



Air Force Life Cycle Management Center (AFLCMC)

Standard Process

For

*Capability Development*

Process Owner: AFLCMC/XZ

Date: 16 August 2018

Version: 3.0

Record of Changes.

Record of Changes		
Version	Effective Date	Summary
1.0	20 Sep 2013	Standard process approved by S&P Board on 19 Sep 2013
1.1	17 Dec 2013	Updated link to SharePoint site where templates are stored. Updated DP Proposal metric to reflect 30 day timeline.
2.0	23 Sep 2014	Updated to reflect changes from Maturity Level 3 review with a number of clarifications. Standard process revision approved by S&P Board on 18 Sep 2014.
3.0	16 Aug 2018	Updated to support implementation of the AFLCMC CD CONOPS; Title Change from 'Development Planning' to 'Capability Development; Approved by S&P Board on 16 Aug 2018.

## *Capability Development Process*

**1.0 Description:** Capability Development (CD) is an overarching term the AF now uses in reference to the organization, execution and oversight of all activities associated with developing capabilities for the total AF across the lifecycle extending from initial identification of need or opportunity through assessment of a fielded capability. CD includes all activities from opportunity, capability gap identification, and capability need identification through warfighter employment. To enable delivery of timely and effective capabilities to the Joint and Air Force warfighter, the execution of all capability development lines of effort must be aligned at the appropriate level. These activities include gap analysis, Science and Technology (S&T), studies/market research, wargaming, experimentation, prototyping, development planning (DP), planning for Development (Pfd), acquisition and investment strategies.

**2.0 Purpose and Scope.** This process details how AFLCMC receives and responds to Capability Development support requests from AF customers. This process establishes the AFLCMC Single Point Entry for requests from the AF governance process currently managed by Air Force Warfighting Integration Capability (AFWIC). In addition, this process establishes the DP framework in AFLCMC to coordinate the identification, evaluation, and documentation of capability needs and acquisition investment opportunities to provide input to AFWIC. Transition to Program of Record is recognized as an important part of CD, however, details are fully covered under Department of Defense Instruction (DODI) 5000.02, *Operation of the Defense Acquisition System*, and not included in this document. This standard process applies to all AFLCMC organizations except HI, which maintains oversight over the CD process for Defense Business Systems. AFLCMC/XZ will coordinate with other Centers and MAJCOMs as required.

**2.1 Strategic Development Planning** is used to describe multi-domain, enterprise-wide DP. Strategic DP occurs when the need for capability development planning is identified but additional work is needed prior to entry into the JCIDS process. Strategic activities include planning, experimentation and prototyping. AFLCMC requests for support may come from AFWIC or the Strategic Development Planning and Experimentation (SDPE) office. AFLCMC/XZ is typically the assigned CD Lead for Strategic DP support requests. Assigned CD Leads are encouraged to leverage, as appropriate, Sec 804 authorities on rapid prototyping and fielding granted by the Assistant Secretary of the Air Force, Acquisition, Technology and Logistics in Air Force Guidance Memorandum 63-146-01, *Rapid Acquisition Activities*, dated 13 June 2018.

**2.2 Planning for Development (Pfd)** is the early portion of the Capability Development lifecycle which coincides with the Joint Capability Integration and Development System (JCIDS) process from Capability Based Assessment (CBA) through Materiel Development Decision (MDD). AFLCMC/XZ typically leads Pfd efforts but may require support from other AFLCMC Directorates. This support should include assistance from the PEO Directorates to factor in integration requirements for all relevant legacy weapon systems. CD is acquisition-based and utilizes early systems engineering to understand requirements and mature potential concept solutions through robust tradespace analysis. Tradespace analysis explores and compares the analysis results of a concept's performance, suitability, effectiveness, and cost relative to a defined capability need. At MDD, robust tradespace/concept analysis delivers a thoroughly developed and defined tradespace, the

identification of viable concept solutions generated from a fully exercised tradespace to take to an AoA, and, subsequently, a requirement definition that is sound and well understood. Improving the pedigree of tradespace and concept analysis leading up to, and supporting, the AoA is central to the Early Systems Engineering (ESE) Master Technical Process (MTP) found in Attachment 1. The PfD process provides the technical foundation for materiel development and provides the analytic basis for life cycle cost and capability trades to inform requirements development and oversight activities supporting acquisition Milestones, decision points, and phases.

