Defense Acquisition Guidebook

Chapter 12 - Defense Business System Definition and Acquisition Business Capability Lifecycle (BCL)

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12.0. Overview

12.0.1. Contents

12.1. Business Capability Definition Phase

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12.0. Overview

The purpose of this chapter is to provide guidance for executing the Business Capability Lifecycle (BCL) and is intended for use with existing policy for the definition and acquisition of defense business systems (DBS). It is intended to serve as a reference to support all Department of Defense (DoD) staff with responsibilities throughout a DBSs lifecycle.

12.0.1. Contents

This overview discusses the Business Capability Lifecycle (BCL) at a very high level and includes the major BCL tenets and a summary of the BCL process. Following the overview, the chapter includes the following sections:

Section 12.1., Business Capability Definition Phase, provides an overview of the Business

Capability Definition (BCD) Phase process and an explanation of the rigorous up-front analysis conducted during BCD Phase activities that result in the Problem Statement section of the Business Case.

Section 12.2., Investment Management Phase, provides an overview of the Investment Management (IM) Phase process and an explanation of IM Phase activities that result in the expansion of the Problem Statement into the Business Case and the development of the Program Charter.

Section 12.3., Execution, provides an overview of the last four phases of BCL and an explanation of the activities for each of these phases that result in a fully designed, developed, tested, deployed, and sustained increment of capability (materiel and non-materiel solution) that satisfies the specific outcomes defined in the Business Case.

Section 12.4., DBS-Specific Criteria, provides an overview of criteria specific to defense business systems (DBS) and BCL.

Section 12.5., Tools and Methods, provides information on the various tools and methods used in conjunction with BCL activities, including an explanation of a Doctrine, Organization, Training, Materiel, Leadership and education, Personnel, Facilities and Policy (DOTMLPF-P) analysis and an explanation of outcomes and measures development.

12.0.2. BCL Introduction

12.0.3. Tenets

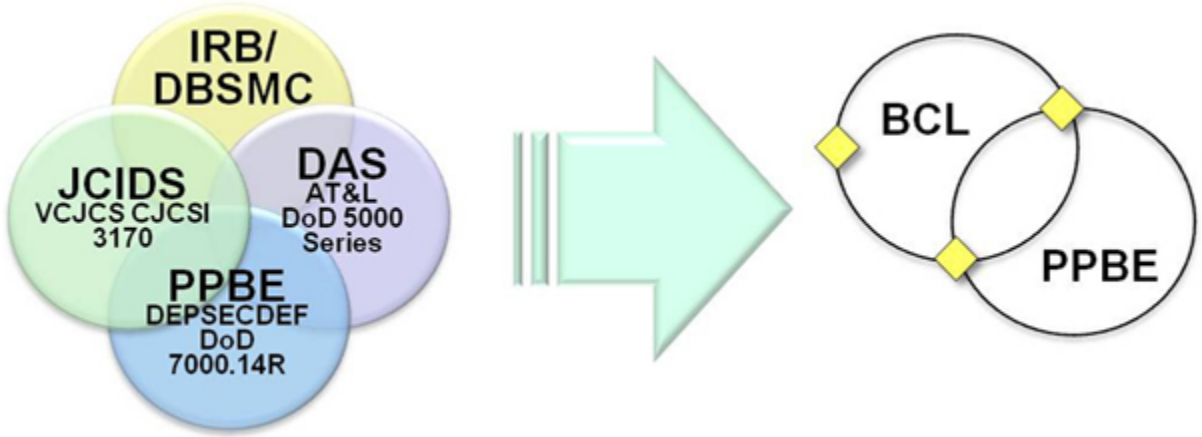
12.0.4. Process

12.0.2. BCL Introduction

The Department has instituted the Business Capability Lifecycle (BCL) to address the unique challenges of information technology (IT) - recognizing that the deliberate weapon systems acquisition process is not agile enough to meet the speed at which new IT capabilities are being introduced to the market.

BCL is the overarching framework for the planning, design, acquisition, deployment, operations, maintenance, and modernization of defense business systems (DBS). It promotes rapid delivery of business capability by facilitating a process tailored to the unique requirements of DBS. It is based on industry best practices, studies, and emerging legislation. It realigns three separate Offices of the Secretary of Defense (OSD) oversight processes into a single process, per Figure **12.0.2.F1** .

Figure 12.0.2.F 1 Re-Alignment of Major DoD Processes for Business Systems



BCL mandates delivering capability quickly within 18 months or less, recognizing that new and evolving IT requires frequent upgrades and that requirements must be reprioritized and new ones will emerge. The goal of BCL is to enable the acquisition and deployment of DBS capabilities to match the speed at which they become viable. Industry and government have learned the big-bang approach to delivering IT seldom meets user expectations; the time-lag between requirements and delivery is often too long.

BCL is modeled on the commercial best practice of iterative capability releases. It requires rigorous up-front analysis of a problem or capability gap to identify it's root cause and determine whether a materiel (i.e., technical) solution is required to solve it and what non-technical factors must support it in order to make it work. Finally, BCL streamlines and integrates decision (milestone) information requirements using the Business Case Template and Program Charter Template, which can be accessed on the Office of the Deputy Chief Management Officer (DCMO)s BCL webpage .

12.0.3. Tenets

1. Rapidly deliver capability to end-users using an incremental approach. This approach delivers increased capability over time, recognizing up-front the users need for future capability improvements. Incremental delivery provides capability to end-users earlier so it can be used, evaluated, modified, sustained, and / or discarded as necessary. Instead of defining all capability improvements up front or implementing new technologies before they are mature, improvements are deferred to future increments. This approach also recognizes that all capability usually cannot and should not be delivered in one big-bang increment.

In the Business Capability Lifecycle (BCL), an increment is delivered in less than 18 months from its Milestone (MS) B to Full Deployment Decision (FDD) and:

- Is a useful and supportable operational capability that can be developed, tested, produced, deployed, and sustained;
- May consist of multiple capability releases to facilitate delivery, while abiding by

Milestone Decision Authority (MDA)-approved BCL time-limited delivery rules; and
- Must be fully-funded.

More information on incremental delivery and time-limited development is available in section **12. 4 .1** **,** *Time-Limited Development* .

2. Enable rapid decision-making by streamlining oversight . As depicted in Figure **12.0.2.F1** , BCL is governed by an integrated decision-making framework and is the implementation methodology for title 10 United States Code (U.S.C) section 2222.

- The MDA has overall responsibility for DBS acquisition decisions and issues Acquisition Decision Memorandums (ADMs) at appropriate decision points **.**
- Investment Review Boards (IRBs) provide: The structure that integrates requirements, investment and acquisition reviews along with portfolio management for DBS; and, Act as the Overarching Integrated Product Teams (OIPTs) for Major Automated Information Systems (MAIS) DBS to advise the MDA for acquisition purposes.
- The Defense Business Systems Management Committee (DBSMC) makes final decisions over granting obligation authority (i.e., certification decisions) via the IRB process for all DBS and capabilities (i.e., requirements) costing $1M over the current Future Years Defense Program (FYDP).
- For DBS that are not MAIS, DoD Components are expected to establish similar processes and procedures as described in policy and this DAG chapter.

More information on governance and oversight processes and procedures are detailed in section **12.4.2** **,** *BCL Governance.*

3. Focus on activity and decision making at the appropriate level, by the appropriate role. BCL uses the principle of Tiered Accountability by assigning responsibilities to the lowest appropriate and permissible statutory and regulatory level. This approach strengthens accountability, reduces bureaucracy, and accelerates positive outcomes. In addition, the Functional Sponsor, who represents the user(s) and champions the needed capability throughout BCL, plays a critical role in delivering successful capability. The Functional Sponsor works with the Program Manager (PM) during the entire process, and while the PM is responsible for the materiel portions of the capability, the Functional Sponsor is responsible for the remaining Doctrine, Organization, Training, Leadership and education, Personnel, Facilities, and Policy (DOT_LPF-P) portions of the solution, for justifying the program, for securing funding, and for eventually ensuring the solution has met the need that the user(s) originally identified. This approach ensures that the PM is predominantly focused on executing the materiel portion of the program, not on the entire spectrum of DOTMLPF-P activities.

4. Base acquisition decisions on risk and rigor, not document format. The objective is to bring the right information and people to the point of decision-making while eliminating non-value-added documents. This tenet is based on the assumption that decisions should be based on the risk of delivering the capability to cost and schedule and how prepared the program is to do so, not whether the program has produced an over-abundance of properly formatted

documentation with the "right approvals.

Supporting this tenet, BCL (1) encourages tailoring, both the process and information requirements, and (2) the use of a Business Case and Program Charter. From a program structuring / process perspective, the goal should be to design and scope a program that will deliver capability rapidly, while tailoring out unneeded or non-value added steps. The goal of tailoring information requirements by decision authorities should only require PMs and other participants in the defense acquisition process to present the minimum information necessary to establish the program baseline, describe program plans, understand program status, and make informed decisions; tailoring in information requirements by the MDA is the recommended approach to achieve this. In general, tailoring should consider multiple factors including program size, scope, risk, urgency of need, and technical complexity. The PM proposes and the MDA approves tailoring decisions in an ADM.

BCLs use of a Business Case (which integrates program-level plans and information for decision makers) and a Program Charter (which outlines roles, responsibilities, and organizational agreements) reduces the amount of documentation that must get coordinated, particularly at the Office of the Secretary of Defense (OSD) level, reducing time and cost. Program-level documentation may still be coordinated and approved within the Component, but does not need to be approved by OSD. This approach places focus on the need, the solution, and the risk not the amount of documentation.

The Business Case Template and Program Charter Template are available on the Office of the Deputy Chief Management Officer (DCMO)'s BCL webpage .

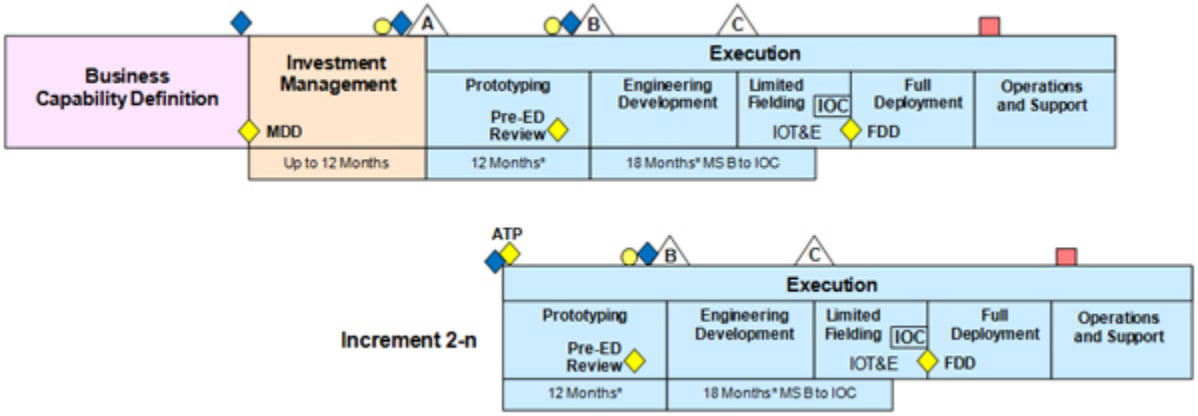
5. Employ outcomes and performance-based measures. Successful capability delivery relies upon the ability to track progress toward completion. BCL integrates the early development of outcomes and associated measures throughout the process. Outcomes define what good looks like to indicate when success has been achieved at varying levels (strategic, business, program, etc.). Performance measures identify the performance-based metrics that provide visibility to the outcomes progress towards completion. BCL supports a top-down decomposition process of outcomes and performance measures development, where high-level outcomes are developed early on and then decomposed further into business and program outcomes as more detail is learned throughout BCL phases. More information on measures and outcomes development is in section 12.5.3 *Outcomes and Measures Development* .

12.0.4. Process

The Business Capability Lifecycle (BCL) is composed of seven phases: Business Capability Definition (BCD), Investment Management (IM), Prototyping, Engineering Development, Limited Deployment, Full Deployment, and Operations and Support (O&S). At the highest level, the BCL Model can be viewed in three main segments BCD, IM, and Execution.

The BCL Model is depicted in Figure **12.0.4.F1** .

Figure 12.0.4.F1 BCL Model



BCD and IM consist of pre-acquisition activities that are critical to implementing a successful acquisition program during Execution. A well-run program may spend upwards of 2/3 of its time on pre-Execution activities for the initial increment. Thus, BCL places considerable emphasis on analysis, critical thinking, requirements development and refinement, and scoping before Execution begins. It requires a Functional Sponsor to define outcomes and measures for declaring success during the BCD Phase before a solution is chosen and executed in subsequent phases. The model drives an iterative approach to capability delivery, which enables the Program Manager (PM) and Functional Sponsor to apply lessons learned to subsequent increments, to continuously refine requirements, and to rapidly deliver increased capability to end-users.

The Investment Review Board (IRB) / Defense Business Systems Management Committee (DBSMC) governance framework is a critical element of BCL and weaves together the requirements, investment, and acquisition processes for Defense Business Systems (DBS). The IRBs provide cross-functional expertise to the Milestone Decision Authority (MDA) (for MAIS acquisitions) and perform investment and portfolio management oversight for all DBS. More information on the IRB / DBSMC processes is located in the DoD IT Defense Business Systems Investment Management Process Guidance" June 2012..

12.1. Business Capability Definition (BCD) Phase

12.1.1. Purpose, Outputs, and Outcomes

12.1.2. BCD Phase Process

12.1.3. BCD Phase Activities

12.1.3.1. "As-Is" Analysis

12.1.3.2. "To-Be" Analysis

12.1.3.3. Remaining BCD Phase Activities

12.1.3.4. IRB Preparation

12.1.3.5. Materiel Development Decision (MDD) Preparation

12.1. Business Capability Definition (BCD) Phase

12.1.1. Purpose, Outputs, and Outcomes

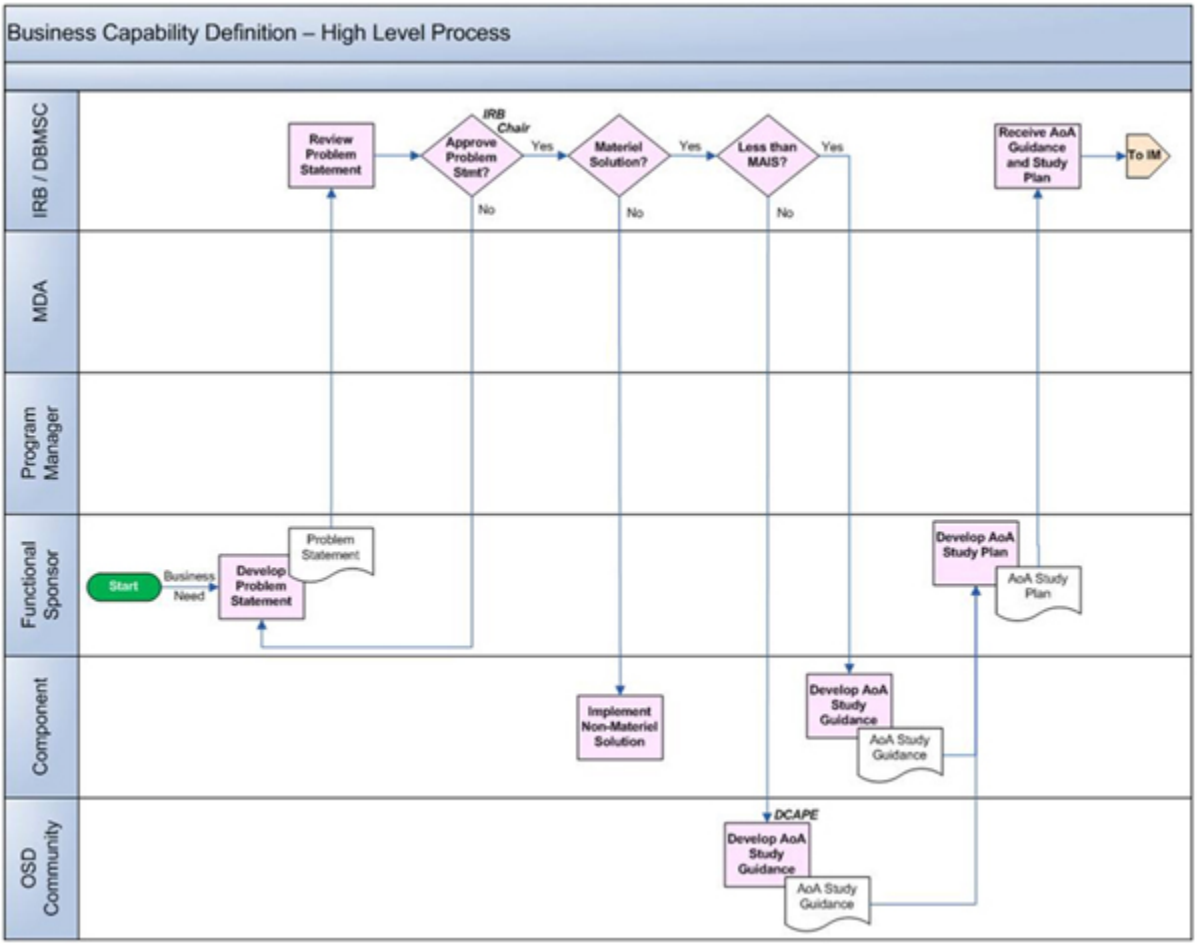
The purpose of the Business Capability Definition (BCD) Phase is, upon the identification of a problem, need or gap, to analyze it, understand it, and scope it.

The outputs and outcomes of the BCD Phase are:

- The outcome is a thorough understanding of the problem, need or gap at a root cause level and the successful identification of the desired outcome (or, "what good looks like" when the problem is eventually solved);
- Completion of a clearly-defined and scoped Problem Statement; and
- Informed decision-makers at the Component and Office of the Secretary of Defense (OSD) levels.

12.1.2. BCD Phase Process

Figure 12.1.2.F1 - BCD Phase High Level Process Flow



The Business Capability Definition Phase (BCD) Phase begins with identification of a business need (*note* : it can also be considered a problem, symptom, gap, opportunity or myriad other things, but in the Business Capability Lifecycle (BCL) and throughout this Chapter it is referred to as a "problem" or "business need"). Multiple activities occur in this phase, including clearly defining the problem and it’s root cause(s); conducting an "As-Is" and "To-Be" Doctrine, Organization, Training, Materiel, Leadership and education, Personnel, Facilities and Policy (DOTMLPF-P) Analysis; conducting high-level Business Process Re-engineering (BPR) through the Functional Sponsor's assessment of the desired outcomes; proposing a solution mix (either solely non-materiel, or a mix of materiel and non-materiel); and defining / validating High-Level Outcomes (HLOs) and measures that scope it. These activities result in a Problem Statement, the main output of the BCD Phase.

Once the Component has approved the Problem Statement, the Functional Sponsor will forward it to the Investment Review Board (IRB) for review and IRB Chair approval. If approved, the IRB Chair will subsequently direct the development of Analysis of Alternatives (AoA) Study

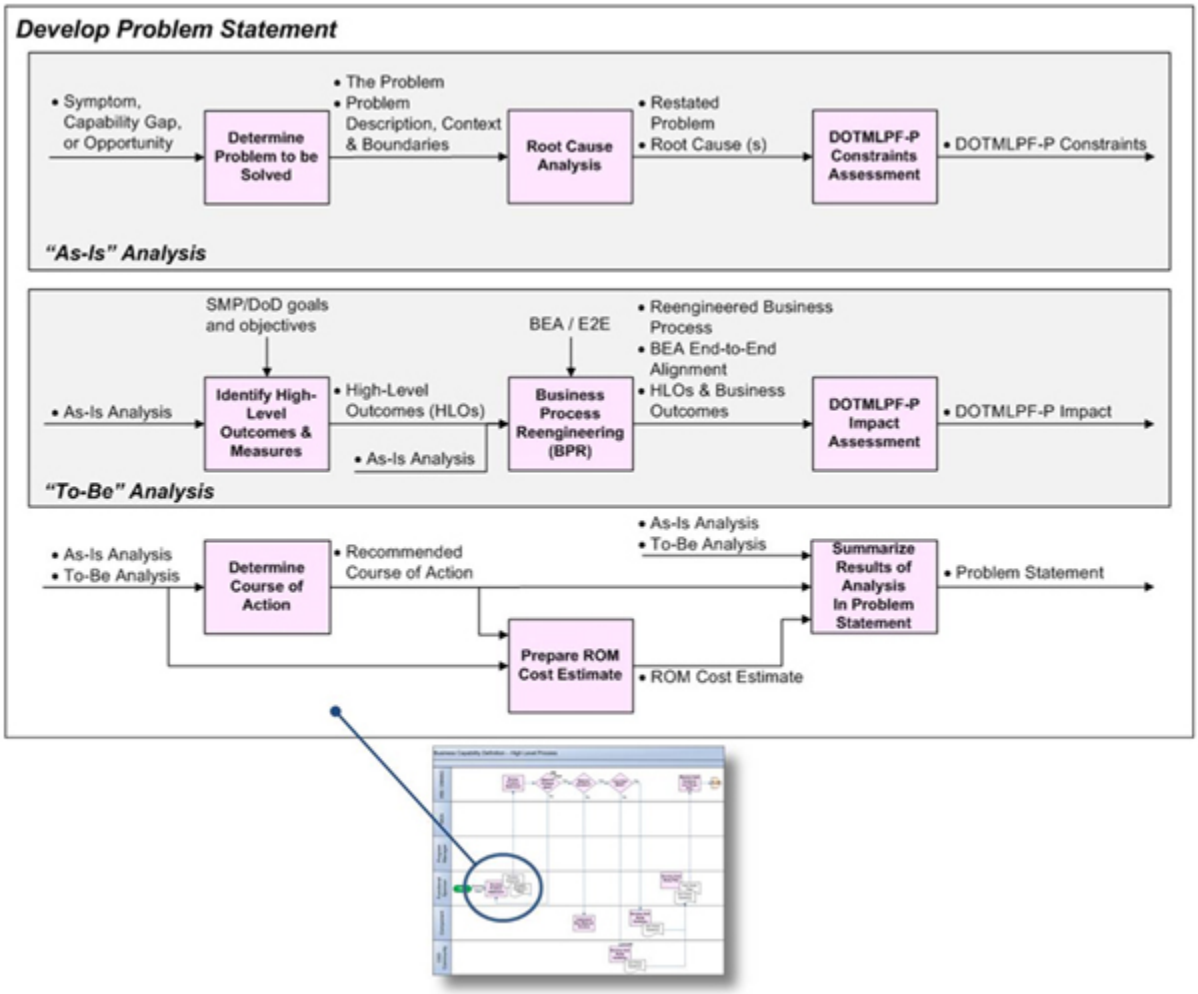
Guidance to allow the Component to develop an AoA Study Plan for approved Problem Statements that contain a materiel component.

TIP: It is critical that functional users, who not only have an understanding of the problem but are also invested in its outcome, are involved in BCD Phase analysis to ensure the problem is well-understood and outcomes are developed correctly from the outset.

12.1.3. BCD Phase Activities

In the Business Capability Lifecycle (BCL), the Business Capability Definition Phase (BCD) Phase consists of rigorous analysis activities, the output of which is the Problem Statement (sections 1-3 of the Business Case Template, available on the Office of the Deputy Chief Management Officer (DCMO)'s BCL webpage). The final Problem Statement can be developed either step-by-step as BCD Phase analysis activities are completed or after all analysis has been completed. The activities involved in developing the Problem Statement are depicted in Figure **12.1.3.F1** .

Figure 12.1.3.F1 - Decomposition of "Develop Problem Statement" Process Step



TIP: When conducting the BCD Phase analysis, consider the following questions:

1. What is the problem?
2. Who is affected by the problem?
3. When does the problem occur, and how often?
4. What is the root cause(s) of the problem?
5. What is the business value of solving the problem?
6. How will we know when the problem has been solved?

12.1.3.1. "As-Is" Analysis

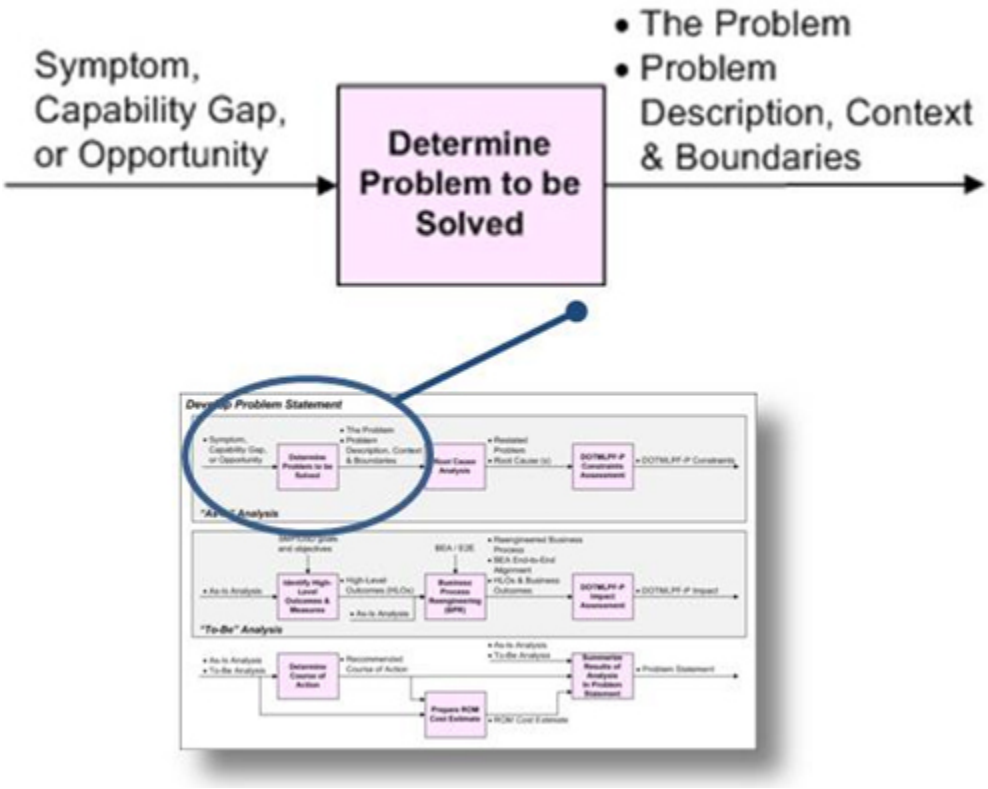
During Business Capability Definition (BCD) Phase "As-Is" Analysis, users / functional experts take the problem that has been identified, put it into appropriate context (organizational, environmental, etc.) and conduct both a Root Cause and Doctrine, Organization, Training, Materiel, Leadership and education, Personnel, Facilities and Policy (DOTMLPF-P) Analysis

(or, a DOTMLPF-P Constraints Assessment).

Determine Problem to be Solved. The purpose of this activity is to analyze a business need (whether an actual need, or a perceived need) that has been identified by a user in an organization.

The business need is analyzed by users and functional subject matter experts (SME) who understand the business processes and environment in which the business need exists. This analysis results in a concise definition of the problem.

Figure 12.1.3.1.F1 - Determine Problem to be Solved Context



The analysis must take into consideration the functional scope and organizational span of the problem - who is affected by it and where (i.e., Component-only or Enterprise-wide). It also includes describing the problem in further detail and providing context and boundaries (i.e., functional scope and organizational span), which expresses the problem in a manner that is specific, testable, and quantitative in nature.

It is important to bound this analysis to ensure it does not reach into the territory of specific, potential solutions ("a system will fix this" or "an Oracle ERP is the answer") and focuses simply on defining the problem.

The following is a summary of the Determine Problem to be Solved activity along with an

example:

- *Inputs.* Symptom, capability gap, opportunity, etc. (problem / business need).
- *Process.* User(s) in DoD identify a problem or business need and refer it to the decision-maker (i.e., the Functional Sponsor) whose responsibility it is to investigate the business need and determine if development of a Problem Statement is warranted. The Functional Sponsor then engages participants to analyze the business need and identify the underlying problem to be solved. They determine other characteristics of the problem including a problem description, the context of the problem, and the boundaries of the problem.
- *Outputs.* The Problem; problem description, context, and boundaries.

Example. Security clearances.

1. Someone in the DoD identifies what they believe to be a problem or business need and informs a leader within their organization.

User-identified problem. It takes too long to get a security clearance, which is adversely impacting an organization's ability to effectively operate. The Problem is reported up the chain, possibly by an HR Supervisor or the Security Manager of organization, to the Functional Sponsor.

2. The Functional Sponsor directs a team to analyze the problem that was identified.

Analyze and Validate. *The Problem: It takes too long to get a security clearance.* Problem is decomposed and validated with anecdotes such as: The end-to-end processing of an initial top secret clearance took 311 days; GAO has reported concerns of the quality of investigative and adjudicative work in processing clearances; it is impossible for facility security officers to get clearance information in a timely manner.

3. Team provides information to Functional Sponsor, including a more in-depth description, organizational / environmental context, and boundaries.

Problem Description, Context, and Boundaries. All Federal agencies requiring cleared staff are adversely impacted by the inability to deploy/redeploy staff in an efficient and timely manner. Clearance approvals are provided by multiple organizations utilizing various standards and procedures through use of cumbersome and disparate legacy data systems.

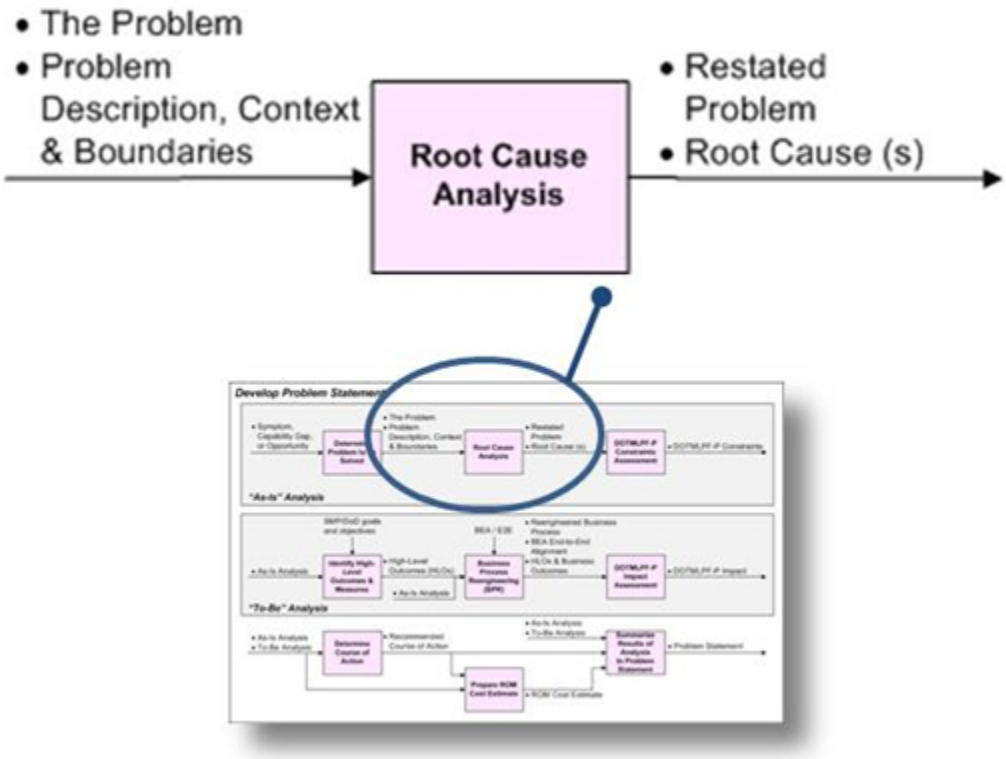
This information, which is intended to provide a better understanding of the problem, will feed Root Cause Analysis.

