications, electronics, and some missile systems. Express A_o as:

$$A_o = \frac{MTBDE}{MTBDE + MDT}$$

Mean time between downing events (MTBDE) is the average time between events that bring the system down, including critical or non-critical failures, scheduled maintenance, and training. Mean downtime (MDT) is the average elapsed time to restore the subsystem, LRU, or LRM to full operational status, following a downing event. ***Note***: A_0 does not express whether an item can operate over a specific period of time. This characteristic is covered in WSR.

A6E.2.2. **Other Parameters.** For subsystems, LRUs, and LRMs, apply the definitions and discussion of the appropriate reliability and maintainability measures as described for the parent system in this instruction.

A6E.3. Deployability. MAJCOMs must consider building in deployability when describing top-level requirements for aircraft subsystems, line replaceable units, and modules. Address capability of the system to be deployed to the theater of operations within the constraints of the user-defined requirements.

A6E.3.1. **Deployability Footprint.** See **A6A.7.1.**

A6E.3.2. **Logistics Follow-on Support.** See **A6A.7.2.**

Section A6F - Software Design

A6F.1. Overview. MAJCOMs must consider software design and supportability measures when describing top-level logistics requirements for weapon system and support system software.

A6F.2. Software Maturity. Use software maturity to measure the progress of software development toward satisfying operational requirements. This progress is based on the number and severity of problems that require software changes. Software maturity measures the rate at which software problems are discovered and resolved. Software problems are those which require software changes to correct errors in system design and improve or modify a system's function. Use Table A6F.1. to assign a severity level and associated weighting factor to each software problem. As you make software changes to correct the problems, sum the weighted problems that are originated and closed. Keep statistics and plot the results over time to provide indicators of overall software maturity. Indicators include trends of the accumulated weighted software unique failures versus time, the difference between the weighted software failures discovered versus the weighted software failures resolved, the average severity of the software failures versus time and the time necessary to implement software changes. Document software severity levels and weights in the AF Deficiency Reporting System IAW T.O. 00-35D-54 until the new software Deficiency Reporting process is developed.

Table A6F.1. Software Severity Levels and Weights.

Priority/Severity Level	Impact	Description	Severity Weight (Points)
1	System Abort	A software or firmware problem that results in a system abort or loss.	30
2	System Degraded – No Work Around	A software or firmware problem that severely degrades the system and no alternative work around exists.	15
3	System Degraded – Work Around	A software or firmware problem that severely degrades the system and an alternative work around exists (e.g., system rerouting through operator actions).	5
4	Software Problem	An indicated software or firmware problem that doesn't severely degrade the system or any essential system function.	2
5	Minor Fault	All other minor deficiencies or nonfunctional faults.	1

A6F.2.1. **Software Severity Levels and Weights.** Although the total number of weighted software problems discovered and resolved may be very large, the resulting difference between problems discovered and resolved must be kept to a minimum. This is especially true for mission-critical, safety-critical, and high-reliability systems. None of the indicators in and of themselves are direct measures of software maturity, but must be considered together. Begin measuring software maturity after the software is placed under formal configuration control. Continuous measurement helps to prevent software from entering the field with known problems that could abort or degrade the mission (see IEEE 12207). Assign severity points to program restarts or reboots—whether or not they are successful—based on the impact an unsuccessful restart or reboot had, or would have had, on the mission.

A6F.2.2. **Growth Capacity.** Use growth capacity to calculate a computer system's capacity to handle added functions and system users. Growth capacity ensures that sufficient processing power and memory exists to make room for required changes after a system is delivered to the field. For example, growth capacity may be stated as a requirement for the delivered computer system to have a minimum of "X" percent of reserve computer memory in contiguous memory locations, a minimum of "Y" percent reserve timing for each computational cycle, an overall average of "Z" percent for all cycles, and the capability to expand by "A" percent.

A6F.2.3. **Block Release Cycle.** Use block release cycle to calculate the anticipated frequency and number of software changes needed periodically. After a system is fielded, appropriate personnel normally develop and release new versions of software based on a block release cycle. Define this cycle using the interval of time during which personnel make software block changes

and the number of changes in the block. For example, express block release cycle requirements as "block releases every 'X' months with an average of 'Y' changes per release."

A6F.2.4. **Reliability.** Use reliability to calculate the probability that software will remain failure-free for a specified time under specified conditions. In a system context, software reliability is the probability that software will not cause failure of the system for a specified time under specified conditions. Sources of failure include system inputs and uses as well as existing software faults. Count software defects that cause the system to fail in the system-reliability allocation. In cases where this is not practical, specify software reliability separately. State the reliability requirement as:

$$\text{MTBCF} = \frac{\text{Cumulative central processing unit time}}{\text{Cumulative failures}}$$

A6F.2.5. **Machine Independence.** Use machine independence to calculate software dependence on the machine's architecture. Machine-dependent software is tied to the inherent architecture of the computer processor. Machine-dependent software is generally more expensive to support over the software's life cycle than software that can run on several machines. A change in the processor forces a change in the machine-dependent code. Assess costs and risks associated with modifying machine-dependent code. The percentage of machine-dependent code varies with different systems under development. Communication systems, such as network control systems or operating systems, may contain significant amounts of machine-dependent code because their functions are closely tied to the hardware. State requirements for machine-dependent software as:

Amount of machine independent code = "X" percent of total code

A6F.2.5.1 Calculate machine independence for each module. If a module contains machine-dependent code, then the entire module qualifies as machine dependent. This encourages developers to use machine-dependent code in only a few small modules and helps to ensure that developers create software that personnel can easily and inexpensively modify. **EXCEPTION:** Do not assess machine dependence for assembly languages or special-purpose processors that use their own languages. Both of these cases require 100-percent machine- dependent software.