- 2.3 **AoA Support.** Customers may use this standard process to request support for AoA execution. In this Phase of the lifecycle is typically lead by a PEO and supported by AFLCMC/XZ. In some cases, it may be appropriate for the PEO and XZ to enter into a co-Lead arrangement. These arrangements are collectively arranged and agreed to on a case-by-case basis.
- 2.4 **Transition to Program of Record (POR)** covers the CD process after AoA execution, to accomplishment of Milestone A, and launch of a POR (e.g. PEO assignment). Please refer to Department of Defense Instruction 5000.02, *Operation of the Defense Acquisition System* for further guidance. Key activities such as the development of the Concept of Operations (CONOPS) and initial Systems Engineering Plan (SEP) may be accomplished concurrently with AoA execution. Similar to AoA Support, Transition to POR is typically lead by a PEO and supported by AFLCMC/XZ. In some cases, it may be appropriate for the PEO and XZ to enter into a co-Lead arrangement. These arrangements are collectively arranged and agreed to on a case-by-case basis.
- 2.5 **Development Planning (DP)**, a frequently used term, encompasses Strategic DP all the way to launch of a POR. As previously stated, this document currently covers Strategic DP and PfD efforts but recognizes AoA Support and Transition to POR as important DP activities.

**3.0 Roles and Responsibilities:** The entries listed below are summarized, see the Air Force Life Cycle Management CD CONOPS for additional information.

3.1 **AFLCMC/CC** will:

- 3.1.1 Exercise PEO-like authority providing oversight of CD efforts managed by AFLCMC/XZ.
- 3.1.2 Approves Center CD Lead assignment and execution strategies.
- 3.1.3 Review technical/programmatic progress of AF CD activities semi-annually.

3.2 **AFLCMC/XZ** (Senior Materiel Leader) will:

- 3.2.1 Be designated as the AFLCMC CD Single Point of Entry (SPE).
- 3.2.2 Serve as the Center's primary representative to the AF CD process and AFWIC governance structure.
- 3.2.3 Work with PEOs to assign CD Lead and develop execution strategies for AFLCMC/CC approval. Maintain insight of execution progress to foster fulfillment of cross-domain effects.
- 3.2.4 Organize semi-annual review of Center CD activities.

- 3.2.5 Serve as Center CD Standard Process owner.
- 3.2.6 Build a network of CD liaisons and SMEs (PEO and Functional) to facilitate collaboration and information flow across the Center
- 3.2.7 Work with functional home offices, as appropriate, to provide processes and tools to aid in CD efforts across the acquisition enterprise.
- 3.2.8 Executes Strategic DP.
- 3.2.9 Executes PfD when assigned CD Lead.
- 3.2.10 Serve as the Center SPM-like POC to SAF/AQR in their DP roles.
- 3.2.11 Solicit and coordinate support from MAJCOMS, PEOs and/or 2 ltrs, as necessary.
- 3.2.12 Manage and preserve documentation of DP artifacts to leverage understanding of capability needs and opportunities across AFLCMC and the weapon system lifecycle. This role also includes identifying and initiating periodic capability analysis, to include consideration to legacy platforms and subsystems in the system of systems CONOPs
- 3.2.13 Facilitate AF-level Technology Transition efforts such as ATDs and JCTDs.

**3.3 AFLCMC PEOs will:**

- 3.3.1 Designate a directorate portfolio liaison who interfaces with AFLCMC/XZ in support of AF CD activities. Liaisons should have broad understanding of the PEO portfolio and maintain awareness of emerging gaps that may be supported through their portfolios.
- 3.3.2 Provide SME support to AFLCMC/XZ to develop execution strategies for AF approved CD activities.
- 3.3.3 Support semi-annual review of Center CD activities, as necessary.
- 3.3.4 Executes PfD when assigned CD Lead.
- 3.3.5 Plans and executes technology transition for those efforts where the PEO is assigned CD lead.

**3.4 Functional owners\*** are responsible to:

- 3.4.1 Assign CD liaison who has a broad understanding of functional roles in CD planning and execution.
- 3.4.2 Coordinate with AFLCMC/XZ and PEO directorates to develop and maintain SMEs required to support CD planning and execution.
- 3.4.3 Provide SMEs to support CD planning for AF approved projects.
- 3.4.4 Provide SMEs to execute CD projects in accordance with approved CD strategy.
- 3.4.5 Support the execution of processes in support of CD—cost estimating, Concept Characterization and Technical Documents (CCTDs), Technology Readiness Reviews (TRR), etc.
- 3.4.6 Support semi-annual review of Center CD activities, as necessary.