Root Cause Analysis. One of the issues the Department faces with successfully fielding information technology (IT) business capabilities is making the leap from problem to solution too quickly, resulting in a solution that doesn't meet the fundamental business need but rather provides temporary "band-aids" for its symptoms. The tendency to "do something now!" must be appropriately balanced with a process that mitigates the risk of fixing a symptom vs. it’s root

cause(s). Within BCL, the expectation is that functional SMEs will analyze the problem to ensure complete understanding of it's true or root causes.

Root Cause Analysis is a structured approach to determining a problem's causal factors and identifying what behaviors, actions, inactions, or conditions need to be changed in order to eliminate the problem.

Figure 12.1.3.1.F2 - Root Cause Analysis Context



TIP: There are many definitions of a "root cause". The United States Air Force Air War College defines a "root cause" as " *the fundamental breakdown or failure of a process which, when resolved, prevents a recurrence of the problem* ".

(To view the following link, copy and paste it into your browser)
http://www.au.af.mil/au/awc/awcgate/nasa/root_cause_analysis.pdf

There is no single methodology for performing Root Cause Analysis and various approaches (such as brainstorming, "5-Whys" analysis, and Cause and Effect [Fishbone] diagrams) can yield satisfactory results. A good option is to consult your Component's Lean Six Sigma point-of-contact for guidance.

For example, the "5-Whys" analysis starts by asking ***" why did the problem occur?"*** and then takes the answer and asks that same question of the answer. This question and answer cycle is repeated until you reach the fundamental process element that failed. Regardless of the

methodology used, it is imperative that the Root Cause Analysis is thorough to ensure that resources are focused on the right item.

The following is a summary of the Root Cause Analysis activity along with an example:

- *Inputs* . The Problem; problem description, context, and boundaries.
- *Process.* Using SMEs, the Functional Sponsor will engage in decomposing the problem to drill down to its root causes, differentiate symptoms from the problem, and update the Problem Statement, if appropriate, based on findings.
- *Outputs* . A restated Problem (if appropriate), and a list of Root Causes.

Root Cause Analysis Example. Security clearances.

1. If a team has not yet been formed, the Functional Sponsor at this point should establish a team to conduct Root Cause Analysis. SMEs may be involved at multiple levels of the security clearance process.
2. The team examines the problem, context, and discovers what may be symptoms *or* root causes:

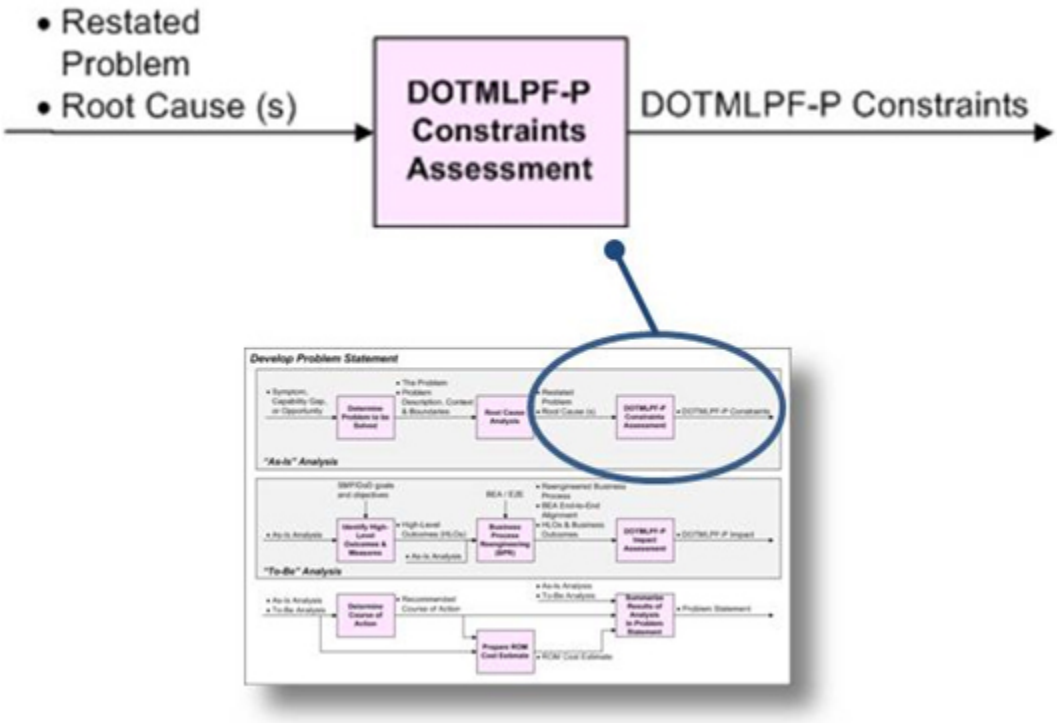
Results. Lack of reciprocity of clearances, delays in fulfilling agencies' missions and completing national security-related contracts, and increased costs of government.

3. Based on expert judgment, the team analyzes the information to derive root causes apart from symptoms. Some of the root causes on security clearances were:

Root Causes. Data and processes are not standardized across agencies; there are difficulties obtaining information from some national, state and local record providers; and, not enough resources are available to handle the number of security clearance requests.

DOTMLPF-P Constraints Assessment, "As-Is" Analysis. This analysis presents functional SME insight into how existing process(es) work. Too often the Department has seen a problem jump to a materiel solution without a thorough assessment of whether or not the problem can be solved by modifying or eliminating a DOT_LPF-P constraint. The "As-Is" DOTMLPF-P Analysis may prevent this from happening by highlighting DOTMLPF-P constraints on the "As-Is" state.

Figure 12.1.3.1.F3 - DOTMLPF-P Constraints Assessment Context



These causal factors are referred to as "DOTMLPF-P constraints" and help determine whether the problem can be solved by eliminating DOT_LPF-P constraints. For example, "changing the Component-level policy will achieve the desired outcomes". It is important to understand the impacts and consequences of implementing non-materiel changes just as much as materiel changes - revising policy or enhancing training programs, for example, can have obvious benefit's but may also add cost and risk that must be mitigated. It is highly likely that DOT_LPF-P factors or underlying business processes are contributing to the problem, and will in fact contribute to the solution.

Similar to Root Cause Analysis, there is no single methodology for conducting DOTMLPF-P analyses. However, methods for DOTMLPF-P are available in the DAG, JCIDS documents , as well as other DoD policy issuances, directives, instructions, regulations, and laws. Further direction on conducting a DOTMLPF-P analysis in the context of BCL is included in section **12.5.2** , *DOTMLPF-P Analysis.*

TIP: It is possible that the solution can be entirely DOT_LPF-P, consisting of, for example, a combination of policy, Component-level guidance, BPR, and re-training solutions. Completing this analysis thoroughly may help determine that a materiel solution is not needed at all - or that the problem has many more factors that need to be solved (i.e., is more complex) than originally thought.

The following is a summary of the DOTMLPF-P Constraints Assessment, "As-Is" Analysis

Activity along with an example:

- *Inputs* . The Problem (restated, if necessary) and list of root cause(s).
- *Process.* The Functional Sponsor / functional SME team assesses the "As-Is" state, considering each DOTMLPF-P element and analyzing the existing constraints that inhibit the ability to solve the problem or the business need. The team determines the DOTMLPF-P constraints and summarizes their assessment in the Business Case.
- *Outputs* . Identification of DOTMLPF-P Constraints in the "As-Is" state.

DOTMLPF-P Constraints Assessment Example . Following is an example summary output of a "As-Is" DOTMLPF-P Analysis (*note* : more detailed information does not need to appear in the Business Case, and may be kept as "working / program-level papers"):

Table 12.1.3.1.T1 - Example of High-Level Constraints from "As-Is" DOTMLPF-P Analysis

DOTMLPF Element	**Constraint**
Doctrine:	Operating procedures are not in-place. Creates disorganization, noncompliance, and non-standardization.
Organization:	Organization is not properly staffed to meet the agreed service level commitments. Adds time to process.
Training:	Personnel do not have access to training, and training programs differ between organizations.
Materiel:	The system does not collect the information required. Cannot share information properly between systems, creating stovepipes and rework.
Leadership and Education:	The command does not have the resources at its disposal to correct the identified issues.
Personnel:	Qualified and trained personnel are not readily available for the occupational specialties.
Facilities:	The call center is operating at capacity and cannot expand to accommodate the new services that are planned.
Policy **:**	No joint policy exists between organizations.

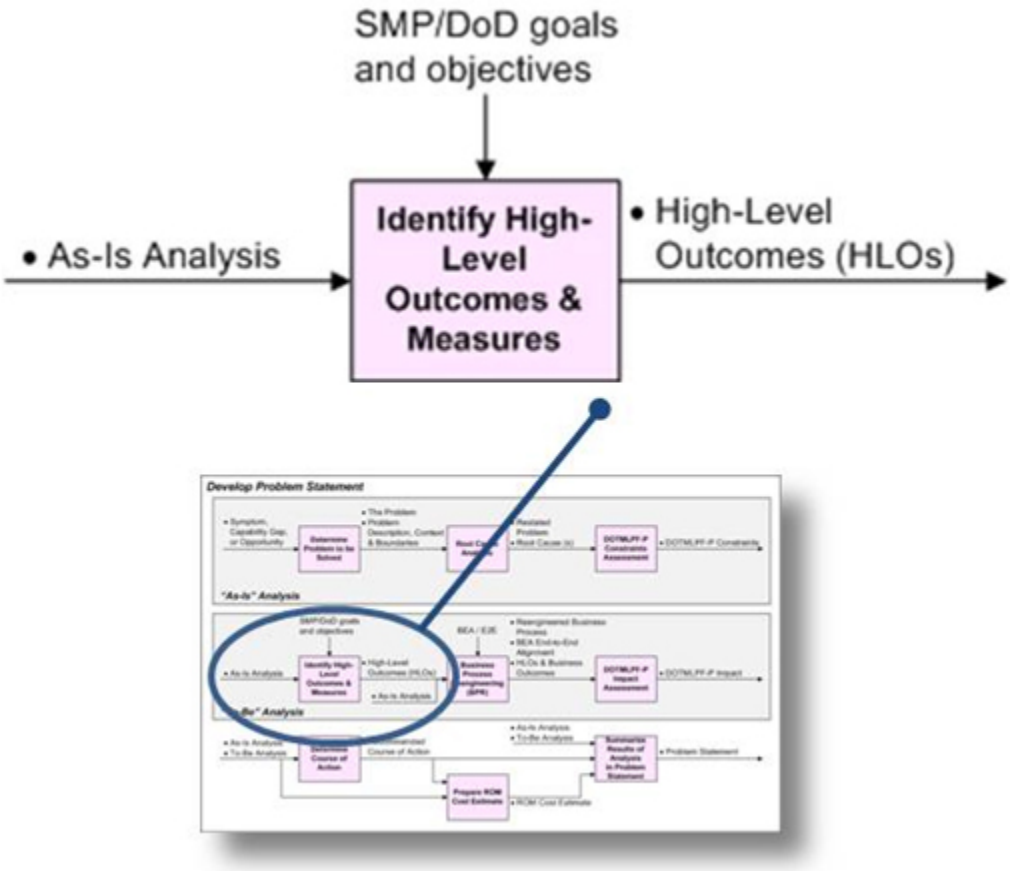
12.1.3.2. "To-Be" Analysis

The "To-Be" Analysis consists of the identification of High-Level Outcomes (HLOs) and measures, Business Process Re-engineering (BPR), and a "To-Be" Doctrine, Organization, Training, Materiel, Leadership and education, Personnel, Facilities, and Policy (DOTMLPF-P) Analysis.

Identify High-Level Outcomes (HLOs) and Measures. The Functional Sponsor (who represents the needs of the user[s] that originally identified the problem) is ultimately responsible for

declaring whether the needed capability has been delivered. Therefore, measurable High-Level Outcomes (HLOs) must be identified up-front so all stakeholders know what constitutes success. Too often programs begin without a clear understanding of what the end-state should be and subsequently development (and corresponding costs) becomes endless.

Figure 12.1.3.2.F1 - Identify HLOs and Measures Context



HLOs and corresponding measures must be established to chart progress toward success and are an integral part of driving the "To-Be" process. HLOs also help scope the effort and align it with Department and Component goals and objectives. Their corresponding measures should be developed by taking into account benefit's, risks, assumptions, and constraints. Later in the BCL process, different and more specific levels of measures will be used for outcome-based testing and determining whether the criteria for Initial Operating Capability (IOC) and Full Deployment have been met.

More information on the outcome development process that begins in the BCD Phase and extends throughout BCL can be found in section **12.5.3** , *Outcomes and Measures Development* .

TIP: Major updates to a Business Case once it has been approved require review and re-approval by appropriate authorities, which may ultimately cause a delay in capability delivery. Therefore, it is imperative that the analysis of "what good looks like" is performed as thoroughly as possible, and HLOs and their associated measures provide a definitive baseline for testing during the Execution Phase. The Problem Statement, once approved, should not change.

The following is a summary of the Identify HLOs and Measures activity along with an example:

- *Inputs* . "As-Is" Analysis (the Problem; problem description, context, and boundaries; root causes; and DOTMLPF-P Constraints).
- *Process*. The Functional Sponsor will work with the functional team to capture the overall outcome ("what will be different when we're done?" or "what does good look like when we're done?"). Next, considering strategy, goals, and objectives (Department and Component), the Functional Sponsor will determine HLOs and corresponding measures, as well as associated benefit's, risks, assumptions, constraints, and dependencies for each HLO.
- *Outputs* . HLOs (including associated measures, benefit's, risks, assumptions, constraints, and dependencies).

Risk identification started during this activity begins a continuous process of risk management throughout the lifecycle of the program. This is a good point to establish a formal process of identifying, documenting, managing, and mitigating risks. An example of risk documentation is shown in section **12.2.3.2** , *Define Risks and Risk Mitigation*, Table **12.2.3.2.T2** .

HLOs and Measures Identification Example. Security clearances.

1. The Functional Sponsor engages functional / SME team in determining what good would look like to them when the problem is solved, that is, what a HLO would be for the problem "The security clearance process takes too long":

HLO: Obtain security clearances in less time than it currently takes.

2. The Functional Sponsor then identifies what strategic (Strategic Management Plan (SMP), Department, and / or Component) goal or objective that HLO supports:

Strategic linkage: Enhance the DoD Civilian Workforce (DoD SMP Business Goal #4).

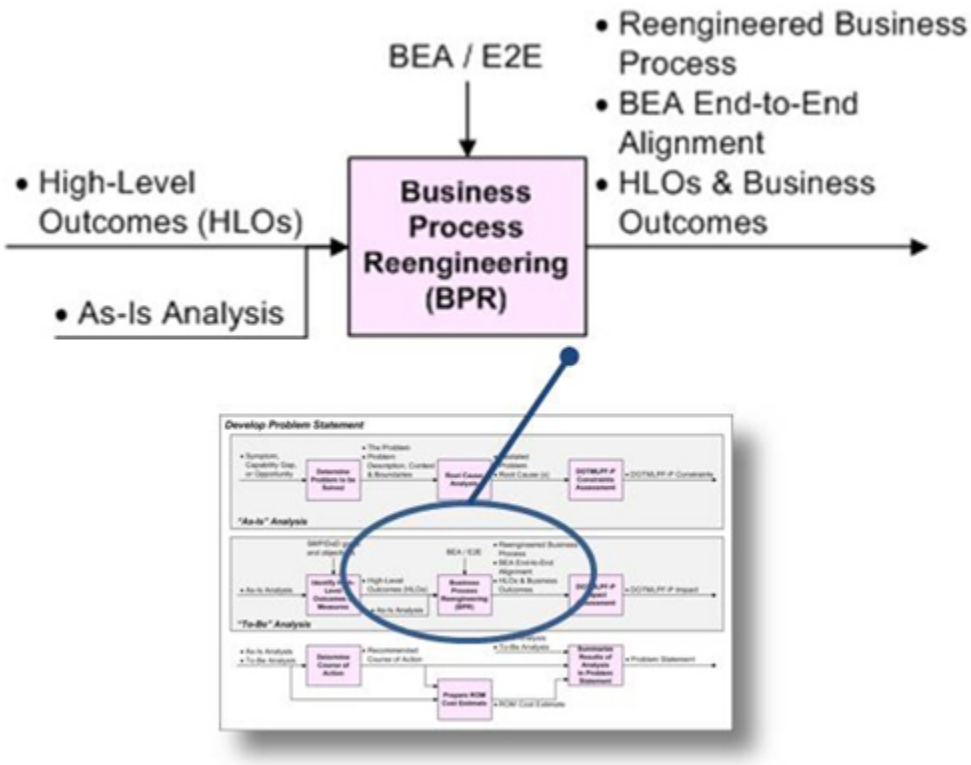
3. Based on the determined HLO, the Functional Sponsor works with the team to determine a quantitative metric for the success of the HLO:
    - (metric) Days from application to clearance granted.
    - (measure) Current: 444 days; Target: 60 days.

HLO's corresponding metric and measure:

Business Process Re-engineering (BPR). Driven by the HLOs, the Functional Sponsor leads

BPR and analyzes existing business workflows and processes to determine what, from a process perspective, needs to change in order to achieve these outcomes. Items may include eliminating non-value added process steps, consolidating separate functional tasks into end-to-end cross-functional processes, and integrating business functions as much as possible to improve business operations and to achieve the desired outcome(s). BPR is a continuous process and requires a rethinking of why the "As-Is" process came to be and how it can be improved to achieve efficiencies.

Figure 12.1.3.2.F2 - BPR Context



BPR is initially conducted during the BCD Phase as a complement to DOTMLPF-P analysis and to prepare for conducting an AoA.

There must be an understanding of the "As-Is" processes for BPR to be effective so that defects and issues can be identified and eliminated in the eventual "To-Be" state. The ideal business process is defined during the initial BPR and specific, actionable business outcomes will be developed based on the HLOs and potential courses of action will emerge (more information on the outcome development process is located in section **12.5.3** , *Outcomes and Measures Development*).

More information on BPR, see the Office of the Deputy Chief Management Officer (DCMO)'s BPR webpage .

TIP: Content in the Business Case's Problem Statement should not be replicated in a BPR Assessment Form. Refer to the original content through reference or hyperlink.

End-to-End (E2E) Process Alignment . For BCL, a primary input to conducting BPR is aligning HLOs to the Department's End-to-end (E2E) Business Process Flows, which are mapped to the Business Enterprise Architecture (BEA) . Business outcomes and activities developed during initial BPR should align to an E2E Business Process and corresponding E2E Flows to show which E2Es will be affected if the "To-Be" state is realized.

The DoD has currently identified15 E2E Business Flows which represent a combination of mature, industry best practices and DoD-specific business functions. Each E2E Business Flow is a value chain that represents a set of integrated business functions that fulfill a need identified by the organization. E2Es are cross-functional, cutting across organizational boundaries. By streamlining business processes using an end-to-end approach, organizations can create consistent data models, eliminate data redundancies, eliminate the need for duplicate data entry, eliminate the need for manual reconciliations between DBS and reduce the total life-cycle costs of the organization's DBS.

The Functional Sponsor will identify which E2E(s) will be affected by matching HLOs and business outcomes to the E2E Flows. More information on the E2Es, including instructions on how to allocate Business Processes to Business Flows and document them in the Business Case can be found in section **12.5.4** , *BEA and BCL.* Additional information and reference material are available on the DCMO's BEA webpage .

The following is a summary of the BPR activity along with an example:

- *Inputs* . "As-Is" Analysis (including: the Problem; problem description, context, and boundaries; root causes; and DOTMLPF-P Constraints); and HLOs (including measures, benefit's, risks, assumptions, constraints, and dependencies).
- *Process.* The Functional Sponsor involves SMEs in business process analysis and BPR. The team proceeds to define the "To-Be" state by identifying new and modified business processes to address the Problem and achieve the "vision" defined by the HLOs. They consider both evolutionary (e.g., enhancements) and revolutionary (e.g., re-engineering) opportunities to define the future state. The team may elect use of modeling techniques to create a rigorous view of the "As-Is" state and "To-Be" state. An important asset at the disposal of the re-engineering team is the BEA, which includes a suite of business models derived out of E2E business flows. Leveraging the BEA through the E2Es, the team aligns, maps, and decomposes processes. Refer to section **12.5.4** , *BEA and BCL* and the DCMO's BEA webpage .

The results of the BPR and the E2E alignment are summarized in the Business Case by showing the decomposition of the HLOs into subordinate business outcomes. The important characteristics of each business outcome are also defined - specifically measures, benefit's, risks, assumptions, dependencies and constraints.

- *Outputs* . Re-engineered business process, BEA E2E alignment, and business outcomes

(including measures, benefit's, risks, assumptions, constraints, and dependencies).

BPR/E2E Alignment Example . Security clearances:

1. Determine the business outcome(s) that support achieving each HLO applicable to the security clearances problem:

HLO: Streamline clearance process

Business Outcome: Establish a "Determinations Store"

Business Outcome Definition: Will provide Security Officers with a listing of security clearance determinations, eliminating the unnecessary processing of clearance applications for applicants with prior clearance investigations or adjudicative determinations

2. Align the business outcomes to the BEA's E2E Business Process Flows and then drill-down to underlying Business Processes and Business Capabilities applicable to the security clearances problem:

Business Outcome: Establish a "Determinations Store"

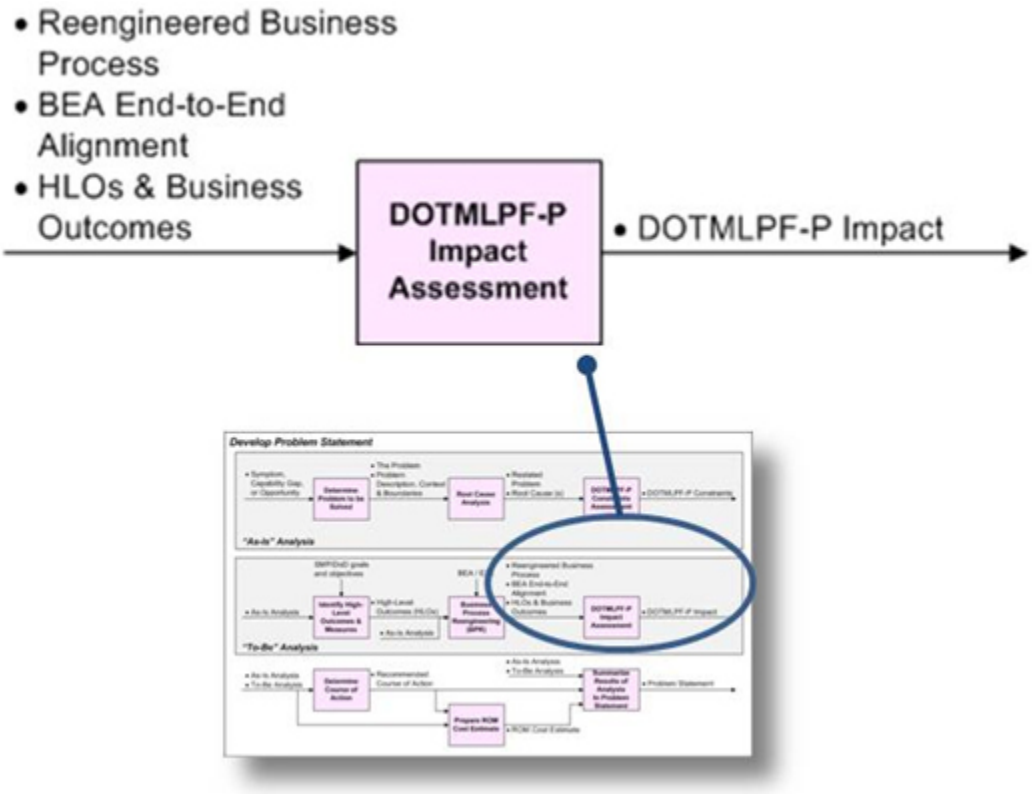
BEA E2E Business Flow : Hire to Retire (H2R)

Business Process : Manage Human Resources Access Control Programs

Business Capability: Manage Personnel Security

DOTMLPF-P Impact Assessment, "To-Be" Analysis. Based on all previous activities and analyses, a DOTMLPF-P Impact Assessment is conducted in conjunction with BPR to determine the impact of a transition to the "To-Be" state. This helps to ensure that all elements of DOTMLPF-P are considered in order to avoid hidden impacts as much as possible, and to realize that it may take multiple DOTMLPF-P elements to solve the problem and achieve the HLOs.

Figure 12.1.3.2.F3 - DOTMLPF-P Impact Assessment Context



The "To-Be" state is unconstrained by tradeoffs or limitations of alternative solutions, since no specific alternatives have been analyzed (**Note:** the Analysis of Alternatives (AoA) is conducted in the IM Phase, after a Materiel Development Decision (MDD) is granted). The results of "To-Be" Analysis are outcome-based and are critical in determining which DOTMLPF-P elements must be addressed to achieve the HLOs and business outcomes.

The following is a summary of the DOTMLPF-P Impact Assessment, "To-Be" Analysis activity along with an example:

- *Inputs* . Initial re-engineered business process, HLOs and business outcomes (including measures, benefit's, risks, assumptions, constraints and dependencies), and BEA E2E Alignment.
- *Process.* The Functional Sponsor and the SME team consider the DOTMLPF-P elements that will be impacted in the transition to the "To-Be" state. A summary of the analysis is documented in the Problem Statement section of the Business Case, and includes a list of each DOTMLPF-P Impact (i.e., the actions or changes to realize the "To-Be" state).
- *Outputs* . Identification of DOTMLPF-P Impacts (and potentially, a new or modified business process).

DOTMLPF-P Impact Assessment Example. Table **12.1.3.2.T1** is an example summary output of a "To-Be" DOTMLPF-P analysis (**Note:** more detailed information does not appear in the

Business Case and is kept as "working papers"):

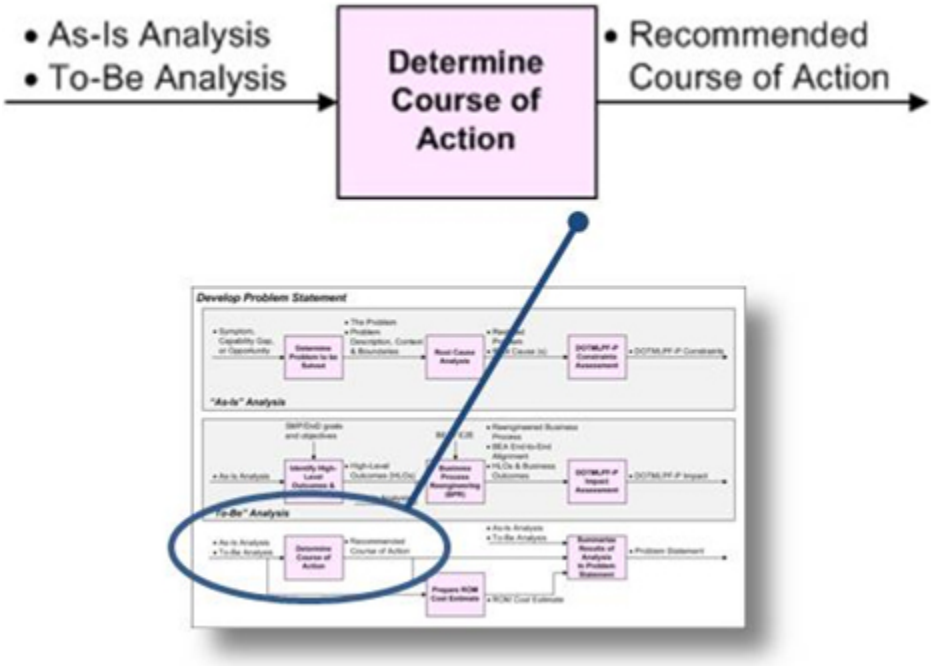
Table 12.1.3.2.T1 - Example of High-Level impacts from "To-Be" DOTMLPF-P Impact Assessment Analysis

DOTMLPF Element	Impact
Doctrine:	Development of new and revised operating procedures is required.
Organization:	Organization changes are required in order to achieve the agreed service level commitments.
Training:	A new training course is required and Personnel need ongoing access to the training.
Materiel:	The existing system must be enhanced or replaced in order to collect the information required by the new policy.
Leadership and Education:	No impact identified.
Personnel:	All Personnel in the call center will be trained for the revised Roles defined for the enhanced or new system.
Facilities:	As a result of BPR, operational improvements will increase the capacity of the existing call center and accommodate the new services that are planned.
Policy **:**	No impact identified.

12.1.3.3. Remaining BCD Phase Activities

Determine Recommended Course of Action. Based on completed analyses, the Functional Sponsor must decide whether a materiel solution is required to solve the problem. Assuming the Functional Sponsor's recommended course of action consists of a materiel solution he or she determines what areas to analyze during the Investment Management (IM) Phase and offers recommendations as to the appropriate solution mix (materiel and non-materiel) that will achieve the defined outcomes.

Figure 12.1.3.3.F1 - Determine Recommended Course of Action Context



No specific solutions are recommended at this point, but based on the analysis conducted, sufficient information is available to inform decision makers that a Materiel Development Decision (MDD) may be required to move forward in the process and, if so, enable an Analysis of Alternatives (AoA) to explore specific materiel solution options.

The Functional Sponsor's recommendation(s) is one of the factors that the Investment Review Board (IRB) Chair will consider when reviewing and determining whether to approve the Problem Statement. The Functional Sponsor's recommendation should also include any DOTMLPF-P impacts.