A6F.2.6. **Software Maintainability.** Software maintainability is the ease in which changes to software source code and its associated documentation can be made. Software maintainability can be indirectly measured by evaluating the characteristics which impact future modifications. These characteristics include documentation (organization, description, and traceability); source code (modularity, description, consistency, simplicity, expandability testability, and traceability); and implementation (modularity, convention, simplicity, testability, and design). Use automated software evaluation tools to support the measurement of software maintainability.

A6F.2.7. **Software Support.** MAJCOMs and SMs determine organizational and depot level support.

Section A6G - Space, Space Surveillance, And Missile Warning Systems

A6G.1. Overview. Use the following definitions, mission capability and supportability measures for space, space surveillance, and missile warning systems.

A6G.2. Availability and Sustainability Measures. The majority of space systems are forward deployed and perform at the same level of operational intensity in peacetime as in time of conflict. These systems are normally employed in networks (systems of systems) and can usually be described as being composed of space, launch, control, and user segments. Operational availability, operational dependability, and mission reliability parameters should be specified for each segment as well as the overall system. The methodologies used to combine the segment-level parameters into system-level parameters should be stated. The segments are defined as:

A6G.2.1. Space segment - the satellites, payloads, and platforms that are placed into orbit to provide operational forces with intelligence, communications, navigation mapping/geodesy, meteorological, or surveillance information.

A6G.2.2. Launch segment - the two basic types of launch vehicles (expendable and reusable) and their associated launch processing facilities and range support.

A6G.2.3. Control segment - the resources which perform the functions required to monitor and control the orbiting space vehicles of the space segment.

A6G.2.4. User segment - the transmit and/or receive equipment to communicate with the payload or control segment, processing equipment, and communications equipment linking the processed payload information to the end user.

A6G.3. Top Level. MAJCOMs must consider the following measures in describing top-level mission capability and supportability requirements for space, space surveillance, and missile warning systems.

A6G.3.1. **Operational Availability (A_o)** -- A_o is the probability that a system can be used for any specified purpose when desired. A_o includes both the inherent RAM and deployability parameters and logistics support effectiveness of the system that relates to the total time the system might be desired for use. A_o is defined as follows:

$$Ao = \frac{\text{Active Hours} - \text{Total Downtime}}{\text{Active Hours}} \times 100$$

A6G.3.2. **Operational Dependability (D_o)** -- Operational dependability of the system measures the probability that the system is operating satisfactorily at any point in time when measured under specified conditions where downtime for scheduled maintenance and training is excluded. It is expressed as follows:

$$D_o = \frac{\text{Active Hours} - \text{NMCU Hours}}{\text{Active Hours}}$$

A6G.3.3. **Mission Reliability.** Mission reliability (denoted R_m) is the probability that the system is operable and capable of performing its required function for a stated mission duration or at a specified time into the mission. R_m is based on the effects of system reliability during mission time only. Rm does not take into account system maintainability. There are many missions and systems that do not allow restoration of specific functions during the mission. For systems whose times to failure exhibit an exponential probability density function (i.e., systems which exhibit constant failure rates), R_m is defined as:

$$R_m = e^{-(t/MTBCF)}$$

where "t" is the average mission time. If the system is used under significantly different mission lengths, the specific mission time should be used to determine the Rm for each mission.

A.6.G.3.3.1**. Mean Time Between Critical Failure (MTBCF)**. MTBCF is a measure of the average operating time between failures of mission-essential functions. MTBF is defined as follows:

$$\text{MTBCF} = \frac{\text{Operating hours}}{\text{Number of critical failures}} \quad \text{or} \quad \frac{\text{Active hours} - \text{NMC hours}}{\text{Number NMCMU events}}$$

A.6.G.3.3.2. **Mean Time To Restore Function (MTTRF)**. MTTRF is the average elapsed time, as a result of a critical failure, required to restore a system to full operating status. MTTRF includes administrative and logistics delay times associated with restoring function following a critical failure. MTTRF is defined as follows:

$$\text{MTTRF} = \frac{\text{NMCMU Hours}}{\text{NMCMU Events}}$$

A6G.3.4. **Logistics Reliability.** Logistics reliability is a measure of the system's frequency of maintenance under defined operational and support concepts, using specific logistics resources. A measure of logistics reliability is mean time between maintenance (MTBM). It is the average time between all maintenance events, that is, both scheduled and unscheduled events. MTBM is most often defined as follows:

$$\text{MTBM} = \frac{\text{Number of operating hours}}{\text{Number of maintenance events}}$$

This is equivalent to:

$$\text{MTBM} = \frac{(\text{MTBUM})(\text{MTBSM})}{\text{MTBUM} + \text{MTBSM}}$$

where MTBUM is the mean time between unscheduled maintenance and MTBSM is the mean time between scheduled maintenance and are most often defined as:

$$\text{MTBUM} = \frac{\text{Number of operating hours}}{\text{Number of unscheduled maintenance events}}$$

and

$$\text{MTBSM} = \frac{\text{Number of operating hours}}{\text{Number of scheduled maintenance events}}$$

A6G.3.5. **Mean Repair Time (MRT).** MRT is the average on-equipment and/or off-equipment corrective maintenance times. It includes all maintenance actions needed to correct a malfunction, including preparing for test, troubleshooting, removing and replacing parts, repairing, adjusting, reassembly, alignment and adjustment, and checkout. MRT does not include administrative and logistics delays. MRT is most often defined as:

$$\text{MRT} = \frac{\text{Repair Manhours (ON)} + \text{Repair Manhours (OFF)}}{\text{Repair Actions (ON)} + \text{Repair Actions (OFF)}}$$

Note: MRT differs from the contractual term mean time to repair (MTTR) in that it measures maintenance activities that occur in the operational environment.

A6G.3.6. **Launch Segment Specific Parameters:**

A6G.3.6.1. **Maintenance Man Years Per Launch (MMY/L).** MMY/L is the total manpower-maintenance resource requirements associated per launch. MMY/L includes non-mission time (for example, launch pad preparation and build-up) and active mission time (for example, prelaunch, launch, and postlaunch operations).