*\* Functional owners are the primary Center Functional Home Offices (FHOs): EN/EZ, PK/PZ, FM/FZ, LG/LZ, AQ/AZ, as well as acquisition intelligence, acquisition security and safety.*

**4.0 Potential Entry/Exit Criteria and Inputs/Outputs.** The following sections provide example entry and exit criteria for a particular CD effort. Exit and Entry Criteria should be tailored for each CD effort based on the need.

4.1 Entry Criteria: Customer submits a Capability Development Support Request (CDSR), see attachment 2 for a template, to the AFLCMC CD SPE. The CDSR template requests the customer provide as much data as possible to start the process including: problem statement, top-level analysis questions, and desired products. The CD SPE can assist with the development of the CDSR on a case-by-case basis.

4.2 Exit Criteria: AFLCMC delivery of a Technical Analysis Report (TAR) or Concept Characterization and Technical Description (CCTD) report which contains all the information required by the customer, as specified in the customer's CDSR.

4.3 Inputs. This section describes mandatory inputs.

4.3.1 Completed CDSR

4.3.2 Other data and documents identified in the CDSR to include documentation and data from prior CD efforts.

4.4 Outputs: This section describes the required outputs of CD execution. The analysis planning documents and reports are AFLCMC owned products which are used to capture the body of work accomplished to respond to a customer request. The customer may require other tailored products. The CDSR will specify additional desired products.

4.4.1 For Strategic Development Planning efforts:

4.4.1.1 CC Approved CD Proposal/Execution Strategy. A CD Proposal Template is provided in Attachment 3. It is recommended that the CD Lead refer to the Master Technical Process (Atch 1) and the Top Level-Program Plan Template (Atch 4) for guidance on how to identify appropriate analysis questions to effectively answer customer questions and complete the CD Proposal.

4.4.1.2 Technical Analysis Plan (TAP). Customer questions are typically complex and often qualitative. The TAP is a document which details how the customer's questions are decomposed into detailed analysis questions which are measureable and traceable back to the capability need. A TAP Template is found in Attachment 5.

4.4.1.3 Technical Analysis Report (TAR). This report documents the results of the analysis results and makes recommendations. This document is delivered to the customer closing out the CDSR. A TAR Template is provided in Attachment 6.

4.4.1.4 Other tailored documents (or data) required by the customer as specified in the CDSR.

4.4.2 For Planning for Development efforts:

- 4.4.2.1 CC Approved CD Proposal/Execution Strategy. A CD Proposal Template is provided in Attachment 3. It is recommended that the CD Lead refer to the Master Technical Process (Atch 1) and the Top Level-Program Plan Template (Atch 4) for guidance on how to identify appropriate analysis questions to effectively answer customer questions and complete the CD Proposal.
- 4.4.2.2 TAP.
- 4.4.2.3 TAR or CCTD. One of these documents is delivered to the customer closing out the CDSR. A CCTD is the traditional product delivered in support of an MDD or AoA. A CCTD Template (revised from dated SAF/AQ guidance) is provided in Attachment 6. A TAR may be used to document other CD analysis outside the scope of a typical CCTD such as Strategic DP or analysis supporting Capability Based Assessments (CBAs) or Initial Capability Document (ICD) development. A TAR may also be used to capture experimentation or prototyping activities.
- 4.4.2.4 Other tailored documents (or data) required by the customer as specified in the CDSR.