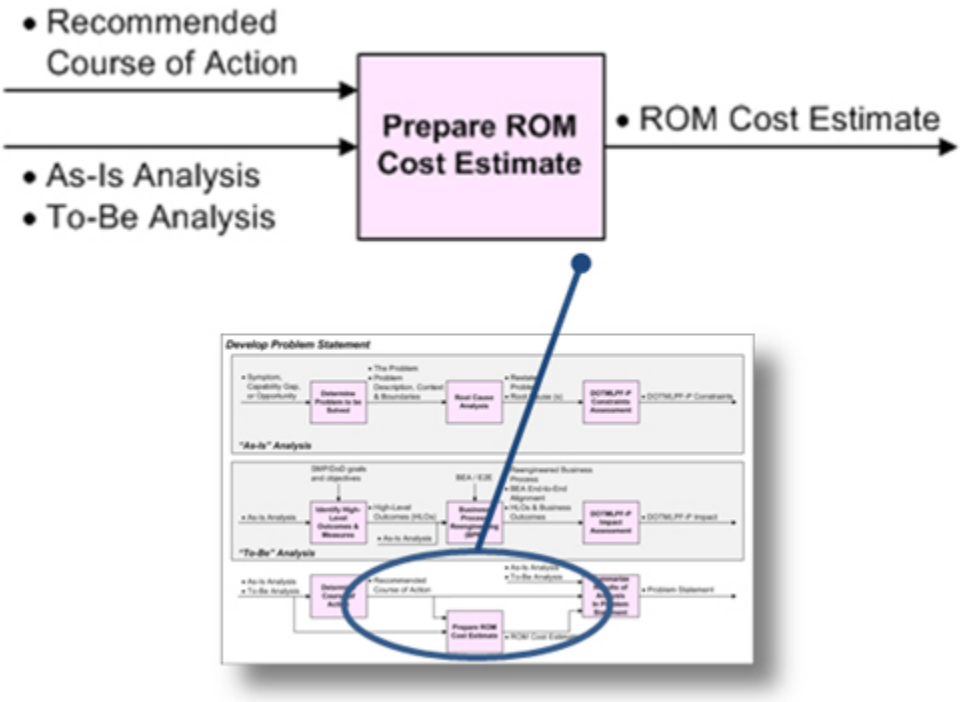
The following is a summary of the Determine Recommended Course of Action activity:

- *Inputs.* "As-Is" Analysis, "To-Be" Analysis.
- *Process.* The Functional Sponsor will review the "As-Is" Analysis and "To-Be" Analysis and select a course of action for further analysis in the IM Phase, if a material component is required. This information will be summarized in the Problem Statement and reviewed by the IRB Chair for approval.
- *Outputs* . Recommended course of action.

***Prepare ROM Cost Estimate* .** Based on the Functional Sponsor's recommendation(s), a Rough Order of Magnitude (ROM) cost estimate is developed. The ROM provides a general picture of the level of effort required to solve the problem and the relative size (MAIS or non-MAIS) of what the effort might cost. According to GAO-09-3SP, March 2009 , "Best Practices for Developing and Managing Capital Program Costs", a ROM is "developed when a quick estimate is needed and few details are available. Usually based on historical ratio information, it is

typically developed to support what-if analyses and can be developed for a particular phase or portion of an estimate to the entire cost estimate...."

Figure 12.1.3.3.F2 - Prepare ROM Cost Estimate Context



It is important to provide a best guess for the ROM as it will be an indicator of the level of oversight required after Problem Statement approval.

The following is a summary of the Prepare ROM Cost Estimate Activity:

- *Inputs.* "As-Is" Analysis, "To-Be" Analysis.
- *Process.* The Functional Sponsor will use appropriate SMEs in developing a ROM; it is essentially the gross estimate to bridge the gap between the "As-Is" state and "To-Be" state. At this point in the process there is limited information available to yield a detailed estimate but only a gross estimate is needed to help determine the level of oversight for a potential program. One estimating technique to consider is Analogy (see DAU's Teaching Note on Cost Estimating Methodologies, February 2011 for more information).
- *Outputs* . ROM Cost Estimate.

Summarize Results of Analysis in Problem Statement . Results of (BCD) Phase activities are summarized in the Problem Statement by the Functional Sponsor. This summarization should provide decision makers with the essential information about the business need to make an informed decision supporting the IRB Problem Statement Review. Considerations for this activity are outlined in Figure **12.1.3.3.F4** .

Figure 12.1.3.3.F3 - Summarize Results of Analysis in Problem Statement Context

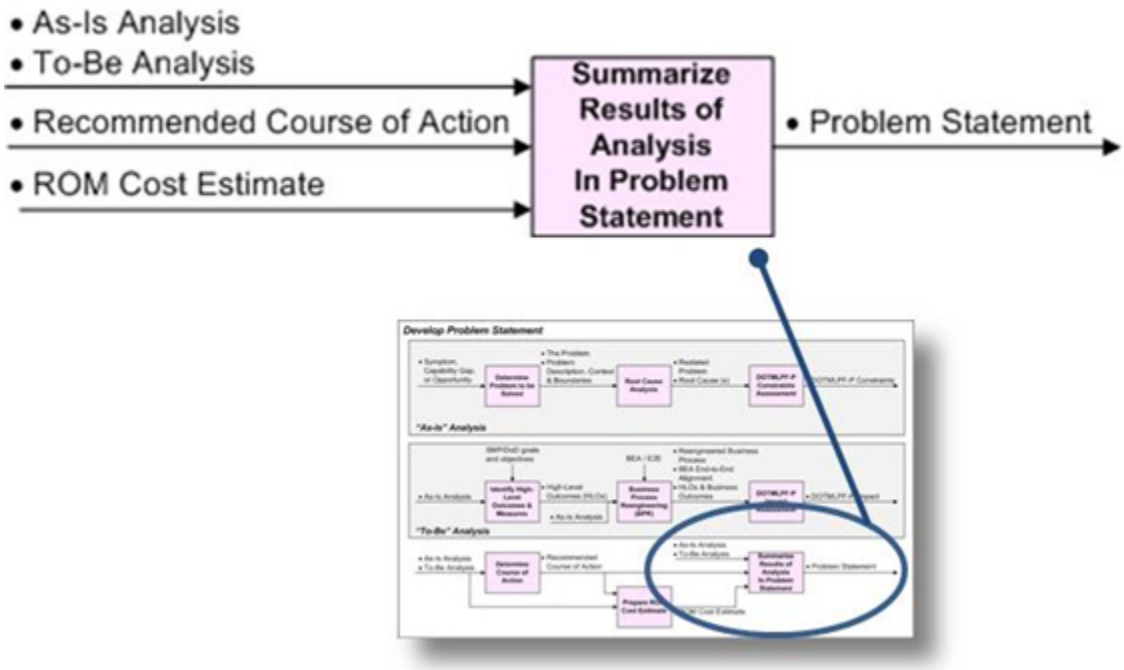


Figure 12.1.3.3.F4 - Considerations Prior to IRB Submission

When compiling the Problem Statement, and before presentation to the IRB, the Functional Sponsor should determine whether the following questions have been adequately answered / addressed:

1. Does the Problem Statement concisely and convincingly demonstrate that the business need exists and merit's solving?
2. Have comprehensive Root Cause and DOTMLPF-P analyses been performed?
3. Has this business need / problem already been solved in the Department, as discovered through initial research?
4. Have specific and measurable success factors been defined and agreed upon among the functional and stakeholder community?
5. Do initial BPR efforts result in enough streamlining and efficiencies to warrant further analysis and continued investment?
6. Is it clear what the Functional Sponsor is seeking from the decision maker, and what steps / activities will take place after the decision?

The following is a summary of the Summarize Results of Analysis in Problem Statement activity:

- *Inputs.* Results of BCD Phase activities (Business Process Re-engineering BPR) results (driven by HLOs) "As-Is" Analysis outputs, "To-Be" Analysis outputs,

recommendation(s) (COA), ROM cost estimate).

- *Process.* The Functional Sponsor summarizes the output of the BCD Phase in the appropriate sections of the Problem Statement (Business Case Section 3), either as phase activities are completed or at the end of the BCD Phase (prior to IRB submission). The Functional Sponsor will also complete the Executive Summary and Introduction sections (Business Case Sections 1 and 2) in preparation for the IRB Problem Statement review.
- *Outputs* . Business Case Sections 1-3.

12.1.3.4. IRB Preparation

Once the Functional Sponsor determines that the Problem Statement is ready for Investment Review Board (IRB) review, it is submitted to the IRB Support Staff. Procedures for IRB submittal can be located in the "Defense Business Systems Investment Management Process Guidance", June 2012 . The package must include Sections 1-3 of the Business Case signed by the Functional Sponsor and a summary slide containing a short description of the problem, the desired outcome or "what good looks like", the ROM Cost Estimate, and the proposed business value to the Department / end-user.

At the IRB, a review is conducted that will generally address items #1-6 of Figure **12.1.3.3.F4** , in addition to the Enterprise and portfolio implications of the need and the Functional Sponsor's recommendation(s) for the way ahead. The IRB Chair will approve or disapprove the Problem Statement or may send it back to the Component for additional work. For an IRB Chair-approved Problem Statement, one of the following occurs:

- If the recommended course of action contains no materiel elements, BCL is exited and the Component will complete / implement non-materiel activities (i.e., policy / process changes, training development, etc.) and report back to the IRB on progress of implementation as directed by the IRB Chair, as appropriate;
- If the recommended course of action contains a materiel element but the cost is expected to fall under the MAIS threshold, subsequent BCL Phases will be executed at the Component level while investment certification activities will utilize the IRB process; or
- If the recommended course of action contains a materiel element and the cost is expected to exceed the MAIS threshold, the Component will execute BCL Phases at the OSD level and utilize the IRB process for investment certification activities.

12.1.3.5. Materiel Development Decision (MDD) Preparation

In preparation for a Materiel Development Decision (MDD), the Director, Cost Assessment and Program Evaluation (DCAPE) (for expected MAIS-level efforts) or the Component-equivalent (for those efforts that are expected to be below MAIS-level, based on the ROM) will develop Analysis of Alternative (AoA) Study Guidance and the Functional Sponsor will complete and submit an AoA Study Plan, based off the approved AoA Study Guidance.

Information on developing the AoA Study Plan and sample AoA Study Plan outlines can be found in DAG Chapter 3, Section 3.3, "Analysis of Alternatives" . The AoA Study Plan should take into account the HLOs and corresponding measures developed during BCD as well as the

results of the initial BPR, as these will provide valuable input to how each alternative will be evaluated.

The Study Guidance and Study Plan, along with the approved Problem Statement, will be reviewed by the MDA at the MDD. Based on the ROM:

- Functional sponsors of MAIS-level initiatives will submit the Study Plan through the IRB Chair to the MDA.
- Functional sponsors of below MAIS-level initiatives will submit the Study Plan through appropriate governance channels at the Component level.

The BCD Phase ends with approval of the Problem Statement by the IRB Chair and submission of the AoA materials to the IRB Chair (or, appropriate Component-level governance forum). If a Problem Statement is solely non-materiel, the BCD ends when the Problem Statement is approved since no AoA will be required.

12.2. Investment Management (IM) Phase

12.2.1. Purpose, Outputs, and Outcomes

12.2.2. IM Phase Process

12.2.3. IM Phase Activities

12.2.3.1. Conduct Materiel Solution Analysis

12.2. Investment Management (IM) Phase

12.2.1. Purpose, Outputs, and Outcomes

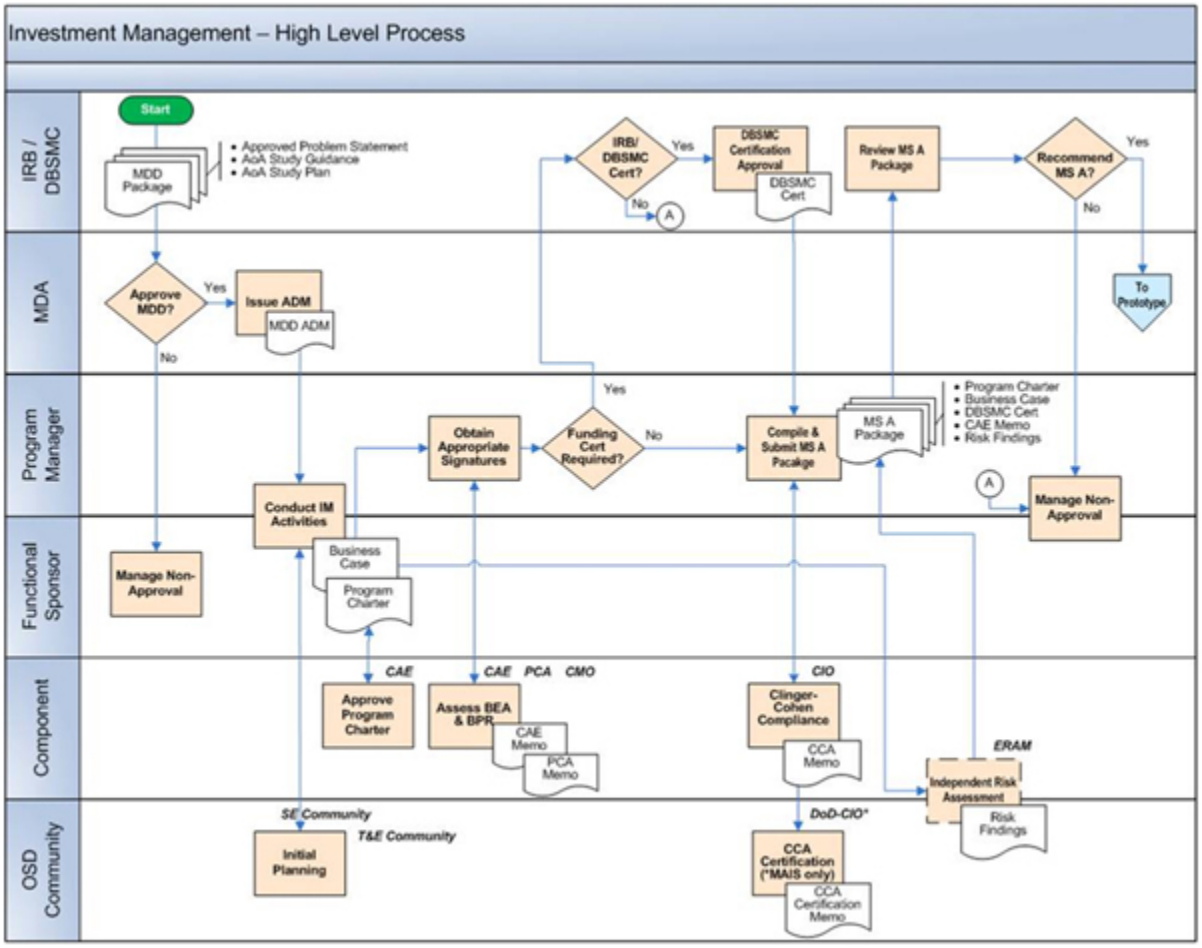
The purpose of the Investment Management (IM) Phase is to conduct an Analysis of Alternatives (AoA), recommend a preferred Doctrine, Organization, Training, Materiel, Leadership and education, Personnel, Facilities, and Policy (DOTMLPF-P) solution and deliver a plan (i.e., Business Case) to satisfy the business need in the approved Problem Statement. It is an iterative process that will result in a strategy and plan that can be executed to field useful capability.

The outputs and outcome of IM Phase activity are:

- A completed AoA that enables the Functional Sponsor and program manager (PM) to recommend a preferred solution for solving the business need;
- A well-defined business and technical management approach that describes how the effort will achieve its objectives using the preferred solution-set. The Business Case is the summary level document for those functional plans and strategies.
- A Program Charter defining roles and responsibilities for the potential program; and,
- Certification of funds to proceed through the next BCL phase;

12.2.2. IM Phase Process

Figure 12.2.2.F1 - IM Phase High Level Process Flow



At the Materiel Development Decision (MDD) the Milestone Decision Authority (MDA), in most cases, will approve entry into the Investment Management (IM) Phase. However, it is possible that the MDA may specify a different entry point (phase) into BCL if the technology supporting the materiel solution has been demonstrated and is well-understood, and the potential program is defined well enough to begin in a later phase. If this is the case, the program shall proceed to the designated entry point and perform the appropriate activities as specified in that phase and the MDD Acquisition Decision Memorandum (ADM).

During the IM Phase a Program Manager (PM) is typically assigned early on and will work with the Functional Sponsor to begin managing the materiel portion of IM Phase activities.

The IM Phase begins with an analysis to describe the requirements for the materiel solution and an Analysis of Alternatives (AoA) to select a preferred solution. Based on the preferred solution, the Functional Sponsor and PM will conduct activities necessary to define a program and develop a well-documented plan to deliver the outcomes defined in the IRB Chair approved

Problem Statement. Planning documents are developed as appropriate (e.g., systems engineering, test & evaluation) for the program and are expected to evolve as the program matures; prior to Milestone (MS) A, some plans are merely strategies to be refined into plans when more facts are known.

The results of IM Phase activities are summarized in a Business Case that provides decision makers with on overview of the proposed solution including the acquisition and contracting approach. The Program Charter, that outlines the managerial methods and standards for governing the program, is also developed during this phase.

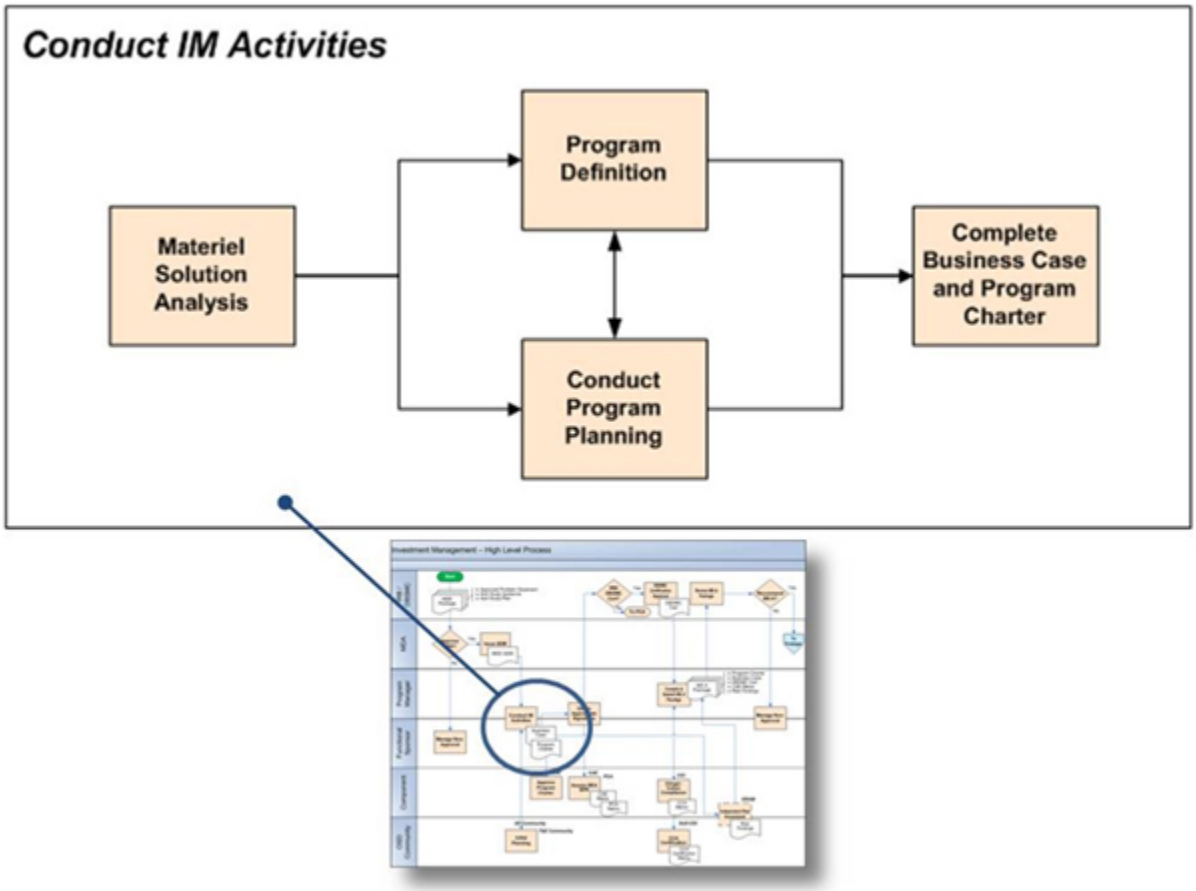
Also, prior to the end of IM Phase, the PM must schedule an independent risk assessment (Enterprise Risk Assessment Methodology (ERAM) is required for MAIS) approximately 120 days prior to MS A review. An ERAM is required for all MAIS DBS prior to a MS A or B review. The program manager will collaborate with the risk assessment team to incorporate findings and recommendations into the program's risk mitigation plan. No additional documentation is created by the program for a risk assessment, as it is based on existing program documentation. Detailed risk assessment findings will be provided to the Functional Sponsor, PM, Investment Review Board (IRB) Chair, and MDA. Summary ERAM findings are presented at the IRB.

The IM Phase ends when the phase activities are complete and summarized in the Business case, and the PM compiles and submits the MS A acquisition decision package to the IRB for review and the IRB Chair forwards a MS A recommendation to the MDA .

12.2.3. IM Phase Activities

The Investment Management (IM) Phase involves numerous activities beginning by conducting a detailed materiel solution analysis and subsequently developing a program plan based on the results of this analysis. These activities are depicted in more detail in Figure **12.2.3.F1** . The goal of IM Phase activities is to develop an efficient and effective plan to fulfill the business need documented in the Problem Statement. The results of IM Phase analysis and activities are summarized in a Business Case and a Program Charter, the two key documents used by decision-makers throughout the Business Capability Lifecycle (BCL). The Business Case Template and Program Charter Template are available on the Office of the Deputy Chief Management Officer (DCMO)'s BCL webpage .

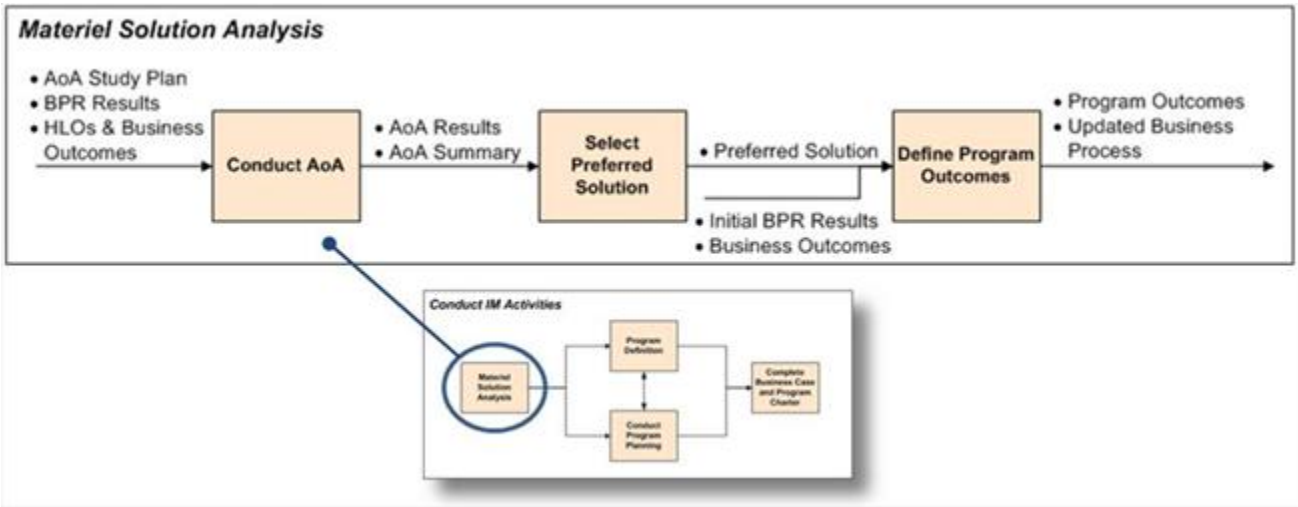
Figure 12.2.3.F1 - Decomposition of IM Phase Activities



12.2.3.1. Conduct Materiel Solution Analysis

Conducting a Materiel Solution Analysis enables the Functional Sponsor to describe the needed requirements to achieve the high-level outcomes (HLOs) and business outcomes defined in the Problem Statement. Activities completed during the Material Solution Analysis include: conducting an analysis on each of the selected alternatives per the Analysis of Alternatives (AoA) Study Guidance along with their associated Doctrine, Organization, Training, Leadership and education, Personnel, Facilities, and Policy (DOT_LPF-P) impacts and risks; comparing each alternative against how well it will address the HLOs, business outcomes and their corresponding measures to solve the business need; selecting a preferred solution based on criteria outlined in the AoA Study Guidance and Plan; and, developing and defining program outcomes. These activities are depicted in further detail in Figure **12.2.3.1.F1** **.**

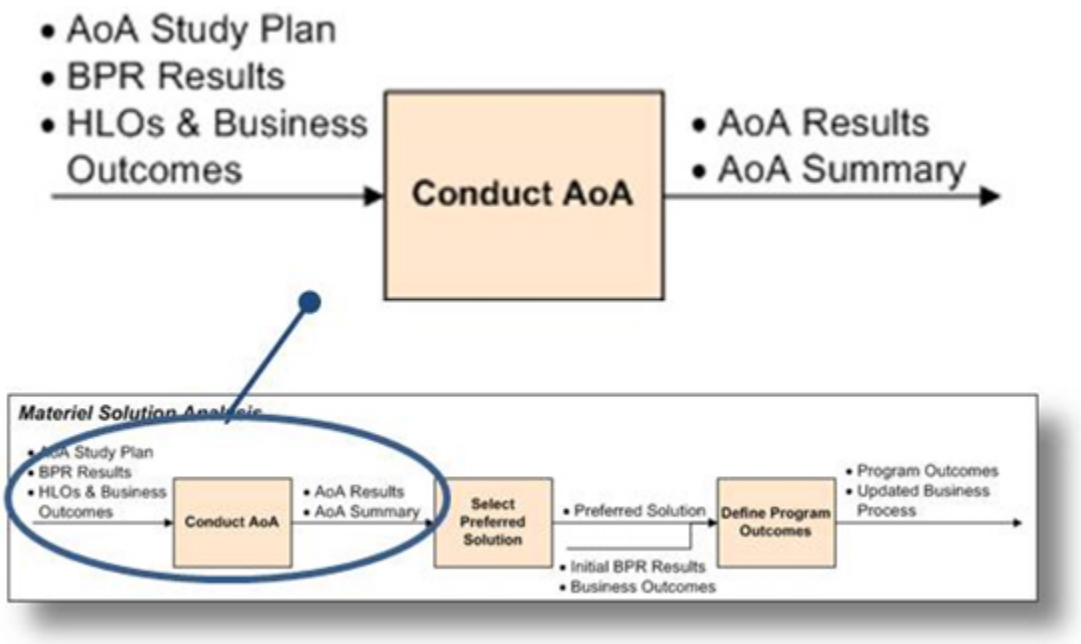
Figure 12.2.3.1.F1 - Decomposition of Materiel Solution Analysis



Conduct Analysis of Alternatives (AoA).

The AoA is an analytical study that is intended to compare the business capability, performance potential, operational effectiveness, cost, and risks of a number of potential alternative solutions to address the problem identified in the Problem Statement. Detailed information about conducting an AoA - including how to develop an AoA Study Plan - can be found in DAG Chapter 3, Section 3.3, "Analysis of Alternatives" .

Figure 12.2.3.1.F2 - Conduct AoA Context



Whereas JCIDS uses the Initial Capabilities Document (ICD) to guide the AoA, the AoA

conducted during the IM Phase utilizes information from the Problem Statement and is directed by the AoA Study Guidance and Plan. It is critical that the results of the DOTMLPF-P Impact Assessment conducted during the BCD Phase are leveraged during the AoA.

During the AoA, the Functional Sponsor will leverage a team to assess each defined alternative and determine which will best solve the problem. Each alternative must be evaluated in terms of how well it addresses the HLOs, business outcomes, and measures in the Problem Statement and how well it fits into the "To-Be" state as defined by the initial Business Process Re-engineering (BPR). Any potential solution must also have the ability to become Business Enterprise Architecture (BEA) -compliant. A cost analysis (total life-cycle or total ownership, as appropriate) and cost effectiveness analysis on each alternative is conducted in addition to market research. The summary of these results is provided in the Business Case. The summary must include, at a minimum:

- A high-level explanation of the AoA process / methodology used;
- The type of market research conducted;
- The preferred alternative selection resulting from the AoA;
- Benefits and risks from the preferred alternative selection; and
- Any other information the Functional Sponsor deems appropriate for decision makers.

TIP: The HLOs and associated measures developed during the BCD phase should have been written to be independent of a particular solution (i.e., solution agnostic).

Something to avoid is the following scenario found during a GAO audit: DoD and service officials responsible for conducting AoA's indicated that often proposed capability requirements are so specific that they effectively eliminate all but the service sponsor's preferred concepts instead of considering other alternatives (GAO-09-655, September 2009).

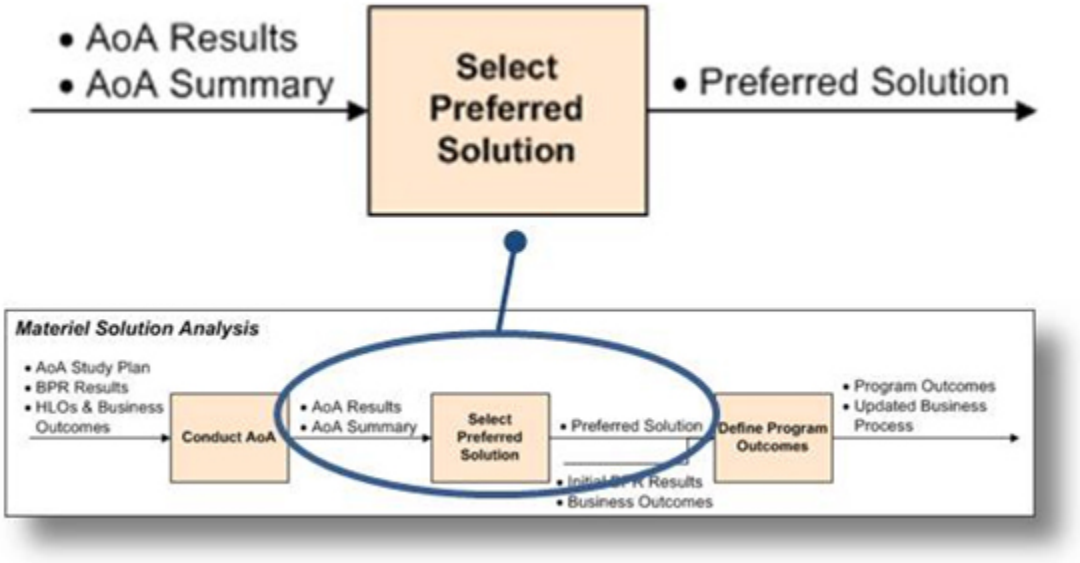
The following is a summary of the Conduct AoA activity:

- *Inputs.* AoA Study Plan (based on the approved Problem Statement and AoA Study Guidance), initial BPR results, HLOs and business outcomes, and corresponding measures.
- *Process.* The Functional Sponsor coordinates an AoA study team/working group and assesses each alternative using the approved AoA Study Guidance and AoA Study Plan. Together, the Functional Sponsor and team will, at a minimum, conduct market research, perform cost analysis and provide a summary of the alternatives (and the preferred solution) in the Business Case.
- *Outputs.* Solution options (AoA results), AoA summary documented in the Business Case.