A6G.3.6.2**. Pad Turnaround Time.** This is the total time associated with the preparation and configuration of the pad after the launch of a similarly configured launch vehicle.

A6G.3.7. **Contact Success Rate (CSR).** Contact Success Rate is the ratio of successful contacts with respect to total attempts. The Contact Success Rate metric is calculated only at the Network level since a complete end-to-end configuration is required for a successful satellite contact. The Network Utilization metric is also calculated only at the Network level as a measure of overall AFSCN antenna utilization.

Note: See Guidelines for Reliability, Maintainability, and Availability (RMA) Metrics for the Air Force Satellite Control Network (AFSCN) Common User Element (CUE) Volume I, Revision 3.

$$\text{CSR} = \frac{\text{(Number of successful contacts)}}{\text{(Total number of contacts)}}$$

A6G.3.8. **Space MICAP.** A space MICAP is an item, that when it fails, causes a System Reporting Designator (SRD) down. This is not restricted to Single Point of Failure items, but could be the loss of a final triple redundant part in a SRD.

A6G.3.9. **Single Point of Failure (SPF).** A space SPF item is a single item type within a SRD, that when it fails, brings a SRD down.

A6G.3.10. **Training Systems/Devices.** Space systems trainers are required to be supported/managed by the SM on an equal priority to the space system they serve. This includes configuration management and sustainment.

A6G.3.11. **Modification and Change Management.** Hardware and software modifications and changes must be accomplished IAW AFI 63-1101, NORAD Instruction (NI) 10-3 and STRATCOM Instruction (SI) 508-10.

Section A6H - Automated Information Systems (AIS)

A6H.1. Overview. Use the following mission capability and sustainability measures for automated information systems (AIS).

A6H.2. Availability and Sustainability Measures:

A6H.2.1. **Operational Dependability (D_o).** Use operational dependability to determine the percentage of the time the AIS is able to satisfy the need for critical management information. Mean time between critical failure (MTBCF) is based on user-provided guidance on information criticality and timing for D_o to be meaningful. Mean time to restore function (MTTRF) is the average time required after a critical failure has occurred.

$$D_o = \frac{(MTBCF)}{(MTBCF + MTTRF)} \times 100$$

A6H.2.2. **Operational Availability (A_o).** Use operational availability to determine the percentage of time the system can be used to perform any assigned task, critical and non-critical. A_o is calculated using mean time between downing events (MTBDE) and mean downtime (MDT).

$$A_o = \frac{(MTBDE)}{(MTBDE + MDT)} \times 100$$

A6H.3. Reliability Measures:

A6H.3.1. **Mean Time Between Critical Failure (MTBCF).** Use MTBCF to measure the average time between failures of mission-essential system functions. For AIS, MTBCF equals the total equipment operating time in hours, divided by the number of mission-essential system failures. MTBCF includes all critical hardware and software failures that deny the user critical management information based on user-determined critical and timing requirements. Express MTBCF as:

$$MTBCF = \frac{\text{Number of operating hours}}{\text{Number of critical failures}} = \frac{\text{Active hours – NMCMU hours}}{\text{Number of NMCMU events}}$$

A6H.3.2. **Mean Time Between Downing Events (MTBDE).** Use MTBDE to calculate the average life units between downing events, scheduled and unscheduled. Use operating hours, if reported, as the time base for applicable items; otherwise, use PHs.

A6H.4. Maintainability Measures:

A6H.4.1. **Mean Downtime (MDT).** Use MDT to measure the average elapsed time between losing full operating status and restoring the system to at least partial operating status. The downtime clock continues to run until maintenance personnel return the system to a user-acceptable level of system operability. When computing MDT also consider TO availability and adequacy, support equipment capability and availability, supply levels, manning, experience levels, and shift structure.

A6H.4.2. **Mean Time to Restore Functions (MTTRF).** This pertains to the average total elapsed time, as the result of a critical failure, required to repair and restore a system to full operating status with respect to providing critical information to the user. Users quantify and qualify the degree of MTTRF acceptable to perform assigned tasks effectively. Quantifiable objective evaluation criteria (average in hours) represent user satisfaction with the MTTRF of the AIS to support the performance of assigned tasks effectively. Express MTTRF as:

$$MTTRF = \frac{\text{Total critical restore time}}{\text{Number of critical failures}}$$

A6H.5. Manpower Measures:

A6H.5.1**. Maintenance Man-Hours per Life Unit (MMH/LU).** Use MMH/LU to measure the average man-hours per life unit needed to maintain a system.

A6H.6. Deployability Considerations. MAJCOMs must consider building in deployability when describing top-level requirements for automated information systems. Address capability

of the system to be deployed to the theater of operations within the constraints of the user-defined requirements.

A6H.6.1**. Deployment Footprint.** See **A6A.7.1**

A6H.6.2. **Logistics Follow-on Support.** See **A6A.7.2**

Section A6I - Ground Communications-Electronics (C-E)

A6I.1. Overview. Use the following mission availability, capability, and supportability measures for ground communications-electronics (C-E), to include ground space C-E. For space-based systems, ITWAA Systems and Cheyenne Mountain, NORAD Instruction (NI) 10-3 and STRATCOM Instruction (SI) 508-10 must be used in conjunction with this attachment. See AFI 21-103, *Equipment Inventory, Status and Utilization Reporting*, for glossary of references and supporting information (terms).

A6I.2. Availability and Sustainability Measures. MAJCOMs must consider availability and sustainability measures when describing top-level logistics requirements for ground communications-electronics systems. Use the equations in this attachment to develop these measures.

A6I.3. Availability. Availability is the probability of a system being fully mission capable (FMC) or partially mission capable (PMC), at a random moment in time, or equivalently, the percent of the desired operating time a system is FMC or PMC. It is expressed using one of the following formulas.