## 5.0 Process Workflow and Activities

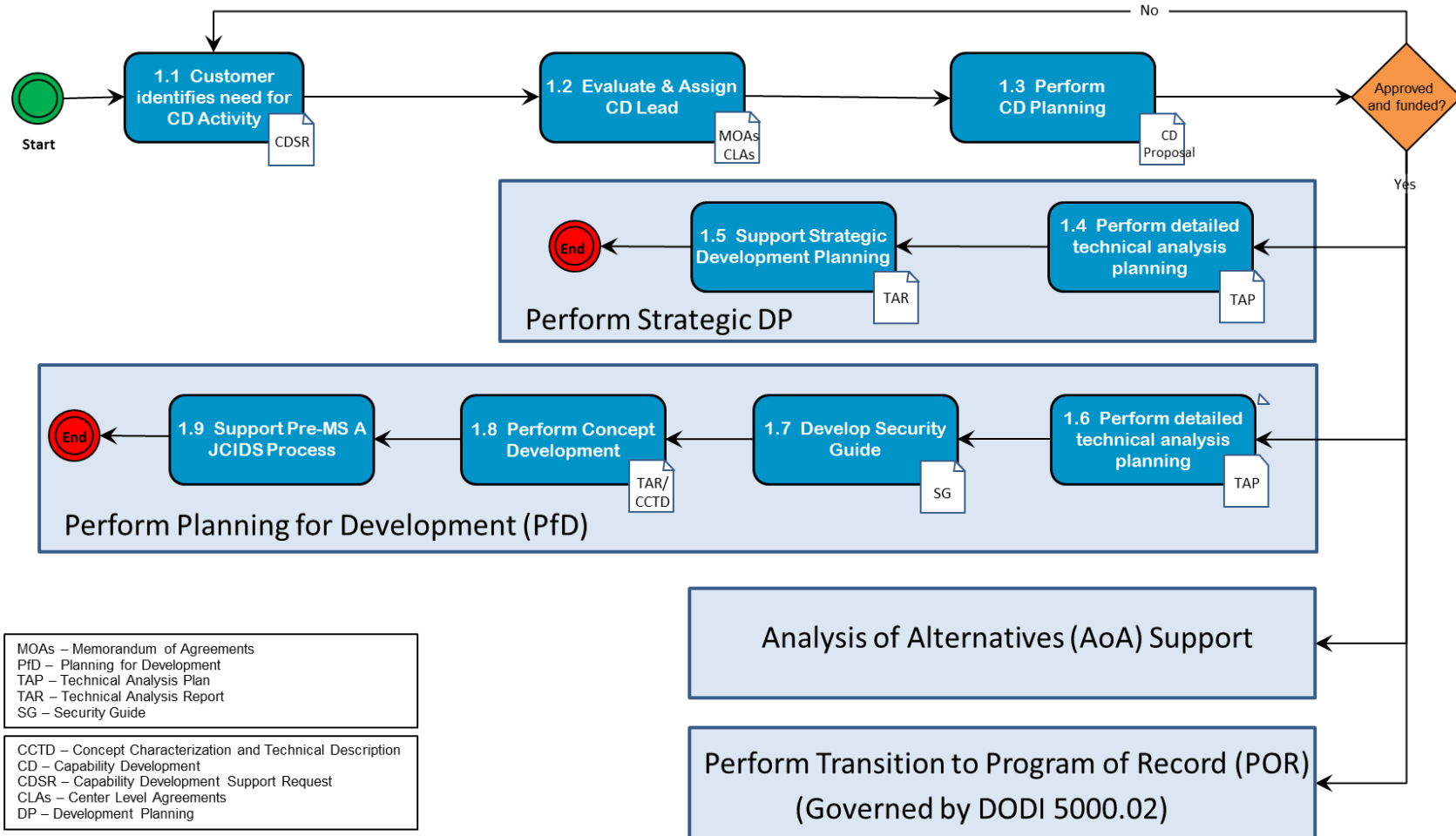
- 5.1 Supplier, Inputs, Process, Outputs, and Customers (SIPOC), **Table 1**. The SIPOC outlines the key interactions and interfaces associated with the CD process. The items detailed in **Table 1** are not necessary for every CD effort and can be tailored based on the specifics of the project.
- 5.2 Process Flowchart. The high level process flowchart, **Figure 1**, represents the CD process flow from HAF/AFWIC/MAJCOM/PEO CD request through AoA execution. Because of the dynamic nature of CD, this process is meant to accommodate multiple perspectives and situations. This process is not meant to be prescriptive, but instead can be tailored to the specific CD effort.
- 5.3 Work Breakdown Structure (WBS). The WBS, **Table 2**, provides additional detail corresponding to individual CD activities depicted in the flowchart in **Figure 1**.