Select Preferred Solution.

Once all alternatives have been analyzed according to the AoA Study Plan, the Functional Sponsor selects the best-value solution in terms of cost, best fit for providing the desired business capability, performance, support and other factors, for solving the problem as defined in the Problem Statement. The selection process takes into consideration impacts of potential tradeoffs, and the principles of Better Buying Power .

Figure 12.2.3.1.F3 - Preferred Solution Selection Context



TIP: The "best value" alternative does not always mean the least expensive. According to DoD ESI Best Value Toolkit , "best value" is defined as "the expected outcome of an acquisition that, in the Government's estimation, provides the greatest overall benefit in response to the requirement" . Thus, selecting a preferred solution should take into account other factors than just cost, such as performance or time, and most fundamentally, meeting the needs of the user.

The following is a summary of the Select Preferred Solution activity along with an example:

- *Inputs* . AoA results, AoA Summary.
- *Process.* Guided by the AoA Study Plan, the Functional Sponsor and the technical team, including appropriate subject matter experts (SMEs), analyze potential solutions by conducting a best-value determination (including consideration of Better Buying Power principles, tradeoffs, etc.). The resulting analysis will yield the preferred solution. The overall analysis is then summarized in the Business Case.
- *Outputs* . Preferred solution.

Preferred Solution Selection Example. An example of the preferred solution selection process

comes from a general commercial off-the-shelf (COTS) software selection.

1. The Functional Sponsor and technical team review the following AoA results presented in a table format:

Solution Option 1: COTS (i.e., Oracle Financial Management (FM) software)

Solution Option 2: Hybrid solution (i.e., Oracle FM software and custom development)

Table 12.2.3.1.T1 - Example AoA Results

Alternative	**Benefit's**	**Risks**	**Type of Cost Analysis**	**Cost Estimate**
Oracle Financial Management e-business suite	Widely used commercially/ in DoD	High number of system interfaces	Life Cycle Cost (LCC)	$96M
Oracle FM+ custom development	Greatest chance of achieving HLOs	Complex software development	LCC	$110M

2. As part of the best-value determination, the Functional Sponsor and technical team perform tradeoff analysis. The purpose is to re-evaluate and update the unconstrained "To-Be" BPR conducted during the Business Capability Definition (BCD) Phase by analyzing it against the alternatives. The objective is to minimize software customization and to identify tradeoffs between the re-engineered "To-Be" state and the alternatives. Tradeoffs are those aspects of the re-engineered "To-Be" state that will need to be modified based on the selected alternative such as interfaces to other systems, business rules, and reports. Statute mandates that the commercial business process should be adopted to minimize customization of COTS products as opposed to customizing COTS software to match legacy practices. As a result of the analysis, the team develops the following conclusions about the two alternatives:

Alternative 1: Oracle Financials requires extensive tradeoffs in desired business capability, i.e., it does not allow for the type of feeder systems mandated by DoD Policy, and commercial business processes are different than the original "To-Be" process.

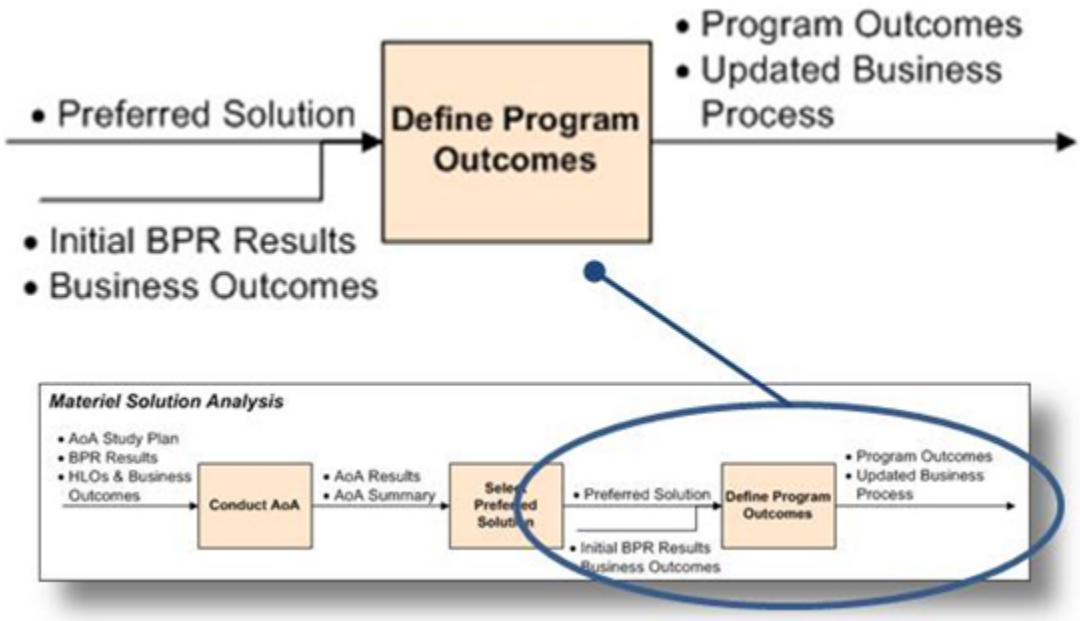
Alternative 2: Oracle Financials + custom development requires minimal tradeoffs; this will cost more and take more time. Also, the final software application will no longer be COTS.

3. After careful consideration using best-value determination, the team selects the COTS alternative (Oracle Financials software) as their preferred solution. The team determined that it is feasible that the policy can be changed (added risk), and adopting the commercial business processes will help deliver the desired outcomes but will require additional training.

Define Program Outcomes.

After a solution has been selected as a result of the AoA, the Functional Sponsor along with the Program Manager performs solution-specific BPR. This activity includes updating the "To-Be" process based on the business process inherent to the solution in addition to defining and prioritizing program outcomes based on the decomposition of HLOs and business outcomes first defined during the BCD Phase. The connected top-down framework of outcomes from a strategic to a more detailed level ensures continuity between the HLOs and program outcomes, and provides the basis for developing more specific system-level requirements to be tested against during Execution.

Figure 12.2.3.1.F4 - Define Program Outcomes Context



Program outcomes defined during the IM Phase should be specific enough to allow the association of functional requirements and non-functional requirements (i.e., DOT_LPF-P) during and beyond the Prototyping Phase. For example, if a program outcome identified during IM is: "Administration capability for role-based authorization", then an associated functional requirement may be: "The system shall enable a user with the role of System Administrator to assign one or more roles to a user of the system".

TIP: Detailed system-level requirements do not typically belong in the Business Case and should be kept at the program-level with other detailed program-level operational or execution-level documentation.

The following is a summary of the Define Program Outcomes activity along with an example:

- *Inputs.* Preferred solution, initial BPR results, HLOs and business outcomes and their corresponding measures, benefit's, risks, assumptions, constraints, and dependencies.

- *Process.* The Functional Sponsor decomposes the HLOs and business outcomes into more specific program outcomes (e.g., what specific functions the potential program will perform) based on the initial BPR results, the preferred solution, and any previous requirements tradeoffs. Up to now, the business outcomes/Capabilities have been driven by the BEA-defined end-to-end (E2E) business flows, business processes, and capabilities. Now that a preferred solution has been selected the "To-Be" business process may have to be revised to accommodate the preferred solution and any tradeoffs made during the analysis. If the updated business process ("To-Be) causes gaps between it and the BEA a determination will have to be made regarding issuing a waiver or filling the gap in the BEA for its next release. Program outcomes must also have associated measures, benefit's, risks, assumptions, constraints, and dependencies. A summary of this information is then documented in the Business Case as appropriate.
- *Outputs.* Program outcomes and their measures, benefit's, risks, assumptions, constraints, and dependencies; and, the updated business process.

Program Outcome Definition Example. An example of defining program outcomes comes from the Defense Agencies Initiative (DAI):

1. The Functional Sponsor determined the program outcome that aligns to the HLOs and business outcome(s):

HLO: Accurate, useful, reliable and timely financial data and management information

Business Outcome: Consistency with financial and Information Assurance standards

Program Outcome: Financial controls/internal controls

Program Outcome Definition: Ensure financial controls and internal controls are embedded in the financial solution to prevent material weaknesses, and ensure budgetary integrity by establishing financial control over funds, obligations, assets, and liabilities.

2. The Functional Sponsor conducts additional BPR refinement, if necessary. In this example, the Functional Sponsor has determined the initial BPR was silent on audit trails so an additional program outcome was added to the business outcome as follows:

HLO: Accurate, useful, reliable and timely financial data and management information

Business Outcome: Consistency with financial and Information Assurance standards

Program Outcome: Audit Trail

Program Outcome Definition: A record of transactions is referenced on-demand to: trace activities to original documents and verify account balances.

3. The Functional Sponsor specified characteristics of the program outcome including:

measurements, benefit's, risks, assumptions, constraints, and dependencies:

Program Outcome: Implement Financial / internal controls

Measurement: Compliance with the financial / internal controls requirements as defined in OMB Circular A-123.

Current Baseline Value: 0%

Targeted Threshold Value: 75%

Targeted Objective Value: 100%

Benefit's: Integrity of financial information

Risks: Ability to achieve component consensus on information requirements; quality of legacy data

Assumptions: Financial information will be entered correctly into the system

Constraints: The information must be reported to Congress annually

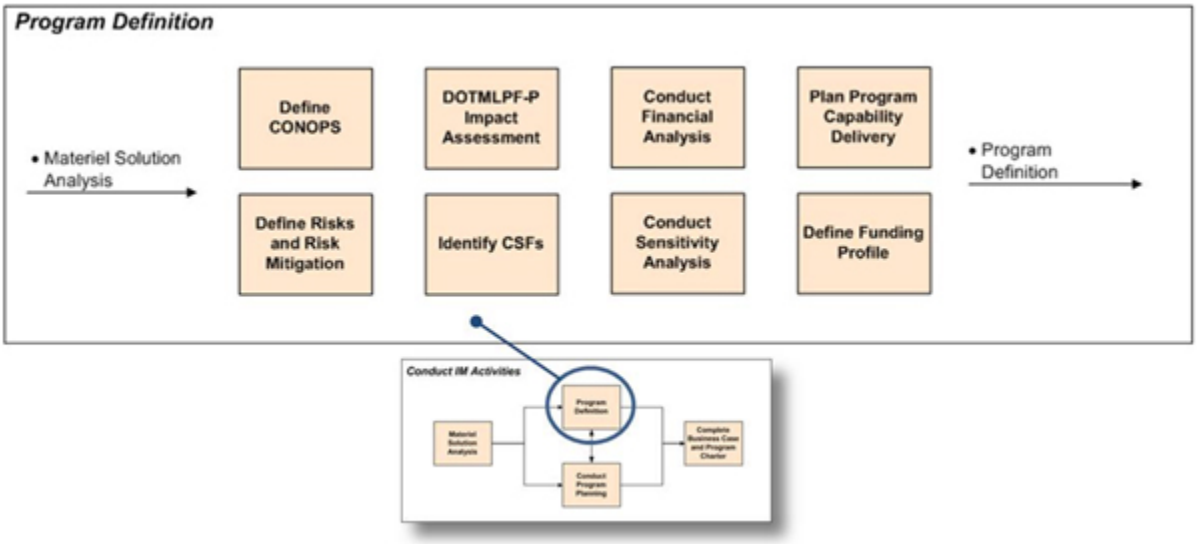
Dependencies: The solution requires multiple interfaces

12.2.3.2. Program Definition

12.2.3.2. Program Definition

Once the Materiel Solution Analysis is complete, the program manager and Functional Sponsor must define and describe the potential program in preparation for future reviews and decisions by the Investment Review Board (IRB) and / or Milestone Decision Authority (MDA) prior to and during program execution. This includes: defining a properly scoped Concept of Operations with assumptions; updating the Doctrine, Organization, Training, Materiel, Leadership and education, Personnel, Facilities and Policy (DOTMLPF-P) Assessment; identifying any additional risks and developing a risk mitigation plan; identifying Critical Success Factors (CSFs); conducting a financial and sensitivity analysis; developing a funding profile and a capability delivery schedule; and, preparing the necessary information to be summarized in the Business Case and Program Charter. The order of activities conducted during Investment Management (IM) is based on what makes sense for a particular program; in fact, many of the activities may be conducted simultaneously. It's important to note that during Program Definition various program-level documents will start to be developed to capture key information that will inform program planning. These activities are depicted in Figure **12.2.3.2.F1** .

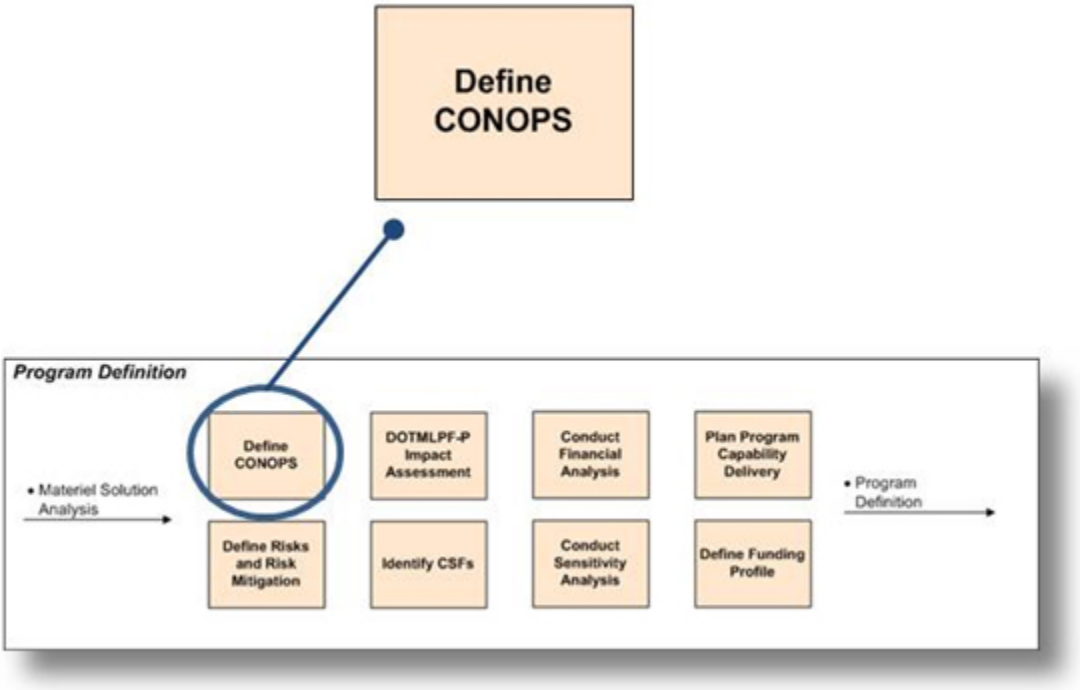
Figure 12.2.3.2.F1 - Decomposition of Program Definition



Define Concept of Operations (CONOPS).

The purpose of this activity is to describe the characteristics of a proposed program from the viewpoint of an individual who will use the system. The Concept of Operations (CONOPS) is used to communicate the quantitative and qualitative program characteristics to all stakeholders. It evolves from a concept and describes, at a minimum, how the proposed set of capabilities will be integrated to achieve desired outcomes. Ideally it offers a clear methodology to realize the program goals and objectives (i.e., outcomes, while not intending to be an implementation or transition plan).

Figure 12.2.3.2.F2 - Define CONOPS Context



At a minimum, the CONOPS should include: the working relationships of key stakeholders using or contributing to the solution; how the various levels of outcomes defined will integrate to solve the problem; and a high-level view of the architecture for the solution, such as an OV-1 diagram (operational view).

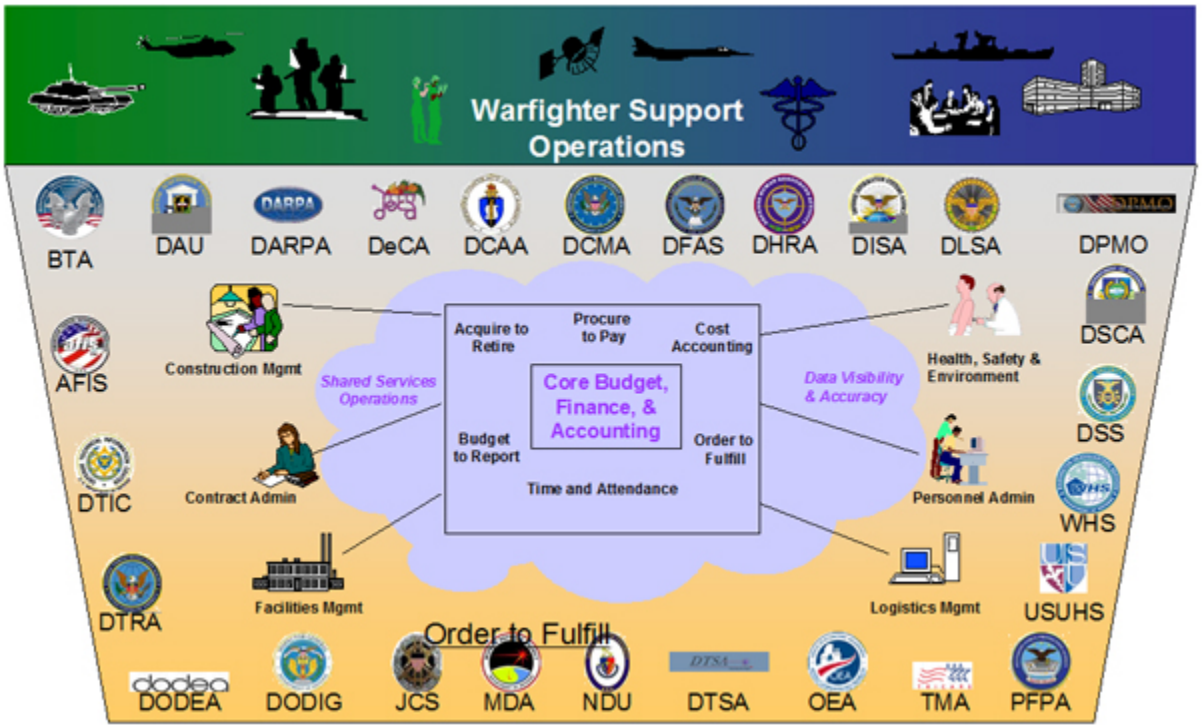
TIP: Remember that the CONOPS provides decision makers with a general overview of the potential program based on the preferred solution. While creating the CONOPS, it may be helpful to consider what, as a decision maker, you would like to see presented that would give you the best overall picture of how the potential program will be structured.

The following is a summary of the Define CONOPS activity along with an example OV-1 depiction from program documents:

- *Inputs.* Preferred solution, program outcomes, and updated business process resulting from the Materiel Solution Analysis.
- *Process.* The Functional Sponsor and program manager utilize expert judgment based on their collective knowledge of business and information technology (IT) systems to provide a vision that best conveys to decision makers how the system (preferred solution) would operate from a user perspective.
- *Outputs.* CONOPS, including an OV-1 diagram. This is summarized / depicted in the Business Case.

CONOPS Example. An example of an OV-1 diagram, shown in Figure 12.2.3.2.F3 , ***is from the Defense Agencies Initiative (DAI) Program:***

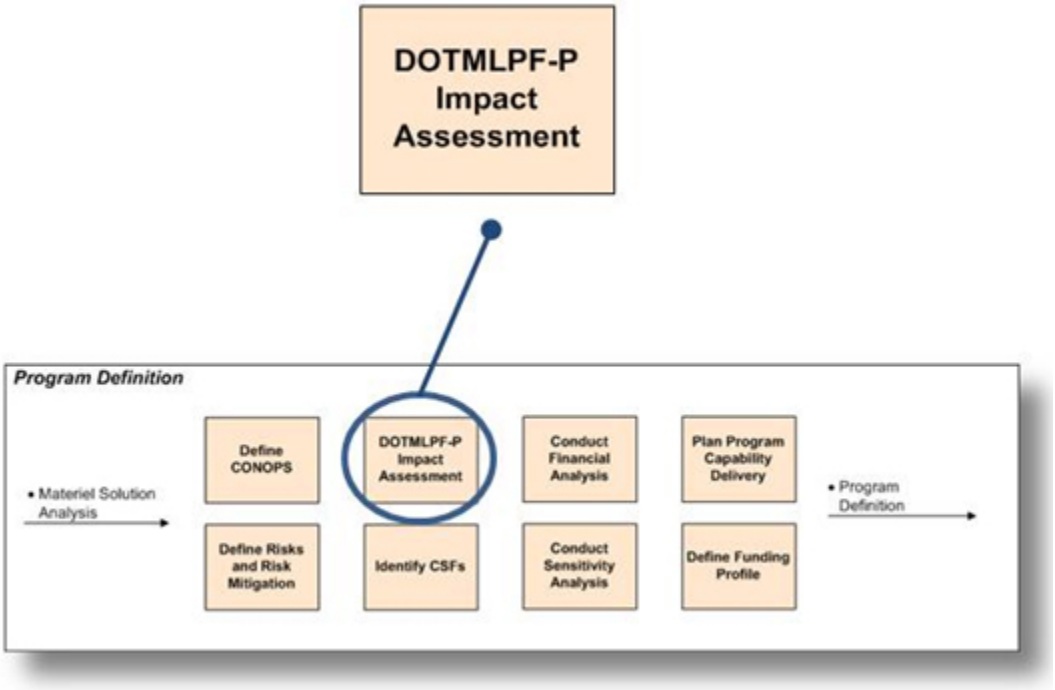
Figure 12.2.3.2.F3 - Example of an OV-1 Diagram



DOTMLPF-P Impact Assessment.

The purpose of this analysis is to understand the effects on any DOT_LPF-P elements now that the Functional Sponsor has selected the preferred materiel solution. The results may differ from the "To-Be" DOT_LPF-P assessment performed during the Business Capability Definition (BCD) Phase, particularly if a COTS product is chosen and the "To-Be" process needs to be changed to minimize customization. In summary, the process is meant to identify which non-materiel elements must be addressed to deliver the capability as intended. The Functional Sponsor is responsible and accountable for implementing non-materiel components of the solution.

Figure 12.2.3.2.F4 - DOTMLPF-P Impact Assessment Context



The Functional Sponsor and PM lead the effort to determine which changes, if any, need to be made to the previous "To-Be" assessment performed in the BCD Phase. This DOTMLPF-P Impact Assessment is based on emerging information resulting from the preferred solution, updated Business Process Re-engineering (BPR), and the program outcomes and corresponding measures defined in the previous activity.

The following is a summary of the DOTMLPF-P Impact Assessment activity along with an example of the summary output that may appear in the Business Case (*Note* : more detailed information does not need to appear in the Business Case, and may be kept as "working papers"):

- *Inputs.* Preferred solution, program outcomes, and updated business process resulting from the Materiel Solution Analysis.
- *Process.* Functional and acquisition subject matter experts (SMEs) consider the DOTMLPF-P elements that will be impacted within the "To-Be" state based on the preferred solution and any evolving BPR changes. A summary of the impact is recorded in the Business Case.
- *Outputs.* Identification of DOTMLPF-P Impacts. A summary of the analysis recorded in the Business Case, which includes a list of each DOTMLPF-P Impact and how it must change if the "To-Be" business process is realized. Any risks not associated with addressing the impacts should be identified and added to the program's risk management tool.

DOTMLPF-P Impact Assessment Example. An Example DOTMLPF-P Impact Assessment is based on using a commercial off-the-shelf (COTS) package per the revised "To-Be" business

process, as summarized in the Business Case:

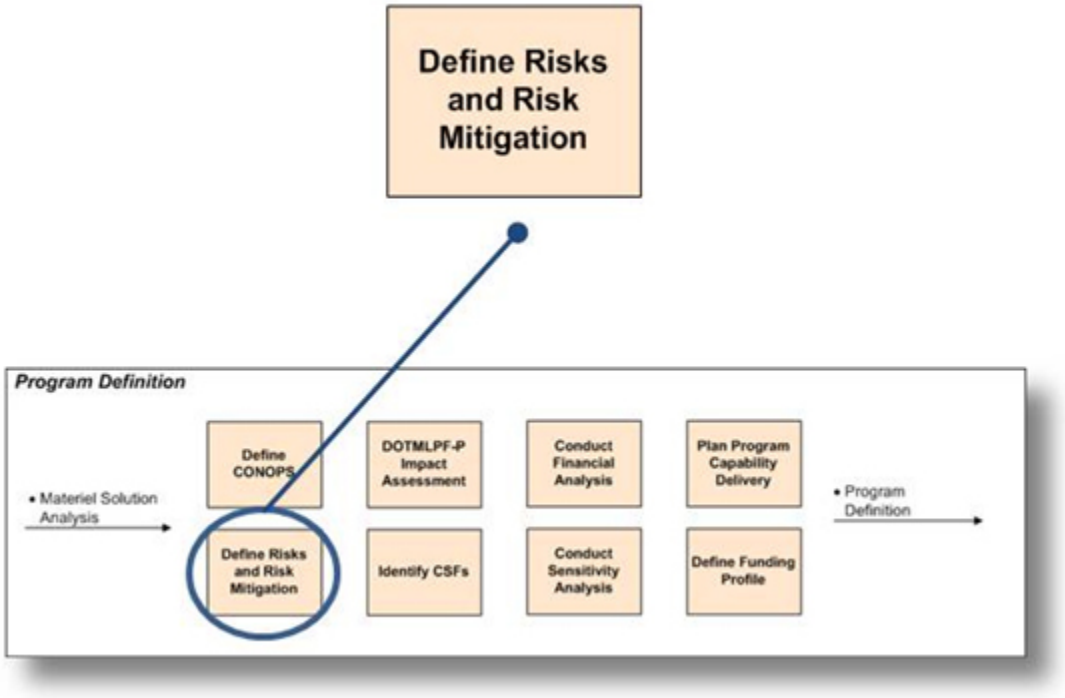
Table 12.2.3.2.T1 - Example of a "To-Be" DOTMLPF-P Impact Assessment

DOTMLPF Element	Impact
Doctrine:	Development of new and revised operating procedures is required.
Organization:	Organization changes are required in order to accommodate the built-in COTS business flow and BPR.
Training:	A new training course is required and Personnel need ongoing access to the training.
Materiel:	The COTS package must be configured and existing systems must be enhanced or replaced to optimize the capabilities and business processes. Will require some custom code to build interfaces.
Leadership and Education:	No impact identified.
Personnel:	All Personnel in the call center will be trained for the revised Roles defined for the enhanced or new system.
Facilities:	The COTS package will require new servers and must run on the GiG. New network equipment must be upgraded at various locations to facilitate increase in transactions.
Policy **:**	The policy mandating the use of existing accounting system must be changed to allow for optimal use of COTS and minimizing interfaces and customization to overcome data quality/standards issues.

Define Risks and Risk Mitigation.

Eliminating all risk is not feasible. Identifying risks early and continuously throughout the lifecycle and developing a plan to mitigate them is part of successful program management. Most business executives ask the following questions: what problem are we trying to solve; what's the benefit; how much will it cost; and what are the risks? Having an effective risk mitigation strategy will go a long way towards gaining buy-in from senior leadership and provide the program manager with information to plan for risk management.

Figure 12.2.3.2.F5 - Define Risks and Risk Mitigation Context



For information on identifying, mitigating and tracking risk, refer to sections 3 and 5 respectively of the Risk Management Guide for DoD Acquisition, August 2006 .

TIP: Generally, the Risk Management Guide refers to outputs from activities occurring later in the process (i.e., developing a work breakdown structure (WBS), earned value management (EVM), testing); however, based on lessons-learned, the chances of success are dramatically increased by effective risk mitigation. Therefore BCL encourages risk identification and mitigation early and continuously throughout the life of the program.

The following is a summary of the Defining Risks and Risk Mitigation activity along with an example:

- *Inputs.* DOTMLPF-P impacts, all risks identified to-date.
- *Process.* Based on the risk management plan in the Program Charter, SMEs from the functional and technical teams consider each of the previously identified risks (associated with DOTMLPF-P impacts) and identify any additional "hidden" risks. The SMEs will estimate the probability of each risk occurring and impact if the risk occurs and then identify the appropriate risk mitigation counter-measures. The SMEs forward all this information to the program manager to incorporate into the program's risk management plan. The program manager must initiate a method for tracking risk based on the risk management approach; define risk management activities and summarize key high risk elements in the Business Case. Detailed output of risk analysis is typically recorded in a risk register or risk log at the program execution level and an individual is assigned responsibility to each risk. For additional information on risk management, view the Risk

Management Guide for DoD Acquisition, August 2006 .

- *Outputs.* Prioritized Risks, Risk Mitigation Strategy.

A risk register or risk log is a repository of identified risks for the program. For each risk, additional information is included such as the risk's probability of occurrence, impact of occurrence, planned counter-measures (or risk mitigation), risk owner, and other pertinent information. An example of risk register or risk log is shown in Table **12.2.3.2.T2** .

Risk and Risk Mitigation Example Summarized in the Business Case .