A6I .3.1. **Operational Availability (A_o).** Operational availability measures the probability that, at any point in time, the system is either operating or can operate satisfactorily when operated under specified conditions. It is the preferred method of defining availability in capability requirements documents. It can be expressed as follows:

$$A_o = \frac{\text{Active hours} - \text{Downtime}}{\text{Active hours}} = \frac{\text{Active hours} - \text{NMC hours}}{\text{Active hours}}$$

Downtime and NMC hours account for situations when the system is not mission capable for any reason.

A6I 1.3.2. **Operational Readiness (O_R).** The operational readiness of the system measures the probability that the system is operating satisfactorily at any point in time when measured under specified conditions where downtime for scheduled maintenance and training is excluded. It is expressed as follows:

$$O_R = \frac{\text{Active hours} - \text{NMCU hours}}{\text{Active Hours}}$$

Not mission capable unscheduled (NMCU) refers to those times when the system is not mission capable because of unscheduled maintenance and associated delays.

A6I.1.3.3. **Utilization Rate (UR).** Utilization rate is the average use of a system during a specified period of calendar time. Mathematically, it is the ratio of active hours to possessed hours in a given calendar period.

$$U_R = \frac{\text{Active hours}}{\text{Possessed Hours}}$$

A6I.4. Reliability. Reliability is the probability that a system and its parts will perform its mission without failure, degradation, or demand on the support system. Reliability is used to calculate the probability of mission success and to determine logistics needs.

A6I 1.4.1. **Mean Time Between Critical Failure (MTBCF).** MTBCF is a measure of the average operating time between failures of mission-essential system functions. MTBCF equals the total system operating time divided by the number of mission downing events, including all disabling hardware and software failure events. MTBCF excludes scheduled maintenance, and it can be expressed as follows:

$$\text{MTBCF} = \frac{\text{Operating hours}}{\text{Number of critical failures}} \quad \text{or} \quad \frac{\text{Active hours} - \text{NMC hours}}{\text{Number NMCMU events}}$$

A6I 1.4.2. **Mean Time Between Failures (MTBF).** MTBF is a measure of the average operating time between any failure of the system, excluding scheduled maintenance. It can be expressed as follows:

$$\text{MTBF} = \frac{\text{Operating hours}}{\text{Number of failures}} \quad \text{or} \quad \frac{\text{Active hours} - \text{NMC hours)}}{\text{Number of PMCMU + NMCMU events}}$$

A6I.4.3. **Mean Time Between Maintenance (MTBM).** MTBM measures the average operating time between maintenance events, scheduled and unscheduled. It can be expressed as follows:

$$\text{MTBCF} = \frac{\text{Operating hours}}{\text{Number of maintenance events}} \quad \text{or} \quad \frac{\text{(Active hours} - \text{NMC hours)}}{\text{Number of PMCM + NMCM events}}$$

A6I.5. Maintainability. Maintainability is the ability of equipment to be maintained, and is typically expressed as the average time to complete a maintenance action.

A6I.5.1. **Mean Downtime (MDT).** MDT is a measure of the average time between losing MC or PMC status and restoring the system to MC or PMC status. It includes, but is not limited to, active maintenance, maintenance and supply delays, administrative delays, scheduled maintenance, and all activities that result in NMC status, such as training and preventive maintenance. MDT can be expressed as follows:

$$\text{MDT} = \frac{\text{Downtime (in hours)}}{\text{Number of downing events}} = \frac{\text{NMC hours}}{\text{Number NMC events}}$$

A6I.5.2. **Mean Repair Time (MRT).** MRT is a measure of the average maintenance repair hours per maintenance repair actions from Job Data Documentation (JDD). MRT includes all maintenance done to correct the malfunction, including preparation, LRU access,

troubleshooting, removing and replacing parts, repair, adjusting, and conducting functional checks. MRT is expressed as follows:

$$\text{MRT} = \frac{\text{On-Equip + Off-Equip Repair Hours}}{\text{On-Equip + Off Equip Repair Actions}}$$

A6I.6. Manpower. Manpower is an estimate or requirement for human resources to support operation and maintenance. Lead commands must consider manpower measures when describing top-level logistics requirements.

A6I.6.1. **Maintenance Labor-Hours per Active Hour (MLH/AH).** The general formula for MLH/AH is obtained by dividing the total maintenance labor-hours by the active system hours accrued as shown by the following formula:

$$\text{MLH/AH} = \frac{\text{On-Equip + Off-Equip Maintenance Time}}{\text{Active Hours}}$$

A6I.6.2. **Maintenance Personnel per Operational Unit.** This is the estimated manpower to support maintenance and operation. It does not include depot-level personnel and others that are excluded from maintenance planning by AFI 38-201, *Determining Manpower Requirements*.

A6I.7. System Deployability. Lead commands must consider deployability in describing top-level logistics requirements for C-E systems. Deployability considers whether or not the system can be deployed to a theater of operations within the constraints of the user-defined requirements and logistics planning factors such as:

A6I.7.1. Manpower (operations and maintenance)

A6I.7.2. Maintenance concept

A6I.7.3. Interoperability

A6I.7.4. Electromagnetic compatibility

A6I.7.5. The deployed environment (climate and terrain)

A6I.7.6. Safety

A6I.7.7. Support equipment (test equipment, mobile electric power generators, tools, environmental control units)

A6I.7.8. Transportation and basing factors, such as the system's weight and cube, and the number and types of vehicles required to transport the system to the deployed destination

A6I.7.9. System/equipment set-up and tear-down times

A6I.7.10. Supply support

A6I.7.11. Software support

A6I.7.12. Network Support

A6I.7.13. Depot-level support

A6I.8. Deployment Footprint. The manpower, materiel and equipment required to support a deployment is often referred to as the deployment footprint. One common way to express the deployment footprint is the number of equivalent airlift pallet positions required to deploy a

system. The number of personnel required to operate and maintain the deployed system must also be factored into the deployment footprint.