**Table 1. Supplier, Inputs, Process, Outputs, and Customers (SIPOC) for CD**

Supplier	Inputs	Process	Outputs	Customer(s)
HAF/AFWIC/PEO, Funtional Home Office (FHO), Intelligence Community (IC)	ICDs, CBAs, Threat analysis, capability gap descriptions, CONOPS, candidate solutions	Initiate CD Activity	CD Support Request	AFLCMC Single Point of Entry (SPE)
AFLCMC SPE	CDSR	Evaluate/Assign CD Activity	AFLCMC CD Lead designation	AFLCMC/XZ, PEO
CD Lead	CDSR, Lead designation	CD planning	CD Proposal	HAF/AFWIC/PEO
CD Lead	CDSR, CD Proposal	Detailed CD Planning and project execution	TAP, Security Guide (SG), TAR and/or CCTD	HAF/AFWIC/PEO



**Figure 1. High Level Capability Development (CD) Process Flowchart**



**Table 2. Planning for Development (CD) Work Breakdown Structure (WBS)**

<b>Lvl</b>	<b>WBS</b>	<b>Activity</b>	<b>Description</b>	<b>OPR</b>
1	1.0	Planning for Development Process (Pre-MS A)	This process guide details how AFLCMC receives and responds to CD support requests from the AF governance process currently managed by AFWIC.	AFLCMC
2	1.1	Customer Identifies need for CD Activity	Customer identifies need and gathers information needed to complete and submit a CDSR to the SPE.	HAF, AFWIC, PEO
2	1.2	Evaluate Request and assign CD Lead	The SPE will work with the PEO, Functional, and/or customer (as applicable) to assess whether a CDSR requires strategic DP or PfD support. Note: When the AF Form 1067 is used, specific review and approval authorities are defined depending on the funding threshold (e.g., below \$50M or above \$50M). Refer to the AF/A5R Requirements Development Guidebook, vol. 4 for the specific review and approval authorities.	SPE, PEO and Functional Liaisons
	1.3	Perform CD planning	The CD Lead may reference the ESE MTP (Atch1) and the Top-Level Program Plan Template (Atch 4) to assist with writing the CD Proposal. A CD Proposal Template is provided in Attachment 3. The CD Proposal is reviewed, approved and funded by the customer.	SPE and CD Lead
	1.4	Perform detailed technical analysis planning (for strategic DP)	The CD Lead performs additional technical analysis to decompose requirements into an executable plan. This analysis and plan is documented in the TAP. A TAP template is provided in Attachment 5.	CD Lead
2	1.5	Support strategic development planning	The SPE performs activities outlined in the CD Proposal and TAP in support of Experimentation Campaigns, prototyping and Enterprise Capability Collaboration Teams (ECCTs). The results are documented in the TAR. A	CD Lead

			TAR Template is provided in Attachment 6.	
2	1.6	Perform detailed technical analysis planning (for PfD)	The CD Lead performs additional technical analysis to decompose requirements into an executable plan. This analysis and plan is documented in the TAP. A TAP template is provided in Attachment 5.	CD Lead
2	1.7	Develop Security Guide	Security requirements are defined and documented.	CD Lead
2	1.8	Perform Concept Development	Execute the analysis outlined in the CD Proposal and TAP and perform other program management activities such as cost, schedule and risk estimates. Also develop concept solutions and perform cost vs capability trade space analysis. All analysis and concept design details are documented in the TAR or CCTD, report templates are provided in Attachments 6 and 7, respectively.	CD Lead
2	1.9	Support Pre-MS A JCIDS Process	Support the customer in developing the AoA Plan (significant content should come from the TAP and the CCTD). Provided technical and planning info to the customer necessary to support a successful MDD. Provide technical expertise to the customer to ensure successful AoA execution.	CD Lead

**6.0 Measurement.** As with any process, measures need to be put in place to ensure consistency and effectiveness of the process. CD has developed three metrics to measure this effectiveness, found in Table 3.

**Table 3. CD Process Metrics**

<b><u>Metric #</u></b>	<b><u>Activity</u></b>	<b><u>Scope of Activity</u></b>	<b><u>Metric</u></b>
1	Non-Space SPE to process CD request and assign lead CD organization	<ul style="list-style-type: none"> <li>• Receive request</li> <li>• Determine lead organization</li> <li>• Identify relevant additional stakeholder organizations</li> </ul>	CDSR reviewed and assigned within 5 business days

	Done by AFLCMC/XZ		
2	Develop CD Proposal  Done by assigned CD Lead	<ul style="list-style-type: none"> <li>• Capability Materiel Team (CMT)- developed</li> <li>• Schedule to include all activities/resources to complete document for submission to appropriate SPE for governance approval</li> <li>• Only done for proposals that go through the SPE</li> </ul>	Deliver CD Proposal to customer for approval within 25 business days.
3	Coordinate and Approve TAR, CCTD or Strategic Planning documents, as appropriate.  Done by assigned lead organization	<ul style="list-style-type: none"> <li>• Action Officer (AO) Review of Draft documents</li> <li>• Coordination of Final TAR or CCTD (O-6/GS-15 Level). Technical Authority Approval of CCTD (when there is no POR), AFLCMC/XZ Director of Engineering (DoE) is the Technical Authority (TA) for AFLCMC. For non-AFPEO/SS PORs, the PEO DoE is the TA with coordination by AFLCMC/XZ.</li> </ul>	On-time delivery of final product to customer within approved timeline.