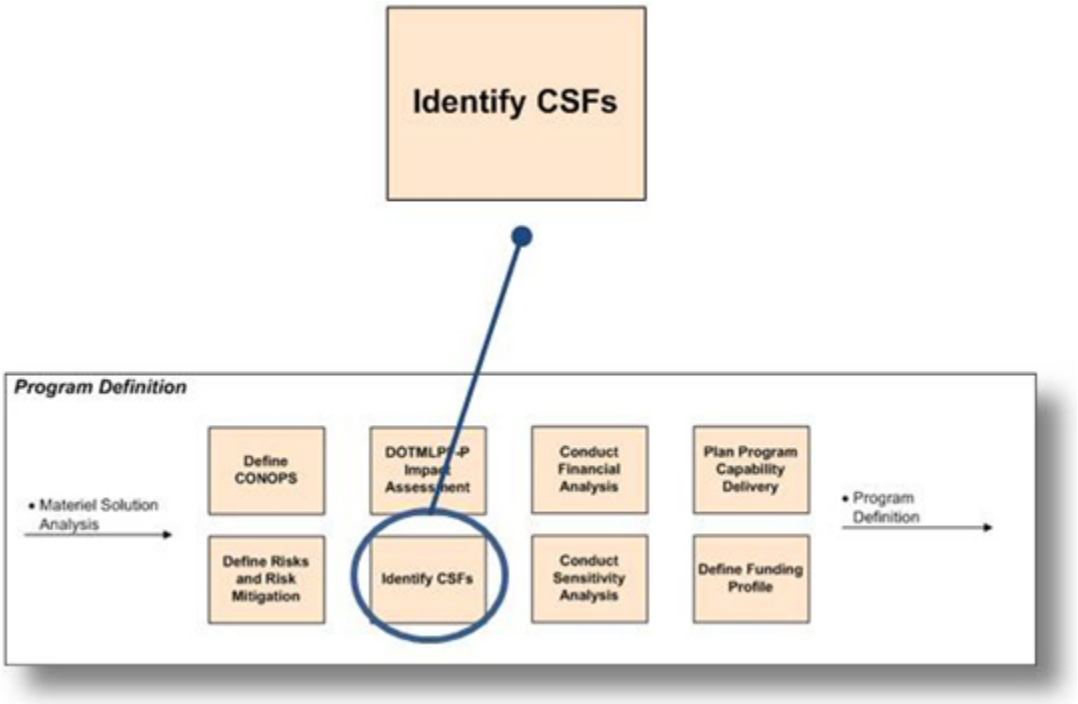
Table 12.2.3.2.T2 - Example of the Output of Risk and Risk Mitigation Activity

Risk	**Probability of Occurrence**	**Impact of Occurrence**	**Risk Mitigation**	**Risk Owner**
Inability to meet non-discretionary deadline for designated high-priority business capabilities.	High	Medium	Defer discretionary requirements to future Increment - manage customer expectations when this mitigation strategy is exercised. Monitor earned progress and *shift resources* from lower priority work when indicators suggest the schedule could be at risk.	PM
System interface from a required feeder system is not ready on-time for implementation.	High	High - may cause delay or additional resources	Sign an MOU/MOA with each system interface owner. Include technical reps in design discussions and publish a formal interface design specification. Conduct early testing of data exchanges. Develop contingency plan in case a suitable workaround becomes necessary.	PM

Identify Critical Success Factors.

Critical Success Factors (CSFs) inform stakeholders of those elements that are deemed must-haves for the potential program to succeed and identify the factors that stakeholders agree must be implemented to achieve Initial Operational Capability (IOC). The advantage of identifying CSFs is that they are simple to understand and they help focus attention on major concerns. This will influence requirements tradeoff analysis conducted during the Prototyping Phase as the Functional Sponsor and program manager define and scope each increment of capability delivery.

Figure 12.2.3.2.F6 - Identify CSFs Context



The following is a summary of the Identify CSFs activity along with an example list of CSFs summarized in the Business Case:

- *Inputs.* High impact risks and risk mitigation strategy, preferred solution, program outcomes and DOTMLPF-P impacts from the "To-Be" assessment.
- *Process.* From the inputs listed above, the program manager (PM), Functional Sponsor and SMEs from the functional and technical teams develop a list of prioritized CSFs. CSFs are the elements deemed as must-haves for the program to achieve the desired outcomes and may include factors outside the program manager's control. The CSFs become candidates for subsequent program management planning. For example: a CSF is proposed for the use of a requirements management tool. The program manager decides the tool is both essential and cost effective, so plans are made to acquire, install, and operate the tool.

- *Outputs.* List of CSFs summarized in the Business Case.

TIP: CSFs should differ from Key Performance Indicators (KPIs) which are measures that quantify management objectives, along with a target or threshold, and enable the measurement of strategic performance.

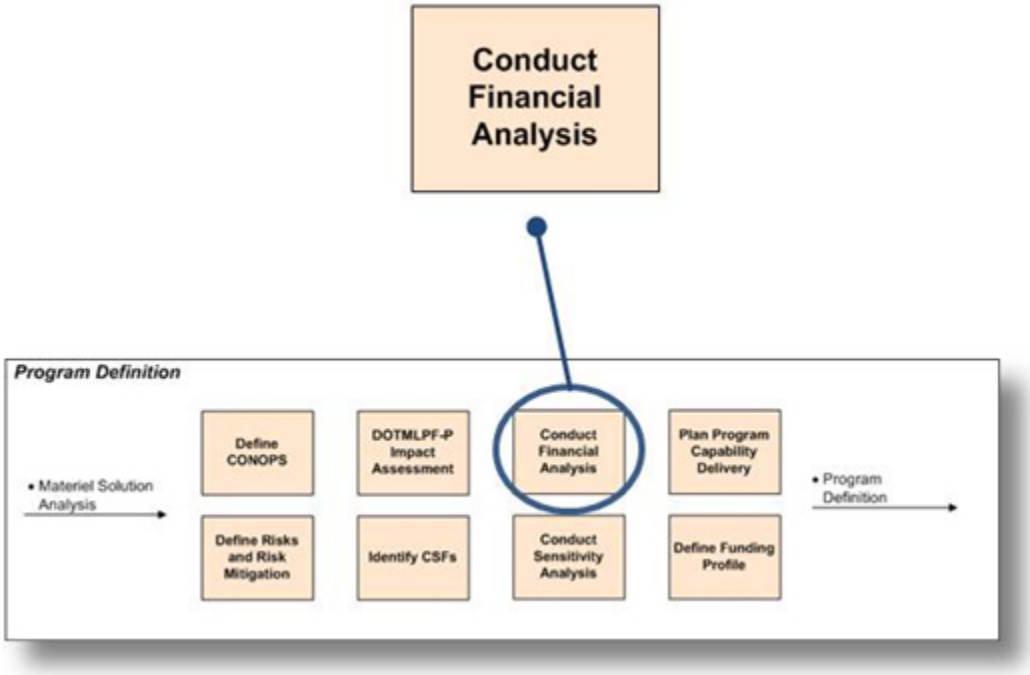
Example Critical Success Factors.

- Commitment from Functional Sponsor and executives
- Adequate training and change management
- Team knowledgeable in implementing large-scale ERP
- User involvement

Conduct Financial Analysis.

A financial analysis evaluates the cost and benefit of the proposed program in relation to the current "as-is" operation in order to define the planned investment and obtain greater efficiency and productivity in defense spending (i.e., Better Buying Power). For a MAIS program, an Economic Analysis (EA) is also conducted to evaluate alternatives for meeting objectives based on the present value of life-cycle costs and financial benefit's.

Figure 12.2.3.2.F7 - Conduct Financial Analysis Context



More detailed guidance for developing and preparing EA and Life-Cycle Cost (LCC) estimates can be found in DAG Chapter 3, Section 3.6, "Major Automated Information Systems Economic Analysis" and Section 3.7 "Principles for Life-Cycle Cost (LCC) Estimates" . The LCC estimate

and EA are summarized in the Business Case for the MS A and MS B reviews.

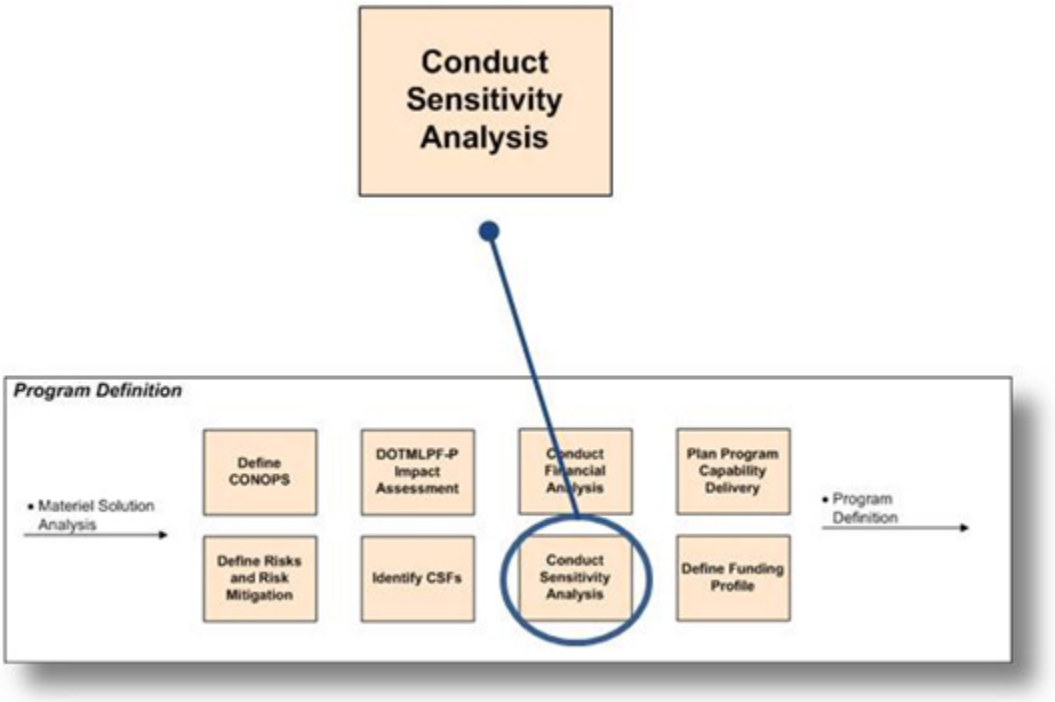
Below are basic inputs, processes, and outputs of the Conducting a Financial Analysis activity:

- *Inputs.* Concept of operations (CONOPS), Material Solution Analysis results.
- *Process.* The program manager and Functional Sponsor will develop the analytic approach and scope for preparing the LCC estimate. Based on the results of the Material Solution Analysis and the CONOPS, they will conduct the following activities:
    - Develop the program's Work Breakdown Structure (WBS) for all work necessary to: 1) meet requirements; 2) manage risks; and 3) obtain greater efficiency and productivity in defense spending (i.e., Better Buying Power).
    - Based on the WBS, prepare the LCC Estimate using planned estimating techniques.
    - Estimate the financial benefit's based on the qualitative benefit's documented in the Business Case.
    - Prepare a high-level, resource-loaded milestone schedule.
    - For MAIS programs, conduct an EA, including a calculation of return on investment (ROI).
- *Outputs.* WBS, Schedule, LCC Estimate, and financial benefit's estimate; an EA for MAIS programs.

Conduct Sensitivity Analysis.

Sensitivity analysis is based on cost, schedule and performance (requirements prioritization) trades and is used to help the program manager and Functional Sponsor evaluate the effect on estimates when assumptions or cost-drivers change. As a result of this analysis, they can then plan appropriate actions and determine how increments will be developed to meet prescribed time-limit's and avoid prospective schedule delays and cost overruns.

Figure 12.2.3.2.F8 - Conduct Sensitivity Analysis Context



The result may be refinement of time, cost and performance boundaries of the program and a corresponding increase in the degree of confidence in the LCC Estimate. This is the initial step where the PM is going to define what can be done in the first increment, and what needs to be done in follow-on increments.

More information and guidance can be found in DAG Chapter 3, Section 3.7.2.4, "Assess Risk and Sensitivity" .

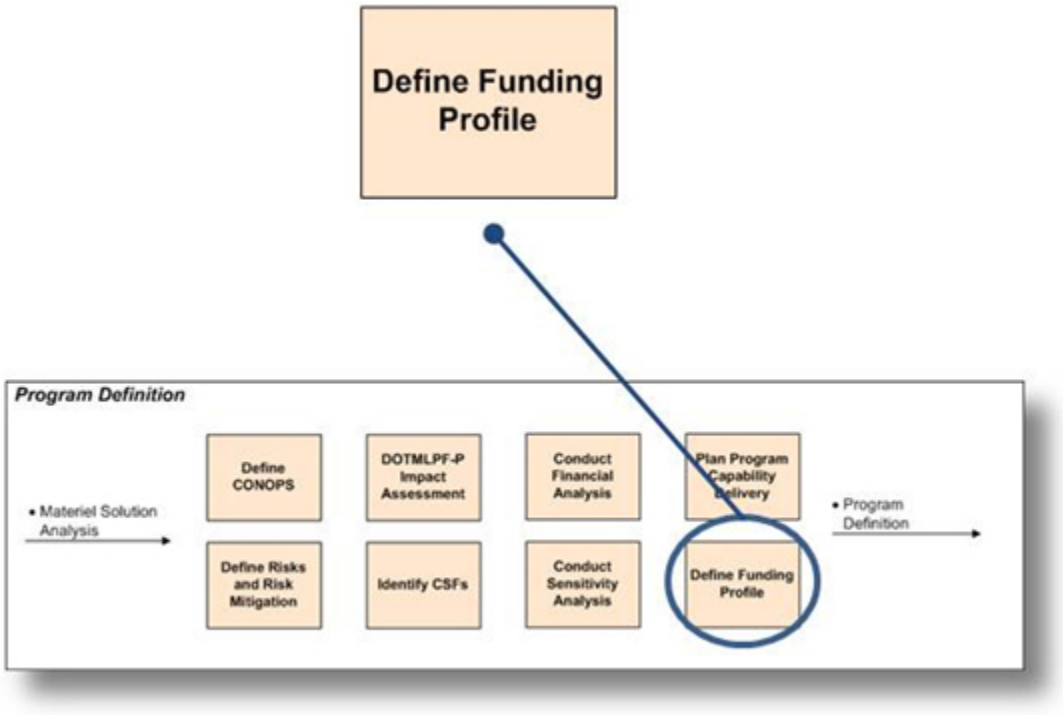
The following is a summary of the Conduct Sensitivity Analysis activity:

- *Inputs.* LCC Estimate, Financial Benefit's Estimate, financial risks, assumptions, parameters for the sensitivity analysis, and, for MAIS programs, an EA.
- *Process.* The PM, Functional Sponsor, and analyst(s) will plan the data and parameters for conducting sensitivity analysis. They will review the resulting sensitivity analysis report and plan appropriate actions to help avoid prospective schedule delays and cost overruns. The planned actions may affect the time, cost, and performance boundaries being defined for the program as well as increase the degree of confidence in the LCC Estimate. Sensitivity analysis may need to be conducted in conjunction with risk management planning in order to consider qualitative and quantitative risk management information.
- *Outputs* . Results of Sensitivity Analysis.

Define Funding Profile.

Once the Financial and Sensitivity Analyses are complete, and in conjunction with resource management activities of program management, the program manager will prepare a Funding Profile that documents the proposed overall strategy for funding the program. Defining a Funding Profile is essential for ensuring program stability over its planned lifecycle and for providing a disciplined approach for program managers to execute their programs within cost and available funding. The Functional Sponsor is ultimately responsible for ensuring that funding is identified and obtained.

Figure 12.2.3.2.F9 - Define Funding Profile Context



The Define Funding Profile activity includes considerations from every other activity conducted during the Investment Management (IM) Phase. During the Define Funding Profile activity, the Functional Sponsor and program manager reviews the Business Case and determines that the Funding Profile adequately supports the program being planned. This should include a review of:

- Requirements (i.e., the planned high-level outcomes (HLOs) and business and program outcomes) to ensure the program is funded in order to meet those requirements;
- Planned deliverables of the program to ensure they are adequately funded - for example preparing and implementing the Test Plan; and
- Other aspects of the program to verify adequate funding, such as: the Acquisition Approach, potential risks as a result of the Sensitivity Analysis, and the Financial Risks considered as a part of the Risk Management process. This includes verification of

adequate funding for the costs associated with planned risk mitigation activities.

TIP: Generally, not all risks are avoidable so Funding Profile development should also include a verification that planned costs are reasonable in order to manage the issues that result from risks that materialize.

The following is a summary of the Define a Funding Profile activity along with an example Funding Chart:

- *Inputs.* Results of Sensitivity Analysis, financial risks, assumptions, parameters (including budget information).
- *Process.* The program manager will prepare a funding profile.
- *Outputs.* Funding profile (including a funding chart).

Funding Chart Example . Example of the latest Funding Chart used at a Defense Acquisition Board (DAB) . **(**Note: Requires login with password or Common Access Card)**

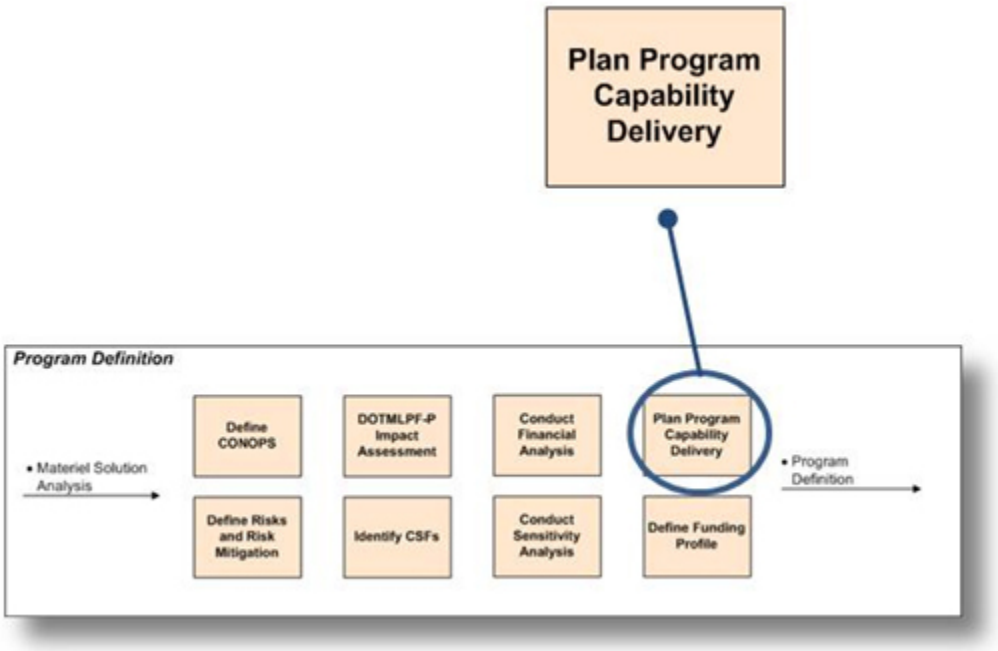
Figure 12.2.3.2.F10 - Example Funding Profile

Program Funding & Quantities				Acquisition to O&S Cost Ratio				(BY yyyy)	Curr Est	Δ Current	Δ Original
				Total Required Acq (BY$M):		4,456	30%	PAUC:	55.7M	+4.6%	+10.2%
				Total Required O&S (BY$M):		10,358	70%	APUC:	50.4M	-3.2%	+60.2%
($ in Millions / Then Year)	Prior	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY13-17	To Comp	Prog Total
RDT&E											
Prior $ (PB 12)	108.0	32.4	44.2	45.1	37.9	12.4	5.3	3.2	103.9	-	288.5
Current $ (PB 13)	108.0	32.4	44.2	45.6	38.3	12.5	5.4	3.2	105.0	-	289.6
Delta $ (Current - Prior)	-	-	-	0.5	0.4	0.1	0.1	-	1.1	-	1.1
Required[1] $	108.0	32.4	44.2	45.6	46.0	15.0	6.5	4.0	117.1	-	301.7
Delta $ (Current - Required)	-	-	-	-	(7.7)	(2.5)	(1.1)	(0.8)	(12.1)	-	(12.1)
PROCUREMENT											
Prior $ (PB 12)	-	99.9	150.4	200.2	304.8	618.6	627.6	360.1	2,111.3	2,257.3	4,618.9
Current $ (PB 13)	-	99.9	150.4	203.1	309.2	522.9	530.5	538.1	2,103.8	1,954.5	4,308.6
Delta $ (Current - Prior)	-	-	-	2.9	4.4	(95.7)	(97.1)	178.0	(7.6)	(302.8)	(310.4)
Required[1] $	-	99.9	150.4	203.1	312.3	528.1	535.8	543.5	2,122.8	1,974.1	4,347.1
Delta $ (Current - Required)	-	-	-	-	(3.1)	(5.2)	(5.3)	(5.4)	(19.0)	(19.5)	(38.6)
MILCON											
Prior $ (PB 12)	-	-	1.3	1.6	-	2.1	2.3	3.0	9.0	15.3	25.6
Current $ (PB 13)	-	-	1.4	1.7	-	2.0	2.1	3.0	8.8	12.6	22.8
Delta $ (Current - Prior)	-	-	0.1	0.1	-	(0.1)	(0.2)	-	(0.2)	(2.7)	(2.8)
Required[1] $	-	-	1.4	1.7	-	2.0	2.1	3.0	8.8	12.6	22.8
Delta $ (Current - Required)	-	-	-	-	-	-	-	-	-	-	-
SYSTEM O&M[2]											
Prior $ (PB 12)	-	6.1	8.3	10.4	26.5	37.8	55.0	91.4	221.1	-	235.5
Current $ (PB 13)	-	6.1	8.3	11.4	29.2	41.6	60.5	98.6	241.2	-	255.6
Delta $ (Current - Prior)	-	-	-	1.0	2.7	3.8	5.5	7.2	20.1	-	20.1
Required[1] $	-	6.1	8.3	11.4	29.2	41.6	60.5	98.6	241.2	5,904.8	6,160.4
Delta $ (Current - Required)	-	-	-	-	-	-	-	-	-	(5,904.8)	(5,904.8)
TOTAL											
Prior $ (PB 12)	108.0	138.4	204.2	257.3	369.2	670.9	690.2	457.7	2,445.3	2,272.6	5,166.5
Current $ (PB 13)	108.0	138.4	204.3	261.8	376.6	579.0	598.5	642.9	2,458.8	1,967.1	4,876.6
Delta $ (Current - Prior)	-	-	0.1	4.5	7.4	(91.9)	(91.7)	185.2	13.5	(305.5)	(291.9)
Required[1] $	108.0	138.4	204.3	261.8	387.4	586.7	604.9	649.1	2,489.9	7,891.4	10,832.0
Delta $ (Current - Required)	-	-	-	-	(10.8)	(7.7)	(6.4)	(6.2)	(31.1)	(5,924.3)	(5,965.4)
QUANTITIES[3]											
Prior Qty (PB 12)	0	2	3	4	6	12	12	0	34	41	80
Current Qty (PB 13)	0	2	3	4	6	10	10	10	40	35	80
Delta Qty (Current - Prior)	0	0	0	0	0	(2)	(2)	10	6	(6)	0
Required[1] Qty	0	2	3	4	6	9	9	9	37	38	80
Delta Qty (Current - Required)	0	0	0	0	0	1	1	1	3	(3)	0

Plan Program Capability Delivery.

To provide best-value to the Department and deliver planned business capabilities to the user within BCL time constraints, the program manager and Functional Sponsor should properly scope and allocate the delivery of planned business capabilities (i.e., Program Outcomes) for the potential program across multiple increments. This approach provides the program manager and Functional Sponsor with the ability to deliver high-value business capabilities and flexibility to reduce overall program risk by creating more manageable increments of work.

Figure 12.2.3.2.F11 - Plan Program Capability Delivery Context



This is a high-level program plan depicting the planned number of increments. Ultimately each increment will be planned in detail and summarized in the Business Case at a high level during the Prototyping Phase; however, for now, this is an estimated overall plan that should include, at a minimum, the overall capability to be delivered, the planned number of increments, and key program-driven events.

The following is a summary of Plan Program Capability Delivery activity:

- *Inputs.* Life-Cycle Cost Estimate, estimated schedule and performance from the Financial Benefit Analysis.
- *Process.* The program manager and Functional Sponsor review the cost, schedule, and performance planned for the potential program during the Program Definition section of the IM Phase (i.e., the Financial Benefit Analysis). They plan the program capability delivery approach based on prioritized requirements. Increments are defined to support the program capability delivery approach. The Program Capability Delivery Plan can be best depicted in a graphic summarized in the Business Case.

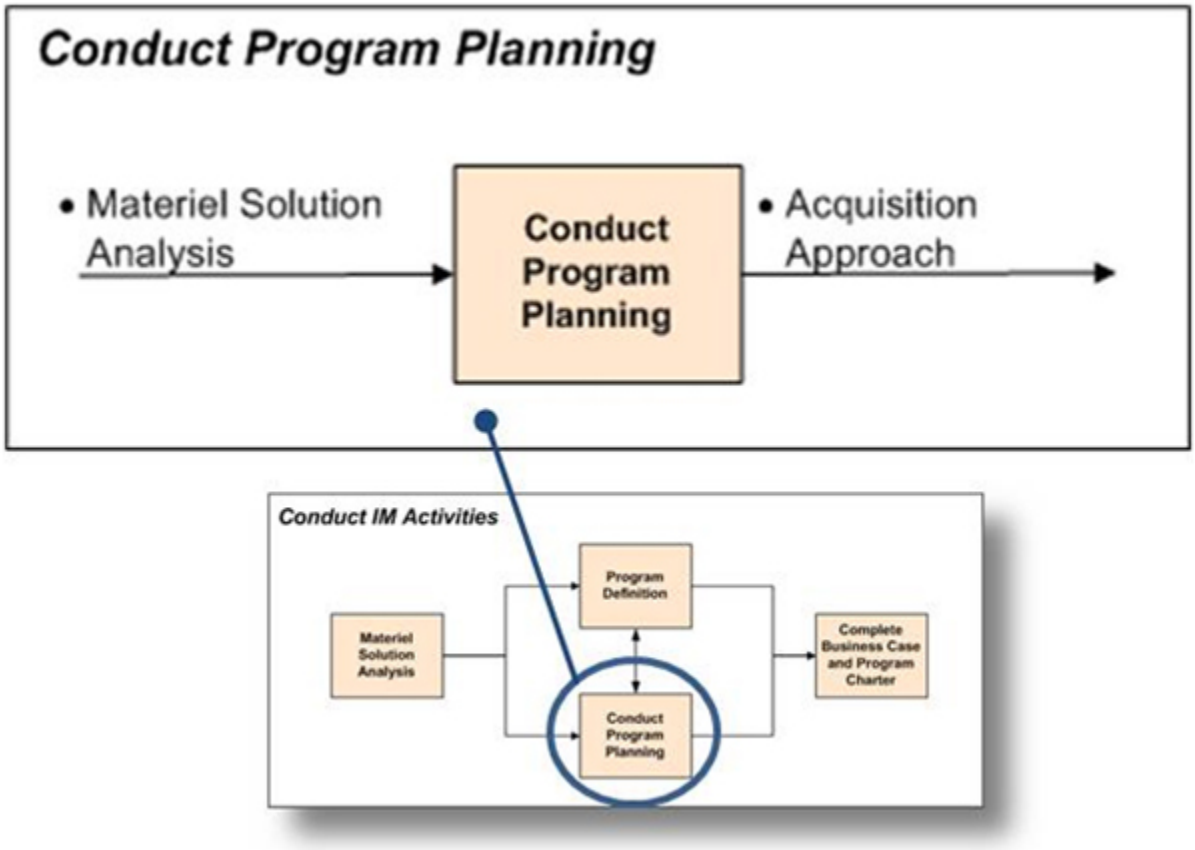
- *Outputs*. Capability Delivery Plan summarized in the Business Case.

12.2.3.3. Conduct Program Planning

12.2.3.3. Conduct Program Planning

Program Planning activities begin after the Material Solution Analysis has been completed and in conjunction with Program Definition activities and includes, but is not limited to, developing plans for the following: test and evaluation, systems engineering, lifecycle sustainment, data migration and management, information assurance (IA), and interface design and management. This activity is demonstrated in Figure 12.2.3.3.F1 .

Figure 12.2.3.3.F1 - Conduct Program Planning



Office of the Secretary of Defense (OSD)-level templates are available to facilitate Program Planning activities (e.g., TEMP , SEP, PPP, LCSP) and can be used as-is or tailored to support the selected solution, as many were originally developed for weapon systems acquisition. It is recommended that the program manager collaborate with OSD subject matter experts (SMEs) and agree to which sections are appropriate for the acquisition of a DBS and the current program in particular, or to validate the use of program-created templates. The intent and spirit of the information developed using templates and program-level documentation is to plan and execute a program - the templates are for convenience and discipline to ensure a critical piece of

information is not overlooked by a busy team - not for "checking the box" on every single element. These program-level artifacts must be made available at the request of a decision-maker. Program-level documents are developed for program use and are summarized in the Business Case for decision makers (see Section 6, "Information Summaries" in the Business Case Template). Program-level information developed is referenced in Table **12.2.3.3.T1** by the corresponding OSD template names, though it is the information generated through the process of developing the information requirement (template or document) that is the critical factor not the creation and completion of a document. In general, the Business Case integrates information requirements from traditional stand-alone templates to provide a summary-level integrated view of the program for decision making, reducing coordination time at the OSD-level. It is not expected or reasonable, however, that the Business Case will suffice as the only program documentation.

Table 12.2.3.3.T1 - Acquisition Approach Information Requirement Summaries

Program-level Information Requirement	**Information in the Business Case**
Acquisition Strategy	*Information Requirement Summaries* : Acquisition Approach
Market Research	
Program Protection Plan (PPP)	
Information Assurance (IA)	
Systems Engineering Planning	
Data Management Strategy	
Technology Development Strategy	
Information Support Plan (ISP)	
Lifecycle Sustainment Planning	
Test and Evaluation Planning *(incl. test and evaluation strategy)*	

The Acquisition Approach, the components of which are described in more detail in the following paragraphs, is the main output of the Conduct Program Planning activity.

Acquisition Approach . Integrates the following information requirements from traditional stand-alone acquisition templates to provide a summary-level view of the Acquisition Approach:

- ***Develop an Acquisition Approach (Strategy).*** Includes: competition strategy; impact of previous phase results on the competition strategy for the upcoming phase; and the role of the competition strategy to facilitate execution of the acquisition. It also summarizes the training plan including the planned training materials and planned user training. It identifies the planned major contracts and a summary of other contract information. Reference the schedule as appropriate. No acquisition sensitive information should be included in the Acquisition Approach.

An affordability target should be established prior to MS A and documented in the Business Case along with cost growth controls. In addition, "should cost" estimates must be developed for

both MAIS and non-MAIS programs and should be used throughout subsequent phases of BCL to drive contracting strategies and to track program and contractor performance. The Business Case should also address methods to incentivize contractor productivity and innovation.

Reference: Better Buying Power

- ***Conduct Market Research.*** Market research is conducted to determine whether there are commercial off-the-shelf (COTS) products that meet the defined requirements in the Business Case, could be modified to meet requirements, or could meet requirements when it is necessary to modify those requirements to a reasonable extent. It helps determine the availability and suitability of COTS products and the degree they have: interfaces with broad market acceptance; standards-organization support; and, stability.

Market research conducted in the Business Capability Definition (BCD) phase and Investment Management (IM) Phase helps: establish an understanding of commercially available solutions; identify potential suppliers; identify small business capabilities; and, initiate development of strategies to promote competitive best value acquisitions. The results of completed market research and plans for future market research are summarized in the Acquisition Approach of the Business Case for review at MS A.