Attachment 7

INDUSTRIAL PREPAREDNESS

A7.1. Defense Production Act, Title I: Defense Priorities and Allocation System (DPAS). The purpose of DPAS is to ensure the timely availability of industrial resources to meet national defense and emergency preparedness requirements. The Special Priorities Assistance (SPA) process is used to expedite product delivery to meet a specific date or to accelerate a delivery due to a change in military urgency. SPA can also be used to resolve delivery conflicts, place additional orders, verify information supplied by customers and vendors, request rating for items not automatically rated, and ensure compliance with DPAS. See AFI 63-602, *Defense Production Act Title I – Defense Priorities and Allocations System*, for information on DPAS and the SPA process.

A7.2. Defense Production Act, Title III, Expansion of Productive Capacity and Supply. The Defense Production Act Title III authorizes the use of various forms of financial incentives and provides the authority for the Department of Defense to develop and promote measures for the expansion of production capacity and of production and supply of materials and facilities necessary for national defense. See AFI 63-603, *Defense Production Act Title III Program*, for information on the Air Force Title III program.

A7.3. Defense Production Act Title VII, Authority to Review Certain Mergers, Acquisitions and Takeovers. The Defense Production Act Title VII establishes the Committee on Foreign Investment in the United States (CFIUS) as the mechanism to support Presidential review and, if the President finds it necessary, to restrict foreign direct investment that threatens national security. The CFIUS led and executed by the US Treasury. SAF/AQR has the responsibility for providing Air Force input to CFIUS.

A7.4. 10 USC §2521 Manufacturing Technology (ManTech) Program. The purpose of ManTech is to pursue revolutionary manufacturing technology solutions. The Air Force ManTech program pursues manufacturing technologies to enable affordable manufacturing development, production, and sustainment capabilities for emerging science and technology for applications; mature and validate emerging manufacturing technologies to support implementation in industry and Air Logistics Centers; and promote efficiency and value-added processes throughout the industrial enterprise value chain (i.e., from prime contractors to their sub-tier suppliers). The ManTech program is led and executed by AFRL/RX.

A7.5. Industrial Base Assessments. AFRL/RX performs Industrial Base Assessments to identify shortfalls in industrial capability and/or capacity needed to support current and future military operations during times of peace, war, crisis, or emergency. These assessments will be used to support the Air Force input to the DOD Annual Industrial Capabilities Assessment and to identify industrial base risks requiring corporate Air Force attention.

Attachment 8

WARFIGHTERS RAPID ACQUISITION PROCESS (WRAP) REFERENCES

Section A8A – Sample WRAP Submittal Package Template

(NAME OF PROJECT)
WRAP PROPOSAL WHITE PAPERS

1) Overview
a) What MAJCOM sponsors this project?
i) Name, phone number and email address of the sponsor POC.
ii) MAJCOM Ranking.
b) What Program and Organization supports this project?
i) Name and phone number of the Program Manager
c) Briefly explain what the project does.
d) Explain the capabilities the proposed technical solution would specifically provide to the warfighter.
e) How is the projected capability significantly better than the current capability the Air Force has now?

2) Requirements Summary (AF/A5R)
a) List any of the following approved / validated requirements documents this project falls under:
i) Joint Urgent Operational Need (JUON). Provide title, date and approval / validation authority (e.g., CENTCOM).
ii) Combat Capability Document (CCD). Provide title, date and approval / validation authority (e.g., ACC).
iii) Joint Capability Document (JCD) Provide title, date and approval / validation authority (e.g., JROC).
iv) Legacy Requirements: Operational Requirement Document. Provide title, date and approval / validation authority (e.g., AFROCC and/or JROC). ORDs should have been approved in the last 7 years.
v) Initial Capability Document (ICD) Provide title, date and approval / validation authority (e.g., AFROCC and/or JROC).
vi) Capability Development Document (CDD) Provide title, date and approval / validation authority (e.g., AFROCC and/or JROC).
vii) Capability Production Document (CPD) Provide title, date and approval / validation authority (e.g., AFROCC and/or JROC).
b) Show linkage to approved / validated KPPs, Key System Attributes (KSAs) or other Attributes contained in an ORD, CDD or CPD – please include the KPP, KSA or Attribute language from the ORD, CDD or CPD. (See Attachment A8.1.).

3) CONOPS (AF/A5X)
a) Proposed method of use:
i) Who will use this? If required, is there an executive agent identified? Identify users (e.g. end-users, their customers).

ii) Will there be integration with an existing solution?
a) What is the existing solution?
b) How will the proposed solution impact the existing systems/solutions?
c) When would this benefit the warfighter? (i.e. how soon could your solution be "in the field"?)
d) Where would this technology be useful, under what environment?
e) How will this enhance an Air Force mission area capability?
f) What capability objective is addressed? Does the initiative address a specific Joint Capability Area (JCA)?
g) Consider cross referencing current COCOM Integrated Priority Lists to determine potential positive impact.
h) Organizational impact?
i) Logistics Support Approach?
j) Training Approach.

4) Test and Evaluation (AF/TEP)
a) Provide your assessment of the technology maturity level of the proposed system and describe the basis of your assessment.
b) Describe the demonstrations and associated venues that convinced you that a significant warfighter utility was demonstrated.
c) Describe and provide references of where these demonstrations took place. Summarize the documented results and conclusions of the demonstration.
d) Describe the degree of operational realism and warfighter (operator, maintainer, and user) hands on experimentation with the proposed system that existed during the demonstrations conducted above.
e) Describe specific developmental and risk reduction measures and steps you have planned in your acquisition strategy and schedule to make the system operationally effective and suitable?