**7.0 Tools.** Several CD tools are available within AFLCMC/XZ (see Attachments below).

7.1 CDSR and CD Proposal templates are attached.

7.2 The Early Systems Engineering Master technical Process is also attached.

7.3 Customers may request support by email using the AFLCMC Capability Development Mailbox, or AFLCMC.XZN.AFLCMCXZCapability@us.af.mil.

**8.0 Training.**

8.1 Training courses are in work.

**9.0 Definitions, Guiding Principles or Ground Rules & Assumptions.**

9.1 This standard process does not apply to Defense Business Systems (DBS), per Section 2.0.

9.2 This process does not cover the following:

- 9.2.1 Transition to POR part of the DP process, which is adequately described in Department of Defense Instruction 5000.02, *Operation of the Defense Acquisition System*.
- 9.2.2 Sustainment efforts to retain or restore existing capabilities but do not lead to an MDD.
- 9.2.3 Fast-track requirements such as Urgent Operation Needs, Joint Urgent Operation Needs, and Urgent Need Requests.
- 9.2.4 Technology demonstrations prioritized via the Applied Technology Councils or similar processes (e.g., Applied Technology Demonstrations (ATDs), Joint Capability Technical Demonstrations (JCTDs), etc.).

9.3 Acronym list is provided at Attachment 8.

**10.0 References to Law, Policy, Instructions or Guidance.** References that relate to this process are as follows.

- 10.1 Air Force Guidance Memorandum 63-146-01, *Rapid Acquisition Activities*, dated 13 June 2018
- 10.2 Air Force Instruction (AFI) 63-101/20-101, *Integrated Life Cycle Management*, 9 May 17
- 10.3 Air Force Instruction 10-601, *Operational Capability Requirements Development*, 9 May 17
- 10.4 *Analysis of Alternatives (AoA) Handbook, A Practical Guide to the Analysis of Alternatives*, Office of Aerospace Studies (OAS), 10 Jun 13
- 10.5 Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3170.01H, *Joint Capability Integration and Development System (JCIDS)*, 10 Jan 12
- 10.6 *Concept Characterization & Technical Description (CCTD) Guide*, SAF/AQR, 27 Oct 10
- 10.7 Department of Defense Instruction (DoDI) 5000.02, *Operation of the Defense Acquisition System*, 7 Jan 15
- 10.8 DoDI 5134.16, *Deputy Assistant Secretary of Defense for Systems Engineering (DASD(SE))*, 19 Aug 2011
- 10.9 *Early Systems Engineering Guide*, SAF/AQ, 31 Mar 09
- 10.10 *AF/A5R Requirements Development Guidebook*, Vol 1 Air Force Implementation of The JCIDS Deliberate Process, Version 1.3, 30 Oct 17

<p><b>Attachment 1.</b> AFLCMC/XZ Early Systems Engineering (ESE) Master Technical (MTP) Process</p>  <p>Attachment 1 ESE Master Technical Proc</p>	<p><b>Attachment 2.</b> Capability Development Support Request Template</p>  <p>Attachment 2 CD Support Request.pdf</p>
<p><b>Attachment 3.</b> Capability Development Proposal Template</p>  <p>Attachment 3 CD Proposal Template.pdf</p>	<p><b>Attachment 4.</b> Top Level Program Plan Template</p>  <p>Attachment 4 Top-Level Program P</p>
<p><b>Attachment 5.</b> Technical Analysis Plan (TAP) Template</p>  <p>Attachment 5 Tech Analysis Plan Templa</p>	<p><b>Attachment 6.</b> Technical Analysis Report (TAR) Template</p>  <p>Attachment 6 Tech Analysis Report Tem</p>
<p><b>Attachment 7.</b> New Concept Characterization and Technical Description (CCTD) Template</p>  <p>Attachment 7 CCTD Template.docx</p>	<p><b>Attachment 8.</b> Acronym List</p>  <p>Attachment 8 Acronym List.docx</p>