Systems engineering planning, conducted during the Prototyping phase, supports architecture design and market research. That market research also supports the Analysis of Alternatives (AoA). Results of completed market research and plans for future market research are summarized in the Acquisition Approach of the Business Case for review at Pre-Engineering Development (Pre-ED). The Pre-ED review is a prerequisite to issuing a final Request for Proposal (RFP) for the Engineering Development phase and beyond for the increment.

Market research, tailored to program needs, should continue throughout the acquisition process and into Operations and Support (O&S). Use of COTS products requires periodic monitoring of the commercial marketplace through market research activities and alignment, when appropriate, of affected business and technical processes. This may impose additional cost, schedule, and performance risks that need to be assessed in the program's risk management plan (RMP).

- ***Develop Program Protection Plan (PPP).*** Summarize the protection scheme/plan for Critical Program Information (CPI) and Critical Functions and Components Protection. Guidance is located in the Program Protection Plan (PPP Outline & Guidance, July 2011). Other key aspects of PPP related to cost and schedule are summarized in cost and schedule information in the Business Case. Key aspects of PPP related to roles and responsibilities and standards and methods are summarized in the Program Charter. Potential for integration with IA and ISP information, as appropriate.
- ***Develop Information Assurance (IA) Strategy.*** Guidance is located in Appendix E of the Program Protection Plan Outline & Guidance, July 2011 . For a DBS, summarize applicable critical items in the Acquisition Approach of the Business Case.
- ***Systems Engineering Planning.*** Effective systems engineering planning is essential to the success of a program. One important measurement of that success is a Technical Performance Measure (TPM) for Reliability, so that should be included as one of the

critical success factors of the Business Case . The summary of systems engineering planning in the Business Case is approved, at MS A, Pre-ED, and MS C, by the Director, Systems Engineering .

Defined content for the summary of systems engineering planning is the architecture and interface definition and management includes:

- a list of planned technical baseline artifacts;
- design considerations critical to achieving the program's technical requirements;
- technical performance measures and metrics;
- planned engineering tools;
- results of previous phase SE activities and planned SE activities for the next phase; and
- identification of the plans containing: the physical architecture diagram, the system functional architecture diagram, and the SV-1 - Systems Interface Description diagram.

Other important systems engineering managerial methods and standards are incorporated into the Program Charter including:

- program requirements management, traceability, and verification;
- configuration and change management;
- technical staffing and organization management; and
- use of technical reviews.
- ***Develop Data Management Strategy and Technical Data Rights.*** Data Management Strategy and Technical Data Rights content is traditionally addressed in the Technology Development Strategy or Acquisition Strategy (TDS/AS) for weapons systems. The information comparable to the TDS/AS for DBS is contained in the Acquisition Approach and is outlined below, but it is suggested that you should review Section 7.6 of the TDS/AS regarding Technical Data Rights Strategy.

Summarize the Technical Data Rights Strategy for meeting data rights requirements and to support the overall competition strategy, including:

- Analysis of the data required to prototype, develop, deploy and sustain the system (e.g., conceptual data model (DIV-1), logical data model (DIV-2));
- Approach to provide for rights, access, or delivery of technical data the government requires for the systems total life cycle sustainment;
- Approach for using open systems architectures and acquiring technical data rights;
- Approach to including a priced contract option for the future delivery of technical data and intellectual property rights not acquired upon initial contract award; and
- Analysis of the risk that the contractor may assert limitations on the government's use and release of data.

For additional information on this subject, refer to DAG Chapter 2, Section2.2.14 "Data Management Strategy and Technical Data Rights" ; and DAG Chapter 5, Section 5.1.6.3, "Contracting for Technical Data" and 5.1.6.4, "Data Management Strategy" .

- ***Information Support Plan (ISP).*** Includes preparation for and interoperability planning in four critical areas: Information Needs; Information Timeliness; Information Assurance (IA); and Net-Enabled (through the Net-Ready KPP). Refer to Enclosure 4, Attachment 2 of DoDI 4630.8, June 30, 2004 .
- ***Conduct Life-Cycle Sustainment Planning.*** Prior to MS A, lifecycle sustainment planning begins with the AoA, describing the notional high-level product support and maintenance concepts to be used for each alternative. Once the preferred alternative has been selected, these concepts are expanded upon into a strategy for the entire program, based on the technology and acquisition approach. Considerations should include optimizing readiness and minimizing total life-cycle costs. Documentation of lifecycle sustainment planning includes requirements; assessments; support strategy; performance-based agreements; funding; schedule and management; a program support and maintenance strategy; key metrics, system performance indicators or other key drivers; the view of sustainment/logistics contracts, key supportability requirements included in the system and design specifications; and the major product support elements and plan / agreement for acquiring and fielding them. DAG Chapter 5, Section 5.1.2, "Life-Cycle Sustainment and the DoDI 5000.02 Acquisition Environment" goes into significant depth into sustainment planning and there are several considerations specifically related to DBS for LCSP in the O&S section.
- ***Conduct Test and Evaluation Planning.*** Test and evaluation planning should involve developing an overall test management strategy and test management plan for the program. It is summarized in the Acquisition Approach of the Business Case for the benefit of decision makers. The Test Plan is produced in-lieu-of a Test and Evaluation Master Plan (TEMP) in order to align with needs specific to defense business systems.

During the IM phase, the Test Plan establishes test and evaluation from a strategic level, for government and contractors, in support of the MS A review. It supports the overall program resource requirements, schedule, and performance requirements planned in the Business Case. It identifies the approach for integrated Developmental Test and Evaluation (DT&E) and Operational Test and Evaluation (OT&E). It is guided by the testing roles, responsibilities, standards and methods to be specified in the Program Charter.

After the IM Phase, the Test Plan matures during Prototyping from a strategy to a plan in support of the review at MS B. This transformation includes the identification of evaluation criteria for testers, and for more detailed documentation at the program level, ensures that the test plan is useful, executable, and outcome-based.

The following is a summary of the Conduct Program Planning activity:

- *Inputs.* Results of Material Solution Analysis.
- *Process.* Conduct program planning activities as appropriate to the selected solution, which includes, but is not limited to developing plans and/or strategies for the following: test and evaluation, systems engineering, lifecycle sustainment, data migration and management, IA, and interface design and management.
- *Outputs.* Program-level documents (which may follow OSD or Component templates)

and summarized in the Business Case and Program Charter.

TIP: Summarizing information from planning / execution-level documents in the Business Case does not relieve BCL users from conducting the rigorous analysis required to make business decisions (i.e., "do your homework!").

12.2.3.4. Complete Business Case and Program Charter

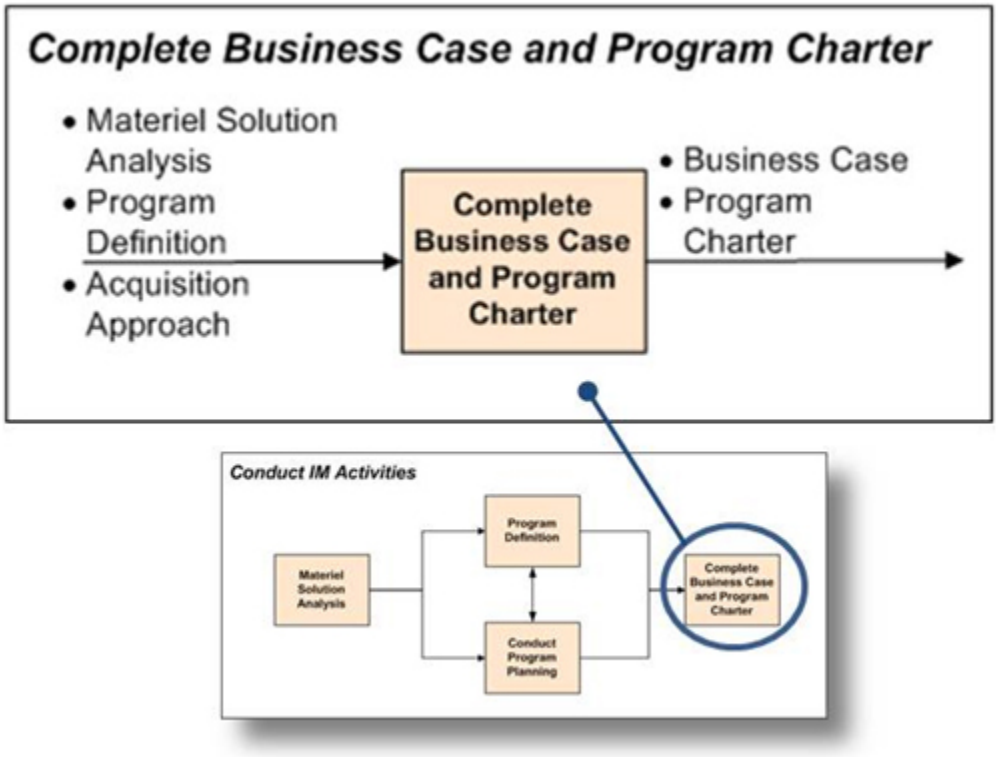
12.2.3.5. MS A Preparation

12.2.3.4. Complete Business Case and Program Charter

Business Case. The business case is the one location where all relevant facts are documented and linked together into a cohesive story. It is an executive-level document used by decision-makers for investment and acquisition decisions.

The Functional Sponsor and the program manager summarize the results of the IM Phase activities in the Business Case and document the managerial methods and standards for executing the potential program in the Program Charter. This summarization should provide decision makers with the essential information about the potential program to make an informed decision supporting a MS A review.

Figure 12.2.3.4.F1 - Complete Business Case and Program Charter



While developing the Business Case, the program manager and the Functional Sponsor should ensure that its content presents the required information at a level appropriately suited for executive-level decision makers, keeping in mind that detailed working papers or detailed analysis should be kept at the program level and available if requested. Before submitting the Business Case for formal review, the program manager and Functional Sponsor may consider the following:

- Is the Executive Summary clear, concise and focused on the problem and it's solution?
- Does the Business Case contain the appropriate level of relevant information to enable a decision and inform decision makers?
- Is the value and the risks inherent in the proposed program clearly explained?
- Is the Functional Sponsor with the capability and authority to deliver the benefit's fully committed to the investment?
- Can all HLOs be quantified so their achievement can be tracked?
- Is the Business Case tailored to the size and risk of the proposed solution?
- Does the Business Case focus on the business capabilities and impact, rather than on technical aspects? (Remember, the Business Case is not a technical proposal.);
- Does the Business Case contain clearly relevant and logical contents which are simple to understand?
- Does the Business Case justify critical elements in a transparent manner?
- Is there clear accountability for and commitment to the delivery of the capability and the management of costs?

The following is a summary of the Business Case portion of the Complete Business Case and Program Charter activity:

- *Inputs* . Results of IM Phase activities (i.e., Material Solution Analysis, Program Definition, Acquisition Approach, and Capability Delivery Plan).
- *Process.* The program manager and Functional Sponsor are responsible for summarizing output of IM Phase analysis in the Business Case. To facilitate development of the Business Case, a Business Case Template is provided for Component use to facilitate informed decision-makers. The template may be tailored to the needs of the program and can be accessed at the Office of the Deputy Chief Management Officer (DCMO)'s BCL webpage .
- *Outputs* . Business Case.

TIP: Before deeming the Business Case complete, the Functional Sponsor should review the Problem Statement to ensure that any discovery during IM does not significantly affect the approved Problem Statement. If significant changes are evident (such as, the fundamental problem has changed or the scope has broadened), it will warrant re-approval by the IRB Chair. The IRB Support staff should be consulted in this circumstance to determine the appropriate way ahead.

Program Charter. The purpose of a Program Charter is to define the manner in which the program will be managed and the governance surrounding the program. It is an agreement between the program team (including contractors), Functional Sponsor and PM and identifies the

roles and responsibilities and assigns accountability to each of these individuals or groups. It also contains references to: detailed project plans such as schedules; work breakdown structure; complete risk assessments; etc.

The Program Charter describes the managerial methods and standards for the program and is a tool that helps enable the outcomes described in the Business Case. It is first developed as part of program management planning activity that spans the IM Phase, though it is updated in later phases of BCL as the program matures.

BCL does not prescribe the tools and techniques for performing program management, but does require the preparation of the Program Charter for review and approval by the Component Acquisition Executive (CAE) and for inclusion in the MS A package.

Program Charter Content.

- ***Program Governance and Integration.*** Describes the managerial methods and standards for ensuring that decisions are focused on achieving the outcomes and cost, schedule, and performance constraints defined in the Business Case.
- ***Program Management.*** Includes: process for managing the Program Charter; change management; procedures; practices for monitoring and controlling all increments within the program; program and increment initiation, closure, and decision documentation.
- ***Scope Management.*** Aligns the activities that identify the deliverables and establish the relationship between product scope and program scope, while setting standards for clear achievable objectives to the Business Case, establishes change management, plans for delivery of program benefit's, defines the program deliverables, and the approach to requirements management.
- ***Schedule Management.*** Provides the plan for schedule tracking, controlling and performance reporting. Applicable earned value management is described, if utilized. A summary schedule of major deliverables and events is provided.
- ***Risk Management.*** Implements the program's risk management plan which defines the approach to risk identification, analysis, and mitigation, in addition to the process for conducting risk reviews and how to escalate risks.
- ***Procurement Management.*** Refers to the acquisition approach (Business Case) and outlines planning for managing acquisition and procurement activities.
- ***Financial Management.*** Establishes a plan for developing and managing program costs; budgeting; and defining the monitoring, forecasting, change controls and performance reporting. Applicable earned value management is described, if utilized.
- ***Stakeholder Management.*** Defines the plan for stakeholder identification, analysis, and management, as well as relationship management.
- ***Communications Management.*** Based on stakeholder management information, outlines a communications management plan, to include format, content, frequency, approval, recipients, and distribution.

The following is a summary of the Program Charter portion of the Complete Business Case and Program Charter activity:

- *Inputs* . Results of IM Phase activities (i.e., Material Solution Analysis, Program Definition, Acquisition Approach, and Capability Delivery Plan).
- *Process.* The program manager, in collaboration with the Functional Sponsor, will review the defined inputs and other available references as they are developed and as they relate to program management (e.g., the WBS developed during the Financial Analysis). Based on these inputs, the Functional Sponsor and program will prepare the appropriate sections of the draft Program Charter using the Program Charter template.
- *Outputs* . The Program Charter.

TIP: To facilitate development of the Program Charter, the Program Charter Template is provided on the Office of the Deputy Chief Management Officer (DCMO)'s BCL webpage . The template may be tailored to unique organizational or program situations.

12.2.3.5. MS A Preparation

When the Functional Sponsor determines that the proposed investment has reached a level of detail sufficient for a MS A review, the program manager compiles a MS A Package that includes the following documents:

- A Business Case;
- A Program Charter;
- The Defense Business Systems Management Committee (DBSMC) Chair approval memorandum to obligate funds;
- The Component Acquisition Executive (CAE) Memorandum (Compliance and Recommendation), for MAIS; and
- Any additional requirements as outlined in previous acquisition decision memorandums (ADMs).

TIP: Prior to submitting the Business Case as part of the MS A package, the program manager and Functional Sponsor should verify whether the following aspects have been adequately addressed:

1. The investment has value to the enterprise and aligns with enterprise priorities;
2. There is proper management by and support from senior officials for the proposed solution;
3. The scope for the proposed solution has been adequately defined and measures for desired outcomes have been appropriately defined;
4. There is clear evidence that Business Process Re-engineering (BPR) has been or is being conducted;
5. There is clear evidence that the component has to ability to deliver the benefits of the proposed solution within the timelines specified; and
6. There is clear evidence that dedicated resources are working on the highest value opportunities.

For non-MAIS efforts, MS A materials are submitted for review and approval in accordance with Component processes and procedures.

For MAIS or "special interest" programs, the MS A Package is submitted to the appropriate Investment Review Board (IRB) at least 30 calendar days prior to the scheduled review date. The IRB Support Staff will coordinate a review with the IRB Membership (which includes Joint Staff), applicable partner IRBs, and SMEs. The Enterprise Risk Assessment Management (ERAM) team briefs detailed findings to the MDA and the IRB Chair. This coordinated review negates the need for the Functional Sponsor to coordinate separately with OSD and Joint Staff stakeholders.

12.3. Execution

12.3.1. Purpose, Outputs, and Outcomes

12.3. Execution

Execution third segment of BCL and is comprised of the following Phases: Prototyping, Engineering Development, Limited Fielding, Full Deployment, and Operations & Support (O&S).

12.3.1. Purpose, Outputs, and Outcomes

The purpose of Execution is to design, develop, test, deploy, and sustain each increment of capability (materiel and non-materiel solution) by satisfying the specific outcomes defined in the Business Case.

The output is to provide the end-user(s) an operational Doctrine, Organization, Training, Materiel, Leadership and education, Personnel, Facilities and Policy (DOTMLPF-P) DOTMLPF-P solution that fulfills a need, as defined in the Problem Statement section of the Business Case, using an incremental approach to delivering capability (more information on the incremental approach to delivery capability can be found in section **12.4.1 ,** *Time-Limited Development*).

12.3.2. Prototyping Phase

12.3.2.1. Purpose, Outputs, and Outcomes

12.3.2.2. Prototyping Phase Process

12.3.2.3. Prototyping Phase Activities

12.3.2. Prototyping Phase

12.3.2.1. Purpose, Outputs, and Outcomes

The purposes of the Prototyping Phase are to:

- Determine the most cost-effective technical and design approach that will satisfy user capability requirements; and
- Conduct risk-reduction activities by: identifying use cases that determine the specific capabilities to be developed during the increment; the technologies to be used; and the approximate schedule for deploying the materiel solution.

TIP: Knowledge gained during this phase may result in: changes to the order in which required capabilities are satisfied; technology trades; and/or movement of requirements to follow-on increments.

The outputs and outcomes of the Prototyping Phase are:

- Functional outcomes (requirements) approved to a threshold / objective level;
- An updated Business Case and Program Charter;
- A draft acquisition program baseline (APB);
- A draft request for proposal (RFP);
- The ability to award a contract immediately upon receipt of a MS B acquisition decision memorandum (ADM); and,
- A materiel solution that has been designed and configured in a relevant test environment to satisfy the outcomes described in the Business Case for the increment under consideration.

12.3.2.2. Prototyping Phase Process

Figure 12.3.2.2.F1 - Prototyping Phase High Level Process Flow (Increment 1)

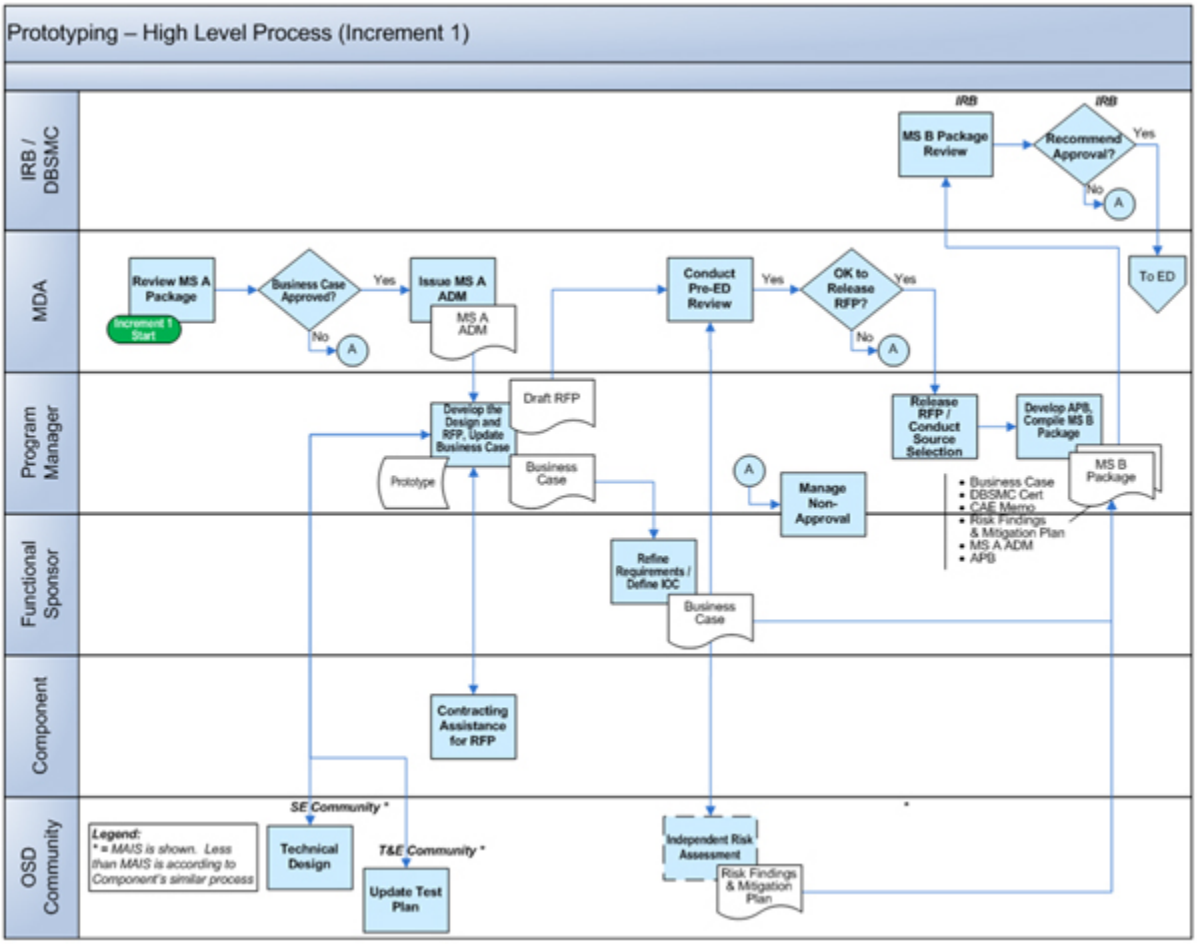
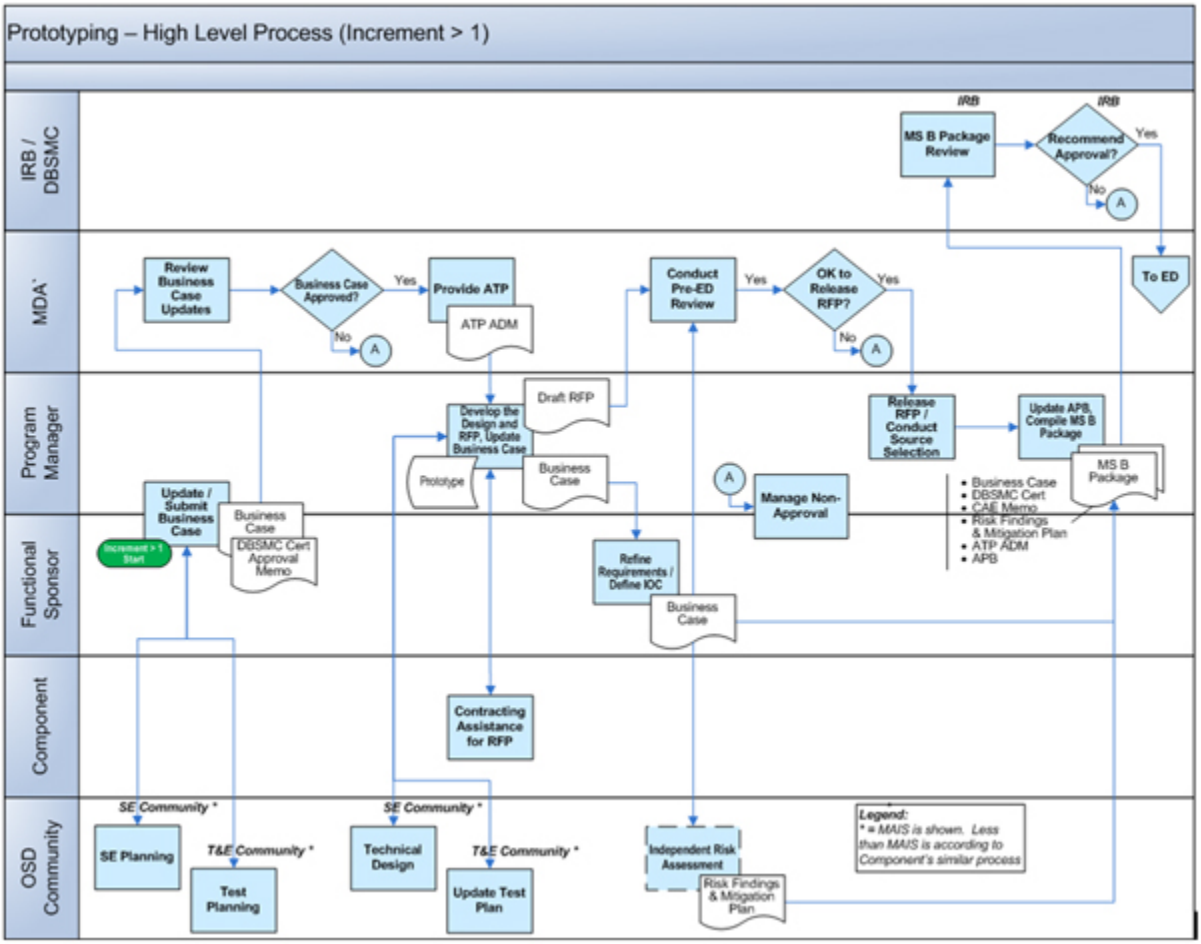


Figure 12.3.2.2.F2 - Prototyping Phase High Level Process Flow (Increment 2-n)



The Prototyping Phase begins when the MDA approves entry into the phase after conducting either a MS A review (for the initial DBS increment) or Authorization to Proceed (ATP) review (for the DBS increments 2-n). In other words, there is one MS A for each DBS and there is an ATP for each follow-on increment. ***Note:*** Multiple increments can be executed concurrently. It's important to note that the ATP is the starting point for obligation of funds for the increment.

During the Prototyping Phase, the Functional Sponsor and PM will perform the necessary activities to install and configure the solution in a relevant environment, perform detail design and requirements trade-offs, summarize updated plans in the Business Case, and develop a draft RFP for a Pre-Engineering Development (Pre-ED) Review. After the Pre-ED Review a draft APB will be developed for the increment and submitted for the MS B review. During this phase, the PM leads all activities pertaining to the materiel portion of the solution while the Functional Sponsor leads activities for the non-materiel or DOT_LPF-P portion of the solution, as outlined in the Program Charter. An independent risk assessment (Enterprise Risk Assessment Methodology (ERAM) for MAIS) will also need to be conducted and a risk mitigation plan developed prior to MS B. The PM and the Functional Sponsor must work collectively to ensure

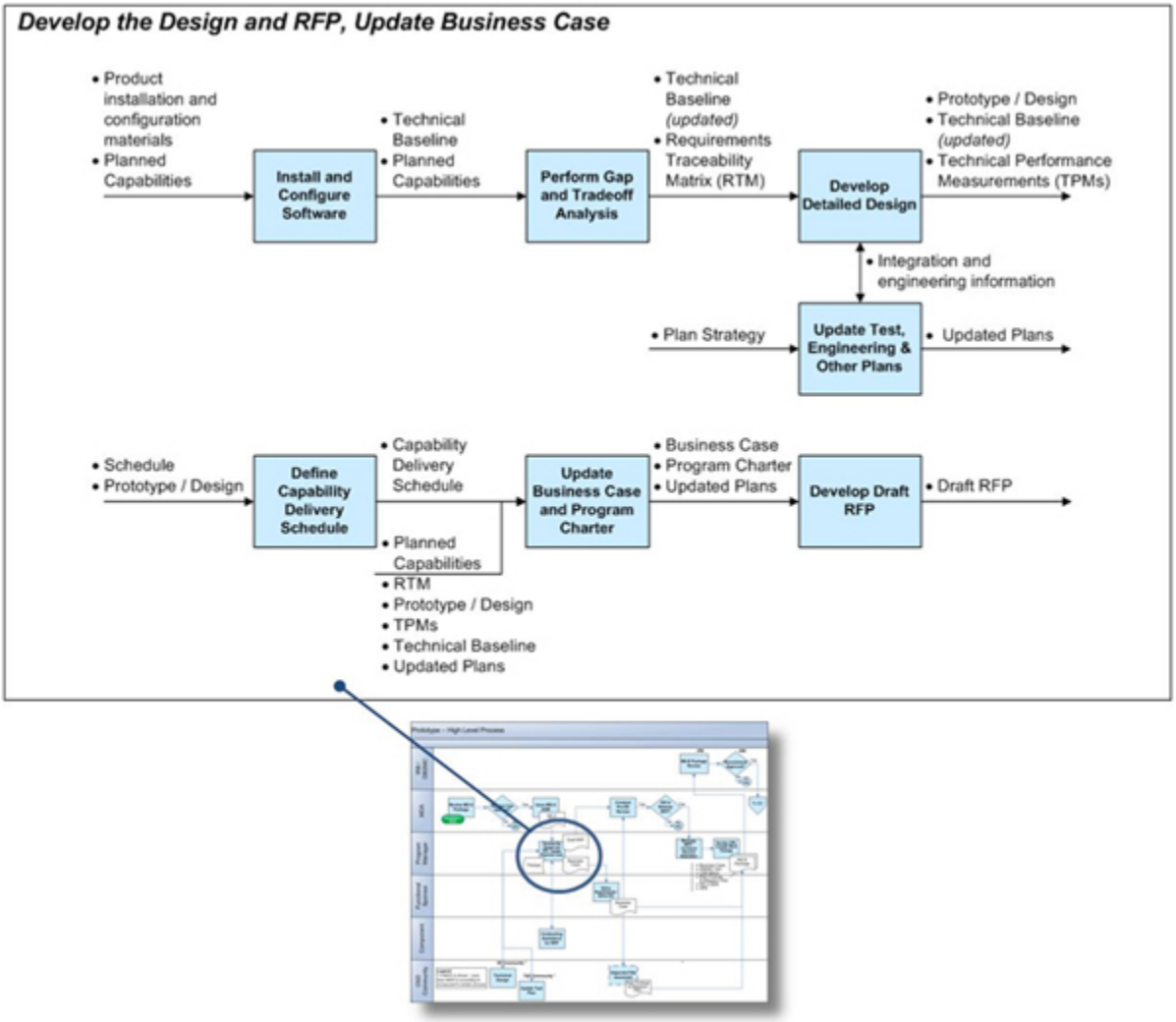
the DOTMLPF-P requirements are integrated and will deliver a holistic solution.

Prototyping is a continuous activity, meaning that in a typical program, requirements are constantly being added or changed and must be evaluated, managed, prioritized and queued for development, test and evaluation, and delivery. This requires close collaboration between users, developers, T&E, and the PM who must set expectations, manage risk, and plan what will be delivered for a given increment within the BCL time limitations. This cycle repeats until there are no more development activities to be planned (i.e., there are no more requirements to fulfill).

Prototyping Phase activities end for each increment after the Investment Review Board (IRB) (or Component equivalent) has reviewed the necessary MS B information and the IRB Chair has sent a milestone recommendation to the MDA.