5) Acquisition Strategy (SAF/AQX)
a) What is the status of applicable acquisition documents required by DODI 5000.02 and AFI 63-101?
b) Is the Acquisition Plan approved by the Milestone Decision Authority?
c) Has the Air Staff PEM determined a new start notification requirement?
d) Contracting approach.
i) Method (e.g., modify Air Force contract F04701-02-C-0011, add to Navy contract N00019-08-D-0002).
ii) Program Office (SPO)-provided timeline for contract award upon receipt of funds. SAF required deviations/waivers.
e) What is the priority of this project within the program office workload?
f) How long will it take to execute the acquisition plan?
g) Does this technology supplement, compliment or replace an existing program?
h) Is this an interim or permanent solution?
i) Provide a program schedule with significant milestones identified, to include contract award date, testing and production and IOC.

6) Logistics Support (AF/A4L)
a) Identify the logistics support approach (all that apply)

i) How and by whom will maintenance be performed?
ii) Legal implications (50/50 rule, etc)?
iii) What will the spares posture be?
iv) Will there be tech data and who will be responsible for configuration management?
v) Is support equipment required and planned for?
vi) Have training requirements been addressed?
vii) Has software support been addressed?
viii) Have packaging, handling, storage and transportation requirements been identified and planned for?
ix) Does the government require data rights for all phases of repair of this item?
x) Considerations of Open Technology Development (i.e. "open source").
xi) How is product support integration being implemented?
b) Identify the training approach.
c) Identify quantities to be procured for the development effort and production.
d) Identify testing approach and resources necessary.

7) Information Support Plan (SAF/XCD)
a) Identify Interoperability Requirements (capture via integrated architectures, information assurance, Key Interface Profiles, and Net-Ready KPPs).
b) Identify plan to be integrated into AF Network.
c) Identify approach to Clinger-Cohen Act compliance.
d) For IT systems believed not to require ISP, provide justification that will be used for waiver submission (see ISP Community of Practice for details):
https://wwwd.my.af.mil/afknprod/ASPs/CoP/OpenCoP.asp?Filter=OO-AQ-AF-18

8) Funding (SAF/FMBI –AF/A8PL)
a) Profile
i) Development
ii) Production of hardware
iii) Test
iv) Training
v) Support and Maintenance
vi) Operations
b) How was the cost estimate developed?
c) Source of production and follow-on sustainment funding?
d) Is this program accelerating an already approved POM program, if so what program will it accelerate?
e) Will funding be obligated and expensed to meet OSD Obligation and Expenditure goals? Show expected Obligations and Expenditure plan by month.
f) Status of funding for out-years. (A8PL)
g) Work with Mission and Support Panels to identify duplications of effort, synergy with other programs/projects. (A8PL)
h) Identify cost savings/potential offsets the program may offer to the AF Corporate Structure. (A8PL)

9) Risk Assessment

a) Identify top five risks (i.e. most likely and most severe impacts) and their mitigation – consider the following:
i) Technical
ii) Funding
iii) Schedule
iv) Other (include Safety)

10) Additional Considerations/Issues/Concerns

a) Internal funding source
b) Other
Attachment 1: KPPs, KSAs, and Attributes (**Figure A9.1.**)

Points of Contact (contact the following workflow accounts for specific functional information)

AF/A5R—AFA5R.workflow@pentagon.af.mil
AF/A5X—AFA5X.workflow@pentagon.af.mil
AF/TE—AFTE.workflow@pentagon.af.mil
SAF/AQX—SAFAQXR.workflow@pentagon.af.mil
AF/A4L—AF.A4LMworkflow@pentagon.af.mil
SAF/XCD—SAFXCD.workflow@pentagon.af.mil
SAF/FMBI—SAFFMBI.workflow@pentagon.af.mil
AF/A8PL—AFA8PL.workflow@pentagon.af.mil

Section A8B – Sample WRAP Submittal Package Attachments and Status Reporting

Figure A8.1. Wrap Submittal Package Attachment 1:

U.S. AIR FORCE

KPPS, KSAs and Attributes

KPP, KSA, Attribute	Development Threshold	Development Objective	Brief Description of how this WRAP imitative contributes to the KPP, KSA or Attribute
KPP-1 Interoperability	80% of the time	90% of the time	Provides interoperability to the joint force

List the KKPs, KSAs and Attributes from the source ORD, CDD, CPD that your project supports. Begin each description w/ identifier of "KPP", "KSA" or "Attribute". Delete this note from your briefing.

Figure A8.2. Sample WRAP Proposal Quad Chart

WRAP QUAD CHART
Project Title

• **Description of the project**	**Picture of Device/System/Item**
Schedule Development: Fielding:	**WRAP Reqt:** $M **Sponsor/Ranking:** **Program Office:** **Sustainment PE:** **Annual Cost:** $ **POM Impact:**

Figure A8.3. – Example Funding Data Worksheet.

				FY 07 ACTUAL DATA				
FY 07 Initiatives	**Acronym**	**MAJCOM**	**FY 07 Baseline (K)**	**Total Committed**	**Total Obligated**	**% Obligated**	**Total Expensed**	**% Expensed**
ex. Automated Assistance w/Intelligence Preparation of the Battlespace	A2IPB	AFEO	780.0	526.0	256.0	48.7%	217.0	41.3%

Figure A8.4. – Example WRAP Project Status PowerPoint Slide.

UNCLASSIFIED

(BRAINS)
Warfighter Rapid Acquisition Process (WRAP)

Description of program

•The Battlefield Reconnaissance & Airstrike Imagery Networking System (BRAINS) project objective is to provide a two-way data and video link to and from the operating pilot employing the LITENING Advanced Targeting Pod (ATP) with a BRAINS Line Replaceable Unit (LRU) and the Joint Tactical Air Controller (JTAC) or ground forces. This project builds off of the "Frankenpod" demonstration from Northrop Grumman Corp in June 06 and is being productionized from the Plug and Play II LRU for the LITENING ATP.

TPOC: ***Capt Crunch, DSN 485-xxxx***

FPOC: ***Mr. John I. Didit, DSN 485-xxxx***

Issues

•Jan 08 AFSOC notified 647 AESS Program Office that capability in current configuration (MBITR PRC-148) will be obsolete by Oct 08

•17 Jan 08 Requirements Meeting at Contractor facility finalized firm requirement (Harris PRC-152)

•Statement of Work (SOW) and System Requirements Document (SRD) were re-written and a revised RFP was submitted

•Proposal received in house 29 Feb 08

Milestones/Accomplishments

•Initial Proposal came in out of scope and at a value of $7.5M

•Proposal was readdressed and a new RFP was released that included the obsolete MBITR PRC-148

•SOW and SRD were revised and a new RFP submitted to the Contractor 25 Jan 08

•Revised proposal received 29 Feb 08

•Contract Award ECD: 24 April 08

Upcoming Activities

•Revised proposal received from Contractor 29 Feb 08. Currently building Technical Evaluation

•Contract Award	ECD: 24 April 08
•First OFP Development	ECD: 17 July 08
•Second and Third OFP delivery	ECD: 28 Aug 08
•Flight Test	ECD: 27 Nov 08
•OFP Update	ECD: 31 Oct 08
•Flight Test Report	ECD: 19 Dec 08