12.3.2.3. Prototyping Phase Activities

Figure 12.3.2.3.F1 - Decomposition of "Develop the Design and RFP, Update Business Case" Process Step



Prototyping Phase activities are conducted in accordance with the approved Business Case, the MS A ADM, and the solution-specific implementation methodology being employed. While conducting Prototyping Phase activities, the PM must work in close collaboration with the Functional Sponsor, functional users, and appropriate Systems Engineering (SE) and Test and Evaluation (T&E) communities as functional, organizational, and user-related activities (such as requirements refinement and implementation of change management / Business Process Re-engineering (BPR) / DOT_LPF-P considerations) occur in tandem with traditional PM responsibilities.

The PM should collaborate with appropriate communities early on to plan the type(s) and amount of design and T&E reviews necessary to facilitate development and validation of the outcomes for the capability to be delivered. More information on conducting test and engineering

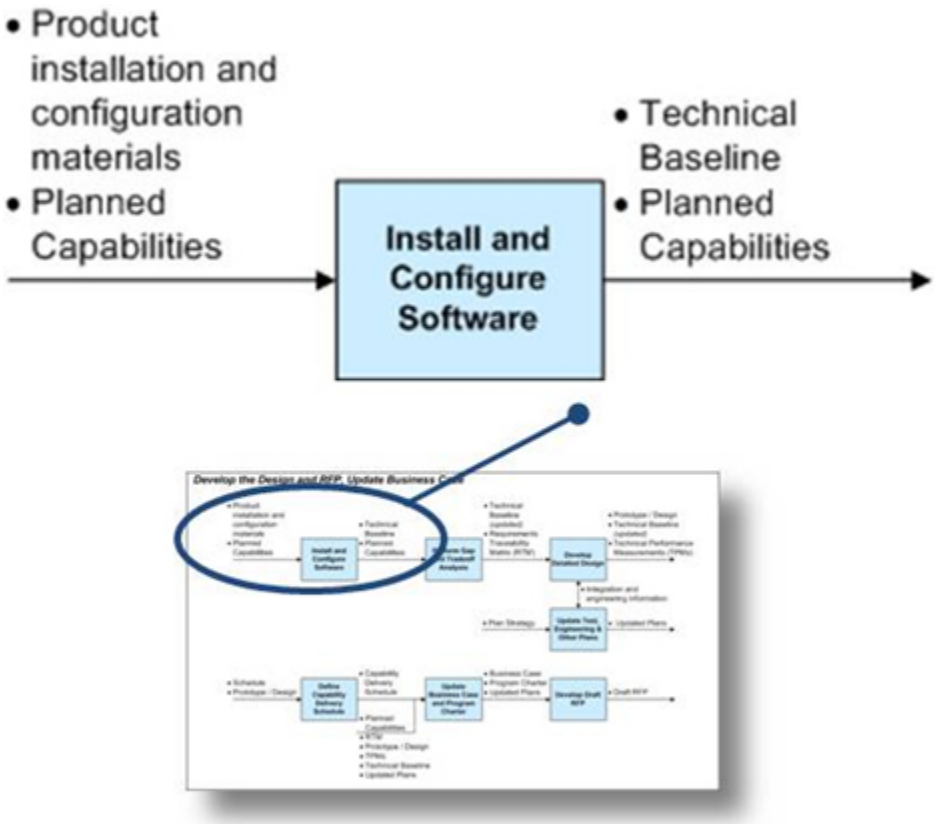
reviews is located in DAG Chapter 4, Section 4.2, "Systems Engineering Activities in the System Life Cycle" .

TIP: It is imperative that the Functional Sponsor and the program manager have collective understanding of their roles and responsibilities (and have documented them in the Program Charter) in order to smoothly execute the program going forward.

As mentioned previously, Prototyping Phase activities are continuous and will iterate until the required level of maturity is achieved and prototypes of the system or key system elements are produced, and when there is confidence that the scope defined for the current increment and the cost, schedule, and performance baselines can be maintained throughout the remainder of the increment's planned implementation and sustainment of capability.

Install and Configure Software. This activity involves planning for the installation and configuration of: infrastructure, as necessary (e.g., servers, utilities, services, databases); commercial off-the-shelf (COTS) product(s); backup and recovery procedures; and the initiation of support services necessary to sustain the Technical Baseline. The Technical Baseline includes both the reference assets (e.g., documentation) and technical assets (e.g., software) of the system and acts as a formal baseline for defining subsequent change.

Figure 12.3.2.3.F2 - Install and Configure Software Context



As a result of this activity, the program manager will initiate Configuration Management (CM) to establish and maintain the integrity of work products and to track and control changes. More information on CM can be found in DAG Chapter 4, Section 4.3.7, "Configuration Management".

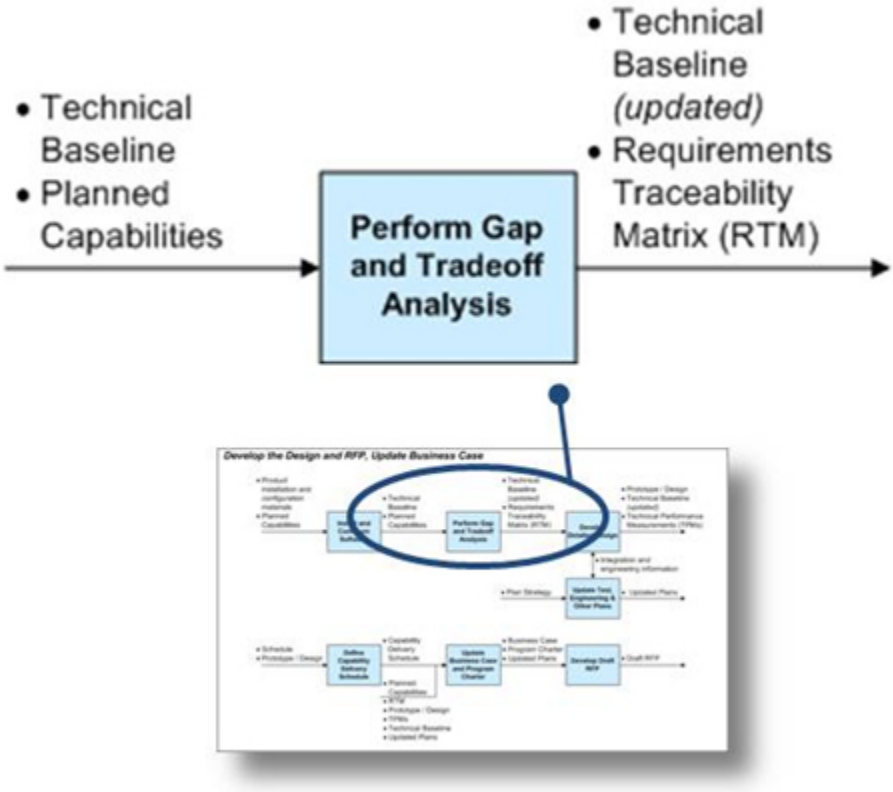
The following is a summary of the Install and Configure Software activity:

- *Inputs* . Planned outcomes, COTS product and product documentation.
- *Process.* Subject matter experts (SMEs) plan and perform the installation and configuration of COTS product(s) in a relevant environment at the direction of the program manager. The software is demonstrated and evaluated to ensure it performs as expected. The result is the Technical Baseline which is then allocated to and released for follow-on Prototyping Phase activities (e.g., gap and tradeoff analysis, software customization), and the program manager initiates CM.
- *Outputs.* Technical Baseline, planned capabilities.

Perform Gap and Tradeoff Analysis. The purpose of this activity is to: evaluate the installed software's actual performance against the planned capabilities ("To-Be" process, outcomes) defined in the Problem Statement and Business Case; determine the variance between the capabilities and the software's performance, or "gaps" and; develop alternatives for filling the gaps.

Cost, schedule, and performance may be traded off within the "trade space" between thresholds and objectives documented in the measurement criteria of the Business Case.

Figure 12.3.2.3.F3 - Perform Gap and Tradeoff Analysis Context



The tradeoff analysis may also consider potential exchanges in the trade space, such as re-sequencing capabilities across increments to accelerate high-value capabilities into the early increments, or continued BPR to modify ways of doing business to more closely align with suitable processes that already exist in the COTS products.

The PM and Functional Sponsor engage SMEs, including SE and T&E, who work to determine the gap(s) between the desired business outcomes defined in the Business Case and what the software can deliver, and develop an executable plan for filling the gaps. One goal of this process is to minimize customization of COTS software. Depending on complexity of the materiel solution, adjustment of the "To-Be" business process may be necessary in order to accommodate the way the software was designed to work. Or, it may be discovered that the software has out-of-the-box capabilities superior to those originally planned. Trade-off decisions typically include modifying the way work is traditionally conducted (business processes) versus incurring the cost and risk of customizing the COTS software. This is why BPR is a continuous refinement effort - where better ways of conducting business are continuously evaluated based on the inherent business capabilities of the selected COTS products.

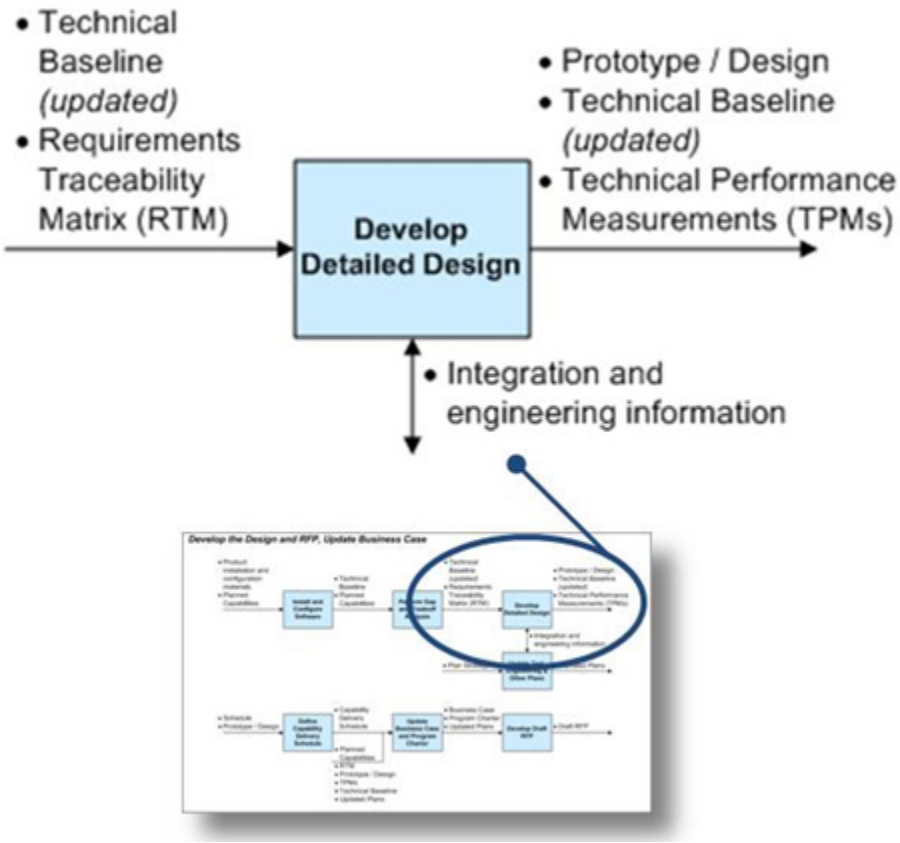
TIP: During these activities, additional requirements or changes to existing requirements are likely to be discovered, particularly when the COTS product is being configured. Potential changes must be balanced against an impact to cost, schedule, and performance and given consideration for deferral to a future increment. The focus should be to execute the current plan and provide capability delivery (and value) to the user and the Department as rapidly as possible.

The following is a summary of the Perform Gap and Tradeoff Analysis activity:

- *Inputs* . Technical Baseline (software and associated documentation) and planned capabilities ("to-be" process and outcomes).
- *Process.* SMEs evaluate installed software against planned capabilities and develop a plan to fill gaps and determine the fastest approach to fielding useful capability, prioritizing requirements, and adjusting business processes as necessary by refining BPR. The outcomes and business capabilities described in the Business Case must be traced to those identified in the Technical Baseline and the plan for filling the gaps using a program-level Requirements Traceability Matrix (RTM). This verifies that all requirements have been allocated to a solution and to help avoid what is known as "gold plating" (i.e., investing in capabilities that are not in scope). The plan for filling the gaps will be used to update the Technical Baseline.
- *Outputs* . Updated Technical Baseline and a RTM.

Develop Detailed Design. The purpose of this activity is to translate planned business capabilities documented in the Business Case into a design specification. To support this, the updated Technical Baseline combined with the initial RTM is used to develop a design to meet the planned business capabilities. As a result, the gaps in the solution will now be closed through design activities by systems integration and software engineering SMEs. More information can be found in DAG Chapter 4, Section 4.3.18, "Systems Engineering Design Considerations" .

Figure 12.3.2.3.F4 - Develop Detailed Design Context



The result of these design activities is a detailed design, which will undergo planned functional and technical reviews to manage the identification of and resolution of design issues (by the PM and Functional Sponsor).

The following is a summary of the Develop Detailed Design activity:

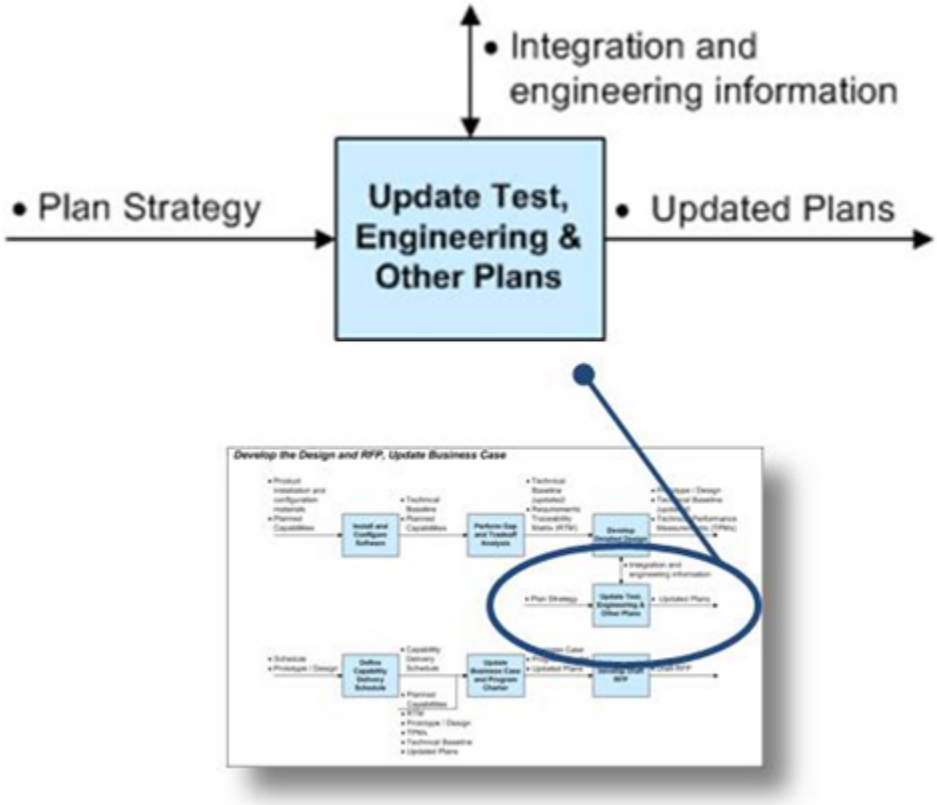
- *Inputs* . Updated Technical Baseline, RTM.
- *Process.* Plan the design activities. Review the existing capabilities of the COTS products that were incorporated into the Technical Baseline. Review the RTM to determine those requirements that will be allocated to the increment being planned. Identify the subset of those requirements that require additional design. Use expert judgment to develop design alternatives and select the "best value" alternative. Verify that the approved cost, schedule and performance parameters of the Business Case will support the proposed design. Further define or update overall performance measures and Technical Performance Measures (TPMs) based on the design and plan appropriate revisions to the Business Case based on the design.
- *Outputs* . Detailed design, Technical Baseline (updated), TPMs.

Update Test, Engineering & Other Plans. The purpose of this activity is to use the knowledge gained from preceding activities in conjunction with the strategies and plans developed during

the Investment Management (IM) Phase and enhance the information to convert them into detailed plans during the Prototyping phase for subsequent activities.

Guided by the analyses conducted during the IM Phase combined with the knowledge gained from assessment of the current solution-set now available in the updated Technical Baseline, the program manager and technical teams (e.g., SE, T&E, Systems Integrators) collaborate on integration and engineering needs. Their plans for design, development, test and evaluation, and performance measurement will be refined to yield a comprehensive suite of updated planning information for the remaining phases of Execution.

Figure 12.3.2.3.F5 - Update Test, Engineering and Other Plans Context

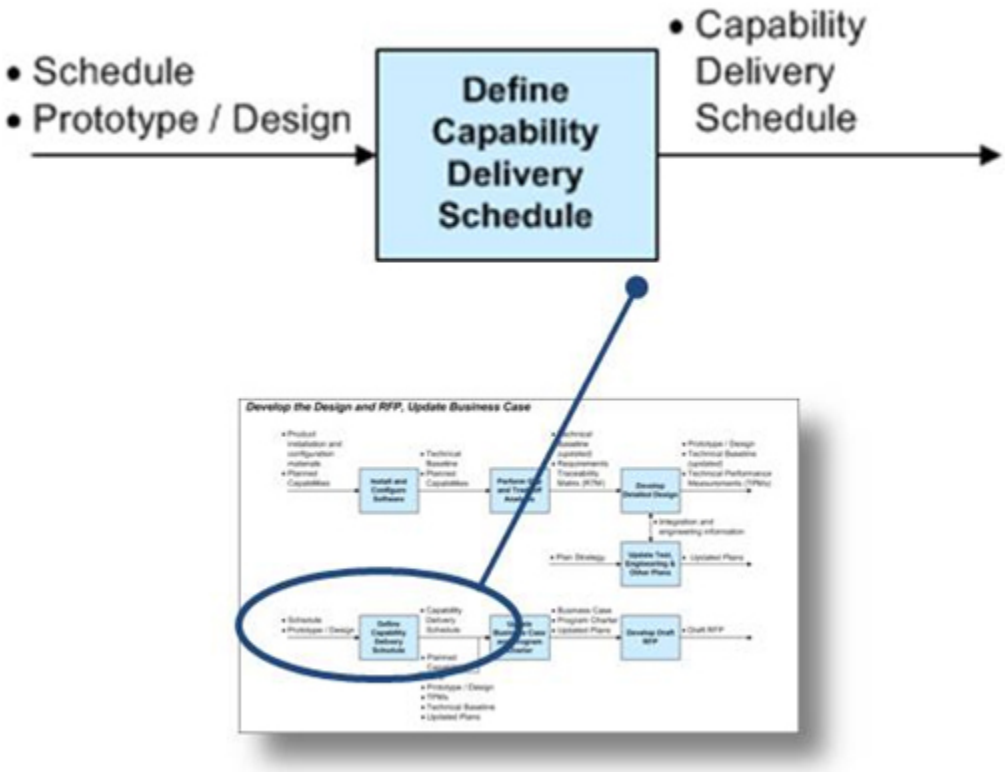


The following is a summary of the Update T&E, SE & Other Plans activity:

- *Inputs* . Strategies developed during the IM Phase (T&E strategy for the Test Plan, Acquisition Approach).
- *Process.* Update the strategy-level information developed during the IM Phase with knowledge gained from assessment of the Technical Baseline and design activities to refine to a plan-level of detail that will support subsequent development, test and evaluation, and implementation.
- *Outputs* . Updated plans summarized in the Business Case.

Define Capability Delivery Schedule. Based on the high-level Capability Delivery Plan in the Business Case (developed during the IM Phase), the program manager and Functional Sponsor segment business capabilities into manageable increments based on priority, dependencies, risks, and implementation strategy and prepare a detailed Capability Delivery Schedule for the next planned increment. Changes will likely result in changes to cost estimates, and should be reviewed for such.

Figure 12.3.2.3.F6 - Define Capability Delivery Schedule



The Capability Delivery Schedule includes major reviews and milestone events and depicts releases, etc., as applicable. It is expected that the schedule will be presented at a high level (summary) in the Business Case, but must be maintained and available at a detail level (WBS) for program and stakeholder use since it critical for effective program management. Decision-makers may request the detail-level information for review.

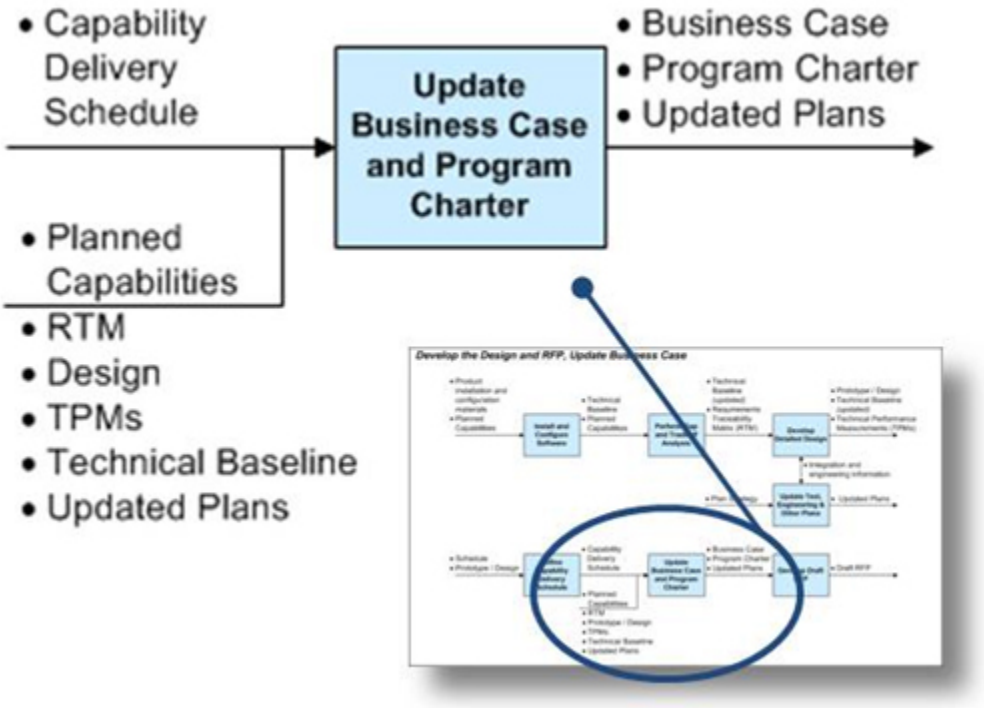
TIP: In the case of an organization-by-organization release of capability, the PM and the users may adjust the capability delivery schedule to accommodate functional/user needs or priorities, consistent with the APB. Such adjustments, however, should not alter the FDD criteria approved by the MDA and documented in the MS B ADM.

The following is a summary of the Define Capability Delivery Schedule activity:

- *Inputs* . Capability Delivery Plan (IM Phase) from the Business Case, design.
- *Process.* Partition business capabilities across multiple increments according to: Functional Sponsor priorities, dependencies, implementation strategy, and other priorities as necessary. Develop a capability delivery schedule. As needed, revise the Work Breakdown Structure (WBS) to indicate consequences of allocating business capabilities across multiple Increments. Verify estimated labor resource requirements, estimated task durations and dependencies based on the new distribution of business capabilities into multiple Increments and modify the Capability Delivery Plan as required.
- *Outputs* . Capability Delivery Schedule.

Update Business Case and Program Charter. Once Prototyping Phase activities are complete, the program manager and Functional Sponsor must update the Business Case and Program Charter as necessary to inform subsequent decision-making.

Figure 12.3.2.3.F7 - Update Business Case and Program Charter Context



TIP: While updating the Business Case, the Functional Sponsor and PM must ensure that the materiel solution is still focused on solving the originally identified business need (from the Problem Statement). If it is not, it may mean that the problem has changed or the right solution has not been chosen.

The following is a summary of the Update Business Case and Program Charter activity:

- *Inputs* . Capability delivery schedule (including the draft APB), planned capabilities, RTM, design, TPMs, Technical Baseline, updated plans (i.e., T&E, SE).

- *Process.* The program manager and Functional Sponsor analyze the outputs from Prototyping Phase activities, such as gaps or changes in business processes resulting from installing and configuring the software, the capability delivery schedule, updated T&E and SE Plans, and update the appropriate sections of the Business Case and Program Charter.
- *Outputs* . Updated Business Case and Program Charter.

Develop Draft RFP. The RFP begins the process of establishing government-industry relationships for acquiring products and services to implement the defined program. The RFP must establish a clear understanding of the government's needs to industry and the resulting proposals help the government understand industry capabilities in their pursuit of "best value".

Based on the Acquisition Approach in the Business Case and the Program Charter's roles, responsibilities and standards for procurement, the program manager initiates the draft RFP in collaboration with a Contracting Officer.

Figure 12.3.2.3.F8 - Develop Draft RFP Context

Contracting specialists provide insight into types of contract and language for the RFP to include such things as data rights and terms and conditions. The content in the RFP is organized in such a manner to clearly define the scope of products and services for the Increment and allow the Government to effectively evaluate proposals; the Business Case and Program Charter are the primary sources for RFP content. The completed draft RFP becomes part of the Pre-ED review package.

The following is a summary of the Develop Draft RFP activity:

- *Inputs* . Business Case, Program Charter, Updated Plans.
- *Process.* The PM follows established procedures within his or her Component to develop an RFP and may replicate applicable sections of the Business Case and Program Charter. The PM collaborates with Contract Specialists to ensure appropriate language is incorporated (e.g., licensing of software and intellectual property, data rights, etc.), in the RFP to protect the Government's interests. The PM also establishes selection criteria for evaluation of proposals.
- *Outputs* . Draft RFP.

Independent Risk Assessment. Prior to MS B, an independent risk assessment must be conducted. For MAIS DBS, the assessment is specifically an Enterprise ERAM assessment and will usually commence 90-120 days before a program is ready for its Pre-ED Review. The PM should notify the risk assessment team as early as possible of knowing the MS B date so preparations can be made. No additional documentation is created by the program office for the assessment, as it is based on existing program documentation. The PM will work with the assessment team to develop a risk mitigation strategy once the assessment is complete.

Pre-ED Review. The purpose of the Pre-ED Review is to have the MDA review and approve the Business Case and authorize the release of the RFP so source selection can begin while the remaining Prototyping activities are being completed (i.e., APB development). The goal is to complete all of the activities necessary to award a contract or task order immediately after MS B is approved.

In preparation for the Pre-ED Review, the PM compiles a Pre-ED Review Package that includes:

- The updated Business Case signed by the Functional Sponsor, PM, Component Acquisition Executive (CAE), and appropriate sections signed by Deputy Assistant Secretary of Defense, Systems Engineering (DASD(SE)), Deputy Assistant Secretary of Defense, Developmental Test and Evaluation (DASD(DT&E)) and Director, Operational Test & Evaluation (DOT&E);
    - DBS below the MAIS threshold will have a Business Case approved through comparable Component processes and authorities
- Component Acquisition Executive (CAE)-approved Program Charter (MAIS only);
- A presentation that outlines the elements of the Draft RFP.
- A CAE Memorandum (Compliance and Recommendation);
- Any additional information and/or requirements as outlined in previous ADMs; and

The package is submitted to the IRB for review and the IRB Chair will provide a recommendation to the MDA.

The output of the Pre-ED Review is an MDA-approved Business Case and approval to release the RFP and begin source-selection.

MS B Preparation. When the draft APB and independent risk assessment are complete, the PM

compiles a MS B Package that includes the following documents:

- The approved Business Case and, if necessary, a memo summarizing any changes since the Pre-ED Review;
- A DBSMC Chair certification approval memorandum to obligate funds;
- The draft APB;
- A CAE Memorandum (Compliance and Recommendation).

The package is submitted to the MDA, who may request an IRB MS B recommendation. For those acquisitions that are not MAIS or designated "special interest" programs, information requirements for a MS B review are submitted for review and approval in accordance with the Component's process and procedures.

12.3.3. Engineering Development

12.3.3.1. Purpose, Outputs, and Outcomes

12.3.3.2. Engineering Development Phase Process

12.3.3. Engineering Development

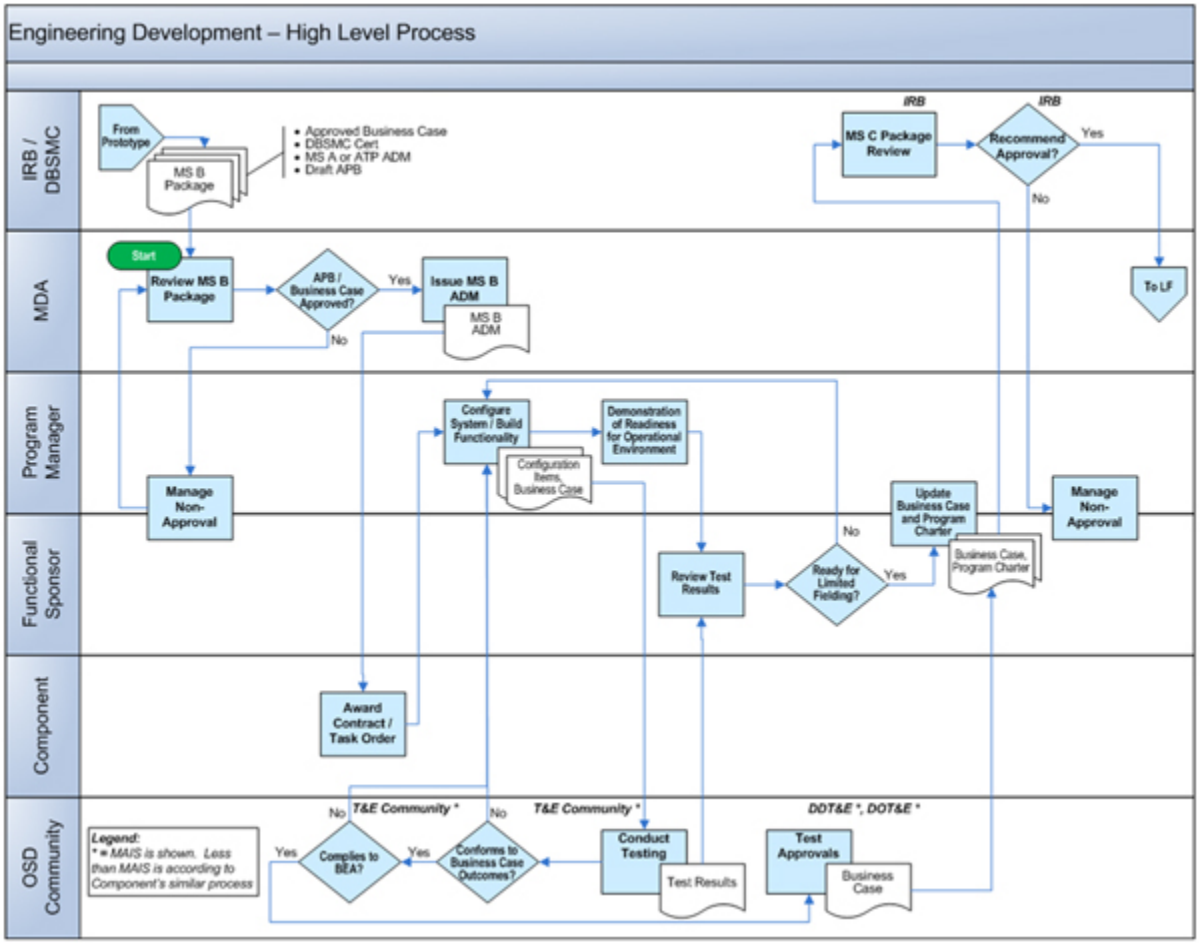
12.3.3.1. Purpose, Outputs, and Outcomes

The purpose of the Engineering Development Phase is to ensure that the materiel solution for the increment has been designed, configured, and developmentally tested in a manner consistent with the approved Business Case and the Program Charter and that it is prepared for limited deployment.