UNCLASSIFIED

Attachment 9

EXAMPLE PROGRAM EXECUTION CHARTS

Figure A9.1. Example for ACAT IC Program

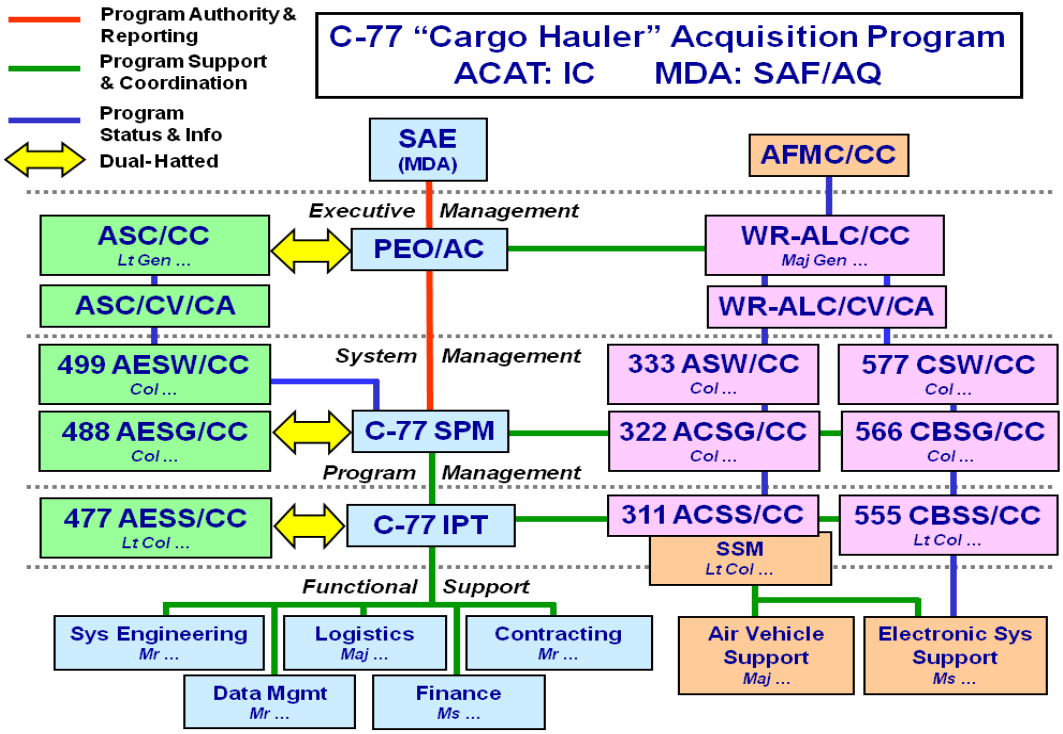

Figure A9.2. Example for ACAT II Program

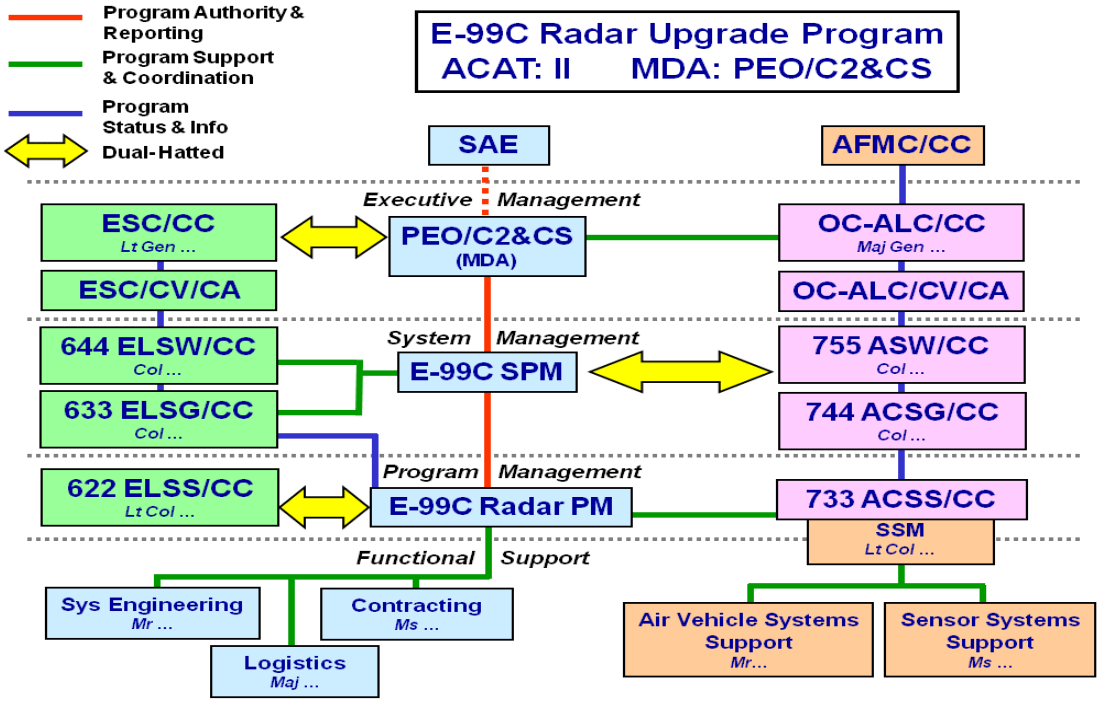

Figure A9.3. Example for ACAT III Program

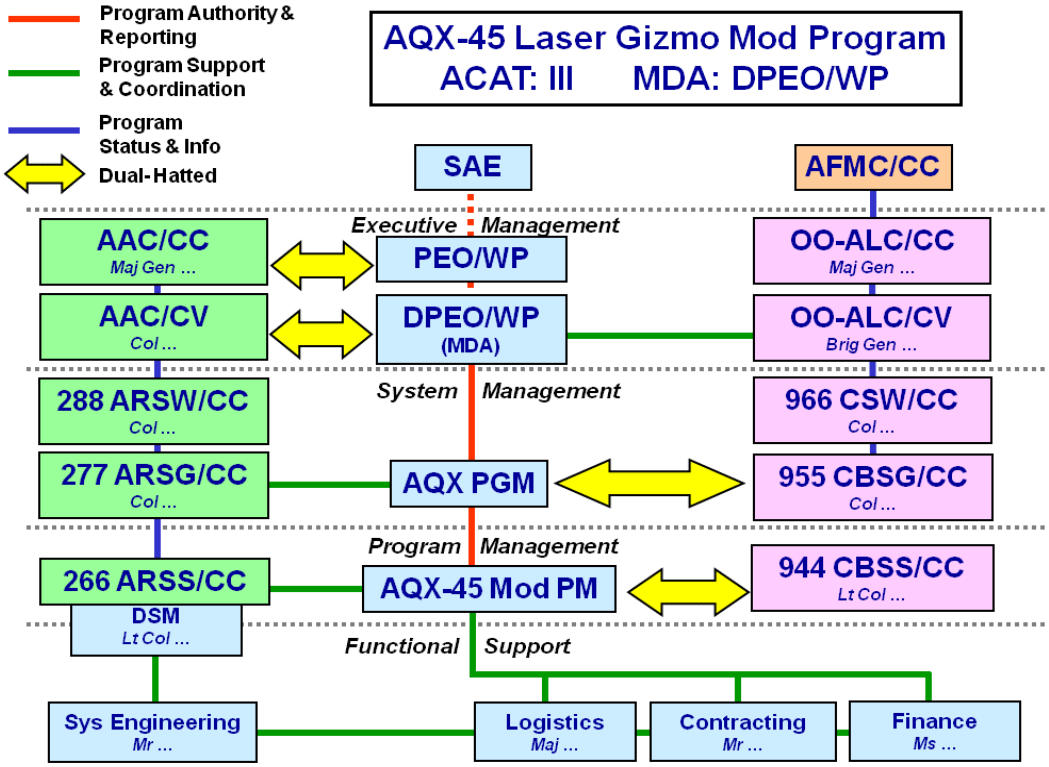
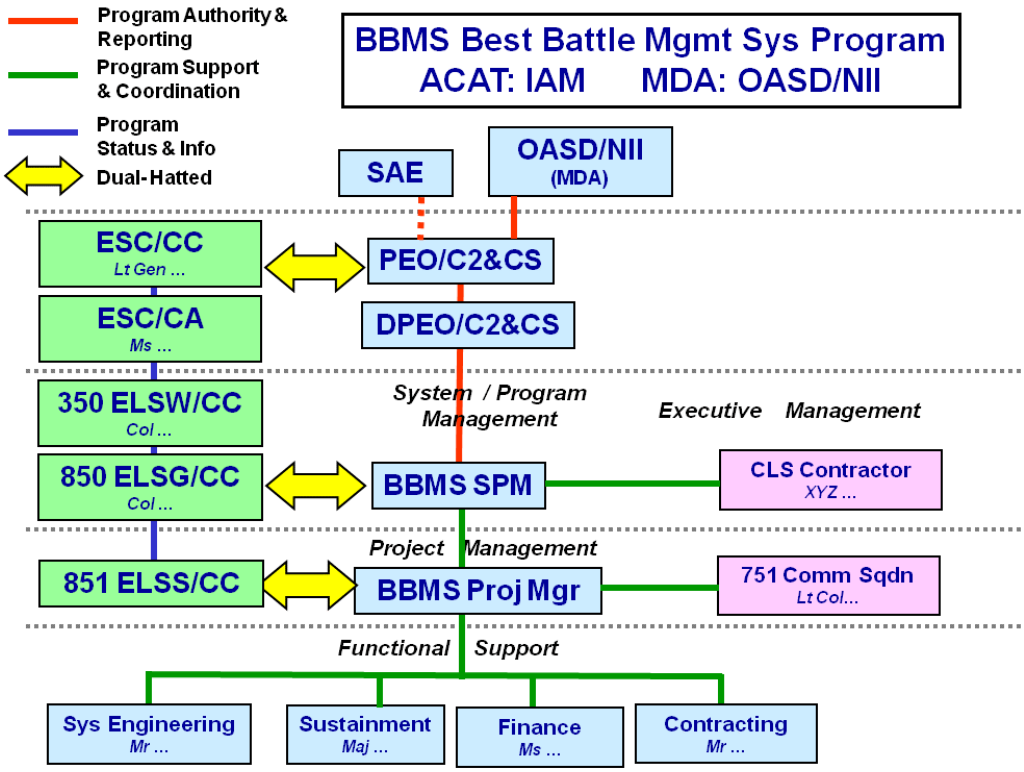
Figure A9.4. Example for ACAT IAM Program