The outputs and outcomes of the Engineering Development Phase is a Business Enterprise Architecture (BEA) -compliant materiel solution ready for limited deployment into an operational environment for testing.

12.3.3.2. Engineering Development Phase Process

Figure 12.3.3.2.F1 - Engineering Development High Level Process Flow

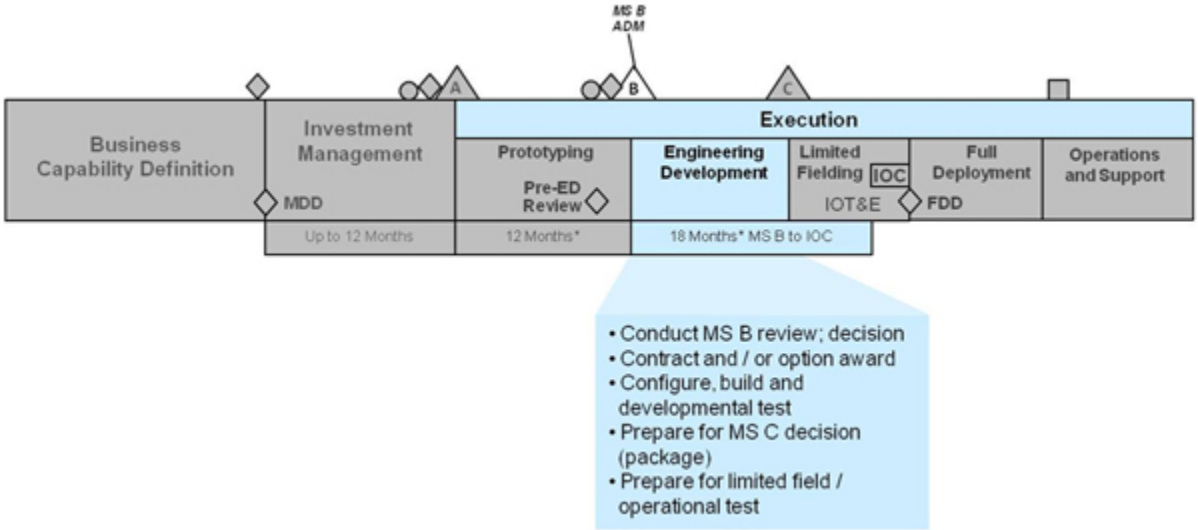


The Engineering Development Phase begins at MS B when the Milestone Decision Authority (MDA) reviews and approves the Acquisition Program Baseline (APB) and documents the decision in an acquisition decision memorandum (ADM). Specific attention shall be given to overall affordability; satisfaction of approved requirements; deployment timelines; risk management; and the basis for the program schedule. Upon approval of MS B, the Contracting Officer can award a contract or have one modified and obligate funds.

During the Engineering Development Phase, the program manager (PM) leads the effort to integrate the solution (increment) in a development / test environment and partners with the Functional Sponsor / user community to ensure functional requirements remain in alignment. The Functional Sponsor continues to solve or implement the Doctrine, Organization, Training, Leadership and education, Personnel, Facilities, and Policy (DOT_LPF-P) aspects of the solution that will accompany the materiel portion.

12.3.3.3 Engineering Development Phase Activities

Figure 12.3.3.3.F1 - Engineering Development Activities on BCL Model



Engineering Development Phase activities include, but are not limited to:

- Configuring the increment in an developmental / test environment;
- Conducting developmental T&E with the appropriate Component Test Agency / Organization and DOT&E (if appropriate) per the Business Case and Program Charter;
    - Testing and evaluating the capability to be delivered to ensure it achieves the outcomes defined in the Business Case and that it is Business Enterprise Architecture (BEA) -compliant;
    - Planning for operational testing during the Limited Fielding Phase;
- Making preparations for sustaining the increment of capability (continuing solution planning begun in the Investment Management (IM) Phase);
- Minimizing costs, monitoring and mitigating risks, conducting ongoing Business Process Re-engineering (BPR) (as necessary and appropriate);
- Integrating the non-materiel / DOT_LPF-P aspects of the solution, as appropriate;
- Monitoring and managing proposed requirements changes as appropriate to ensure the capabilities are delivered according to the APB for the increment;
- Demonstrating that the capability or increment of capability has been designed, configured, developed, and tested in a manner consistent with the Business Case, Program Charter and the MS B ADM;
- Preparing for MS C review; and
- Preparing the capability for delivery into an operational environment.

The Engineering Development Phase ends when the Functional Sponsor and PM are satisfied that the capability is ready for use and request a MS C / Limited Fielding decision.

MS C Preparation. When the Functional Sponsor and PM have determined that the solution

achieves the capabilities described in the Business Case for the increment and the acquisition program baseline (APB), a MS C Package is prepared to request approval to begin Limited Fielding at the MS C decision. Some of the considerations at this phase include:

- User concurrence that the capability satisfies the outcomes specified in the Business Case;
- Associated DOT_LPF-P capability is deployment-ready;
- Performance during developmental and operational testing is acceptable and consistent with the Business Case;
- Interoperability Certifications, Information Assurance Assessment and Authorization (IA A&A), BEA compliance, and any other required certifications have been obtained; and
- Life-cycle support is ready to implement.
- Clinger-Cohen Act (CCA) certification is still valid.

The MS C Package contains:

- The Business Case including any updates resulting from Engineering Phase activities;
- Any additional information / documentation required as directed in previous ADMs; and
- If necessary:
    - An updated APB;
    - A DBSMC Chair Certification approval memorandum; and
    - An updated Program Charter.

12.3.4. Limited Fielding

12.3.4.1. Purpose, Outputs, and Outcomes

12.3.4.2. Limited Fielding Phase Process

12.3.4.3. Limited Fielding Phase Activities

12.3.4. Limited Fielding

12.3.4.1. Purpose, Outputs, and Outcomes

The purpose of the Limited Fielding Phase is to limit risk by having a limited number of users verify that the capability works in an operational environment and to have the Test and Evaluation (T&E) community evaluate it against the outcomes (Business Case) and the Test Plan (Business Case).

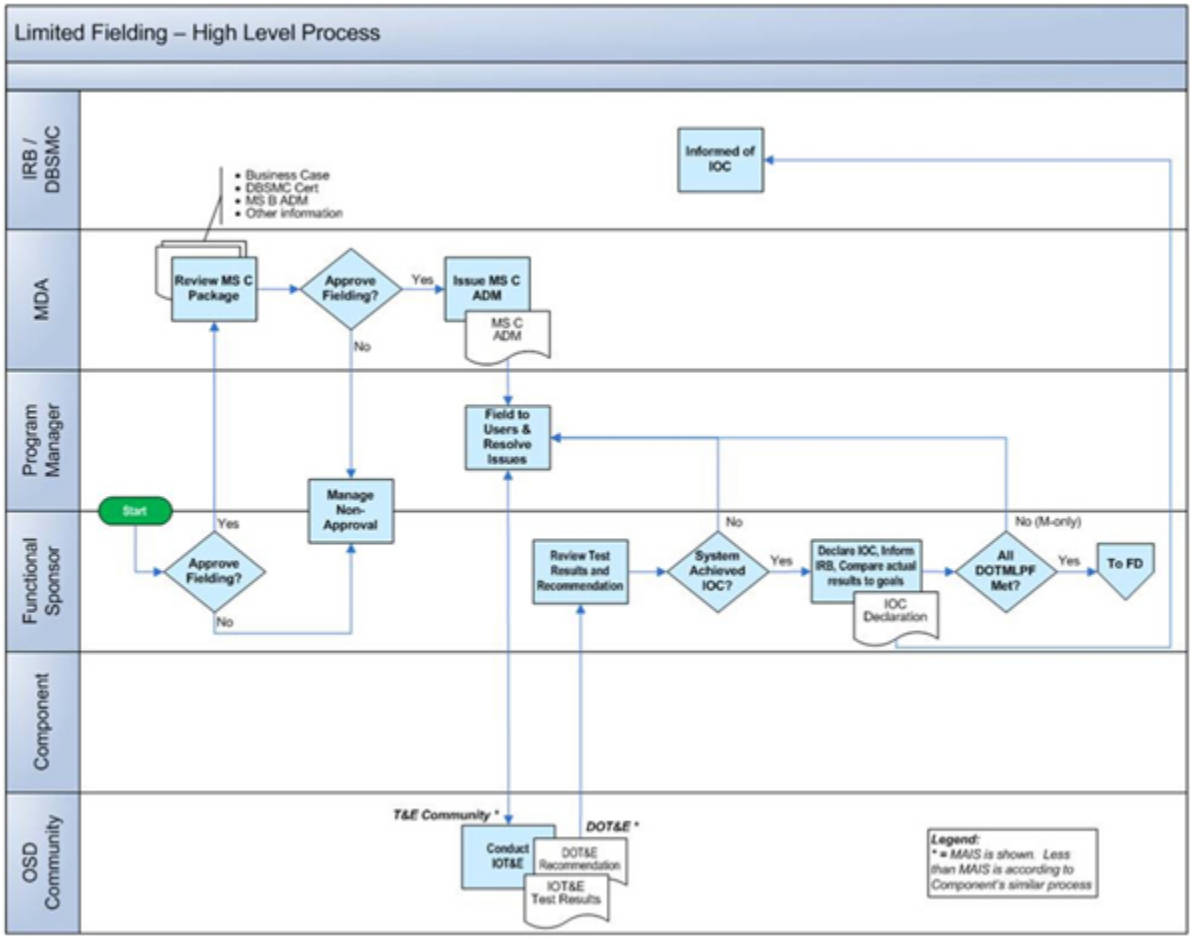
The outputs and outcomes of the Limited Fielding Phase are:

- An operationally assessed capability that meets the Milestone Decision Authority (MDA)-approved schedule and that includes capabilities that are secure, suitable, operationally useful, and accepted by the user; and

- The Functional Sponsor's written declaration of Initial Operating Capability (IOC).

12.3.4.2. Limited Fielding Phase Process

Figure 12.3.4.2.F1 - Limited Fielding High Level Process Flow



The Limited Fielding Phase begins at MS C when the Milestone Decision Authority (MDA) reviews the updated Business Case and any other required information per previous acquisition decision memorandum (ADMs) and approves the fielding of the capability into an operational environment in accordance with the schedule outlined in the APB. The MDA's decision is documented in the MS C ADM.

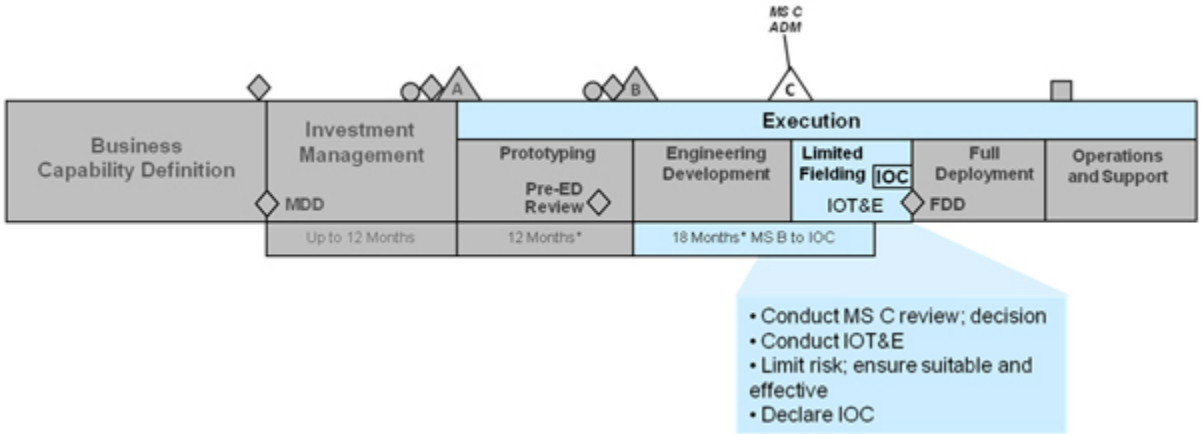
During this Phase, the PM continues to manage the materiel effort and will work closely with users and T&E to resolve issues and execute scheduled initial operational test and evaluation (IOT&E). The Functional Sponsor continues to solve or implement the non-materiel aspects of the solution that will accompany full deployment of the materiel solution. In addition, informed by T&E results and the outcomes defined in the Business Case, the Functional Sponsor will determine whether to declare IOC. For MAIS programs, there are specific test events that may be required to occur; these events and their subsequent processes are discussed in Chapter 9,

Section 9.5.8.2 "System Readiness for IOT&E".

At the end of Limited Fielding, the Functional Sponsor will issue a written declaration of IOC and notify the Investment Review Board (IRB). The Functional Sponsor will also determine whether the DOT_LPF-P dependencies have been met sufficiently enough to allow the program to proceed to Full Deployment.

12.3.4.3. Limited Fielding Phase Activities

Figure 12.3.4.3.F1 - Limited Fielding Activities on BCL Model



During Limited Fielding the PM will verify that the materiel solution will support the outcomes (i.e., high-level, business, and program) described in the Business Case and APB for the increment. The operational effectiveness and suitability of the capability is assessed by engaging appropriate T&E communities and collecting end-user feedback. The PM will manage fielding the system to the defined users and manage feedback from users to: identify issues; work with the Functional Sponsor to prioritize issues; and manage priority issues to closure. The PM and Functional Sponsor will identify lessons learned for each increment to help plan subsequent increments.

The PM will also limit risk by working with end-users to ensure they are appropriately trained in using the capability and that issues are identified and addressed expediently. The Functional Sponsor ensures that DOT_LPF-P aspects of the solution have been integrated as necessary and appropriate and that users have received a complete, usable capability.

When IOT&E results substantially demonstrate that the system is operationally effective, suitable, and survivable, the Functional Sponsor, informed by IOT&E results and DOT&E recommendations (for DBS on the OT&E oversight list), will determine whether IOC has been reached and issue a written IOC declaration to the PM and IRB. The PM will compile a Full Deployment Decision (FDD) review package for the MDA that includes:

- Written declaration of IOC, and

- The updated Business Case.

The Business Case updates may include successive refinement as discovery continues throughout the program life-cycle. At this point updates should include summaries of the revised Life-Cycle Sustainment Plan (LCSP) and Test Plan based on actual IOT&E results.

12.3.5. Full Deployment

12.3.5.1. Purpose, Outputs, and Outcomes

12.3.5.2. Full Deployment Phase Process

12.3.5.3. Full Deployment Phase Activities

12.3.5.3.1. Monitoring Performance Measures

12.3.5.3.2. Conduct Lessons Learned

12.3.5 .Full Deployment

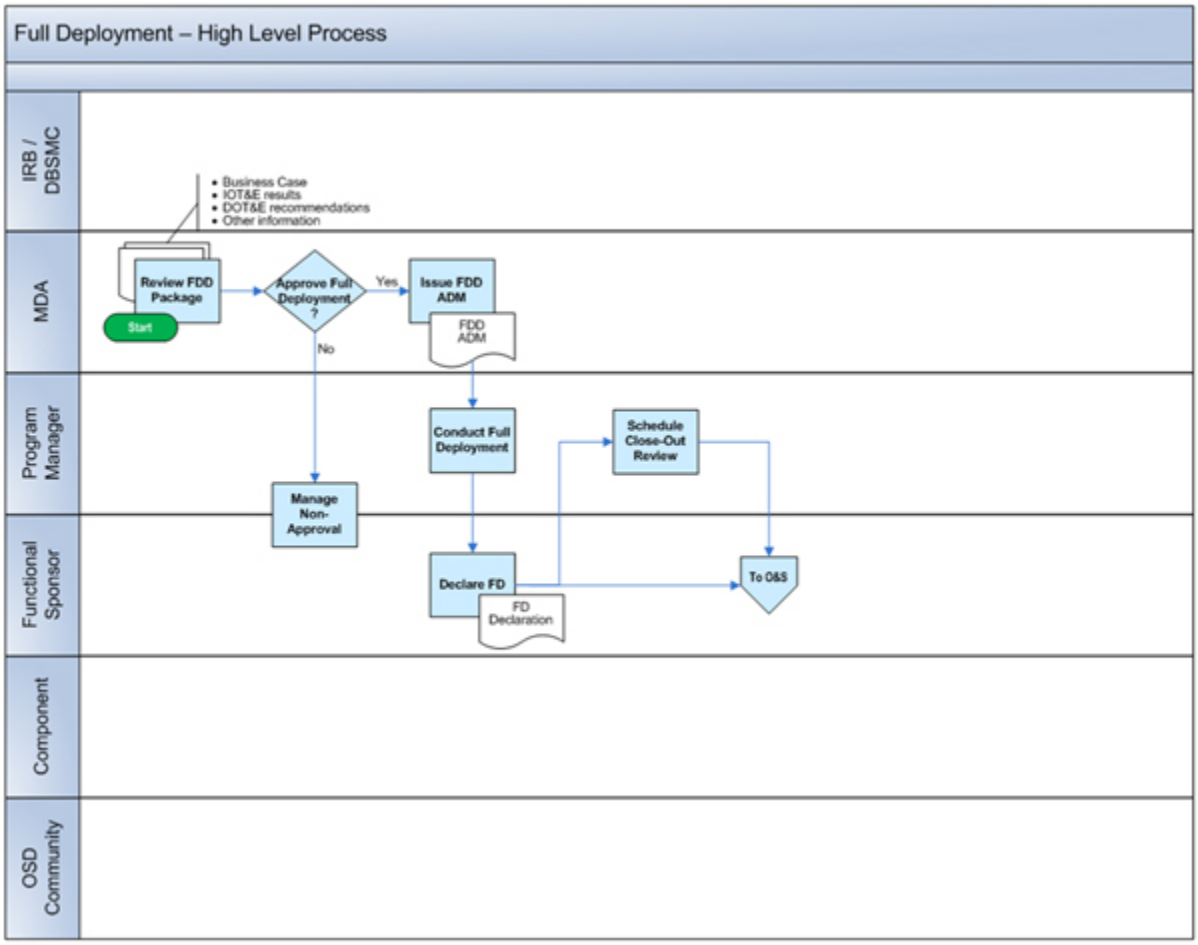
12.3.5.1. Purpose, Outputs, and Outcomes

The purpose of the Full Deployment Phase is to deploy a fully-tested Doctrine, Organization, Training, Materiel, Leadership and education, Personnel, Facilities, and Policy (DOTMLPF-P) capability to all operational users, in accordance with the acquisition program baseline (APB) and as documented in the approved Business Case.

The outcome of the Full Deployment Phase is to successfully deploy operational capability to users as defined in the Business Case that is secure, suitable, operationally useful, and accepted by the end-user within the milestone decision authority (MDA)-approved schedule.

12.3.5.2. Full Deployment Phase Process

Figure 12.3.5.2.F1 - Full Deployment High Level Process Flow



The Full Deployment Phase begins when the Milestone Decision Authority (MDA) approves the Full Deployment Decision (FDD). Criteria for this decision include:

- The Functional Sponsor provided written declaration of Initial Operating Capability (IOC);
- The Functional Sponsor states the associated Doctrine, Organization, Training, Materiel, Leadership and education, Personnel, Facilities, and Policy (DOTMLPF-P) capability is deployment-ready;
- A low percentage of the total functionality (as documented in the Business Case and the acquisition program baseline (APB)) for the increment remains to be developed. All threshold functionality must have been achieved for IOC. Enhancements, new requirements, and other requirements that are not included as part of the increments APB/Business Case are documented for consideration in a follow-on increment;
- Initial Operational Test and Evaluation (IOT&E) results must indicate that the system is operationally effective, suitable, and survivable. The final IOT&E report is not a

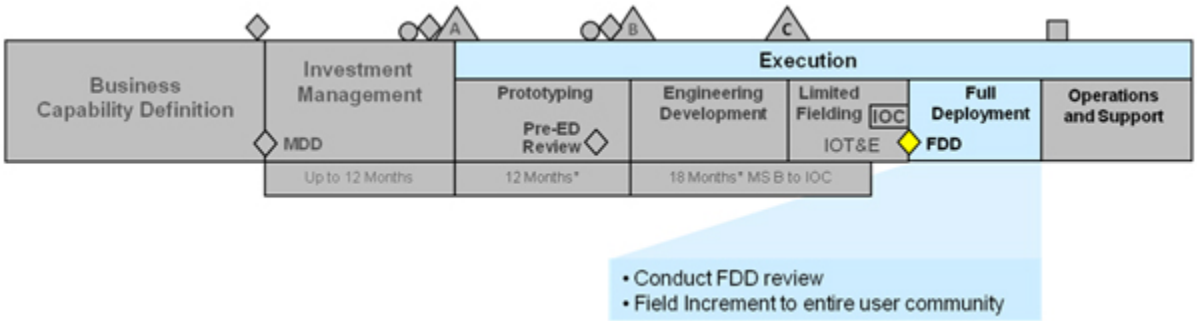
requirement for this decision point;

- Necessary compliance and certifications for deployment have been obtained / achieved;
- Lifecycle support is ready to implement; and
- Insignificant risk remains associated with the technical aspects of the capability, although acceptable fielding risk may remain. The software component of the capability should essentially be risk-free. Deployment risks will exist until they are addressed in the users operational environment.

During this phase, the increment of capability that was successfully deployed and tested during Limited Fielding is deployed to the rest of user community defined in the business case. The activities end when Full Deployment (FD) is declared by the Functional Sponsor and a Close Out Review is scheduled with the Investment Review Board (IRB).

12.3.5.3. Full Deployment Phase Activities

Figure 12.3.5.3.F1 - Full Deployment Activities on BCL Model



Full Deployment activities consist of bringing together change management, training, and technical support to implement the capability to the entire user community described in the Business Case.

The Functional Sponsor is responsible for ensuring the non-materiel components of the DOTMLPF-P solution for the increment have been satisfied and meet the defined outcomes outlined in the Business Case and the cost, schedule, and performance parameters in the APB.

12.3.5.3.1. Monitoring Performance Measures

The program manager and Functional Sponsor must pay close attention to the performance measures during fielding, as these should be an indicator of potential issues. Failure to implement a single aspect of the DOTMLPF-P solution may skew one or more performance measures. For example, if an organization fails to change an underlying business process (to align with a capability's fundamental business process) and instead continues to use their current business process, the timeliness and efficiencies expected with automation will be diminished. These types of issues will be made visible through performance measures.

12.3.5.3.2. Conduct Lessons Learned

This activity is appropriate in Limited Deployment and / or Full Deployment. The purpose of documenting lessons learned is to understand what worked and what didn't regarding the solutions quality and performance. These lessons can be applied to future efforts, result in general program improvement, reduced risk, increased probability of future successes, and reduce the potential for future failures. Typically, lessons learned will be based on fact and/or perception, both of which should be used as inputs to future DBS activities and archived for use as historical information for future DBS. It may also be beneficial to leverage lessons learned from similar efforts in other organizations.

Full Deployment activities end when the Functional Sponsor declares Full Deployment (FD) and schedules a Close-Out review.

12.3.6. Operations & Support (O&S)

12.3.6.1. Purpose, Outputs, and Outcomes

12.3.6.2. O&S Process

12.3.6.3. O&S Activities

12.3.6.3.1. Stakeholder Feedback

12.3.6.3.2. Lifecycle Sustainment

12.3.6.3.3. Close Out Review

12.3.6. Operations & Support (O&S)

12.3.6.1. Purpose, Outputs, and Outcomes

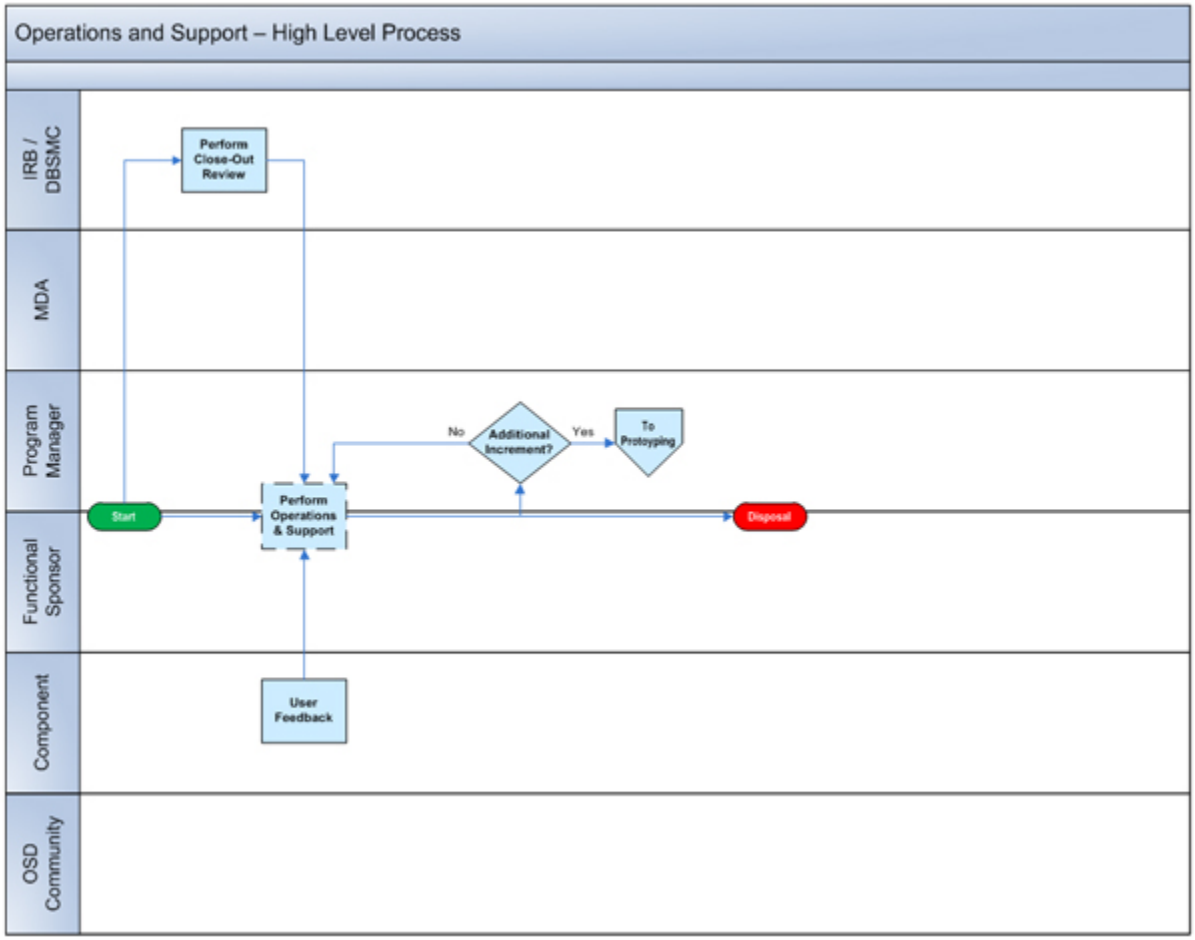
The purpose of Operations & Support (O&S) is to maintain materiel readiness, provide operational support (e.g., help desk), monitor performance, and sustain the capability in the most cost-effective manner possible over its total lifecycle. The end of this phase is reached with the disposal of the capability when it has reached the end of its useful life.

The outputs and outcomes of O&S are:

- Seamless and transparent support to users, until disposal of the capability;
- Requirements inputs for next increment that may impact the Business Case;
- Modifications and upgrades to fielded systems; and
- Updated Systems Engineering planning.

12.3.6.2. O&S Process

Figure 12.3.6.2.F1 - O&S High Level Process Flow

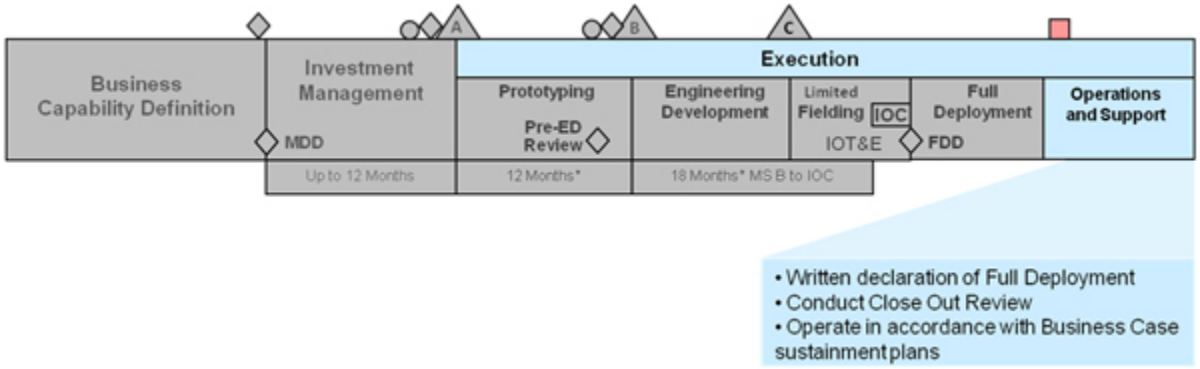


O&S begins when the first increment of a DBS is fully deployed and requires lifecycle sustainment to support users.

While O&S begins with the initial fielding of the capability, the capability fully enters into lifecycle sustainment when the Functional Sponsor decides the capability has been deployed to the full user community and is performing in accordance with the criteria in the Business Case by declaring Full Deployment (FD). Additionally, during O&S, a Close Out Review (which also constitutes the Post-Implementation Review (PIR), traditionally part of Clinger-Cohen) is conducted.

12.3.6.3. O&S Activities

Figure 12.3.6.3.F1 - O&S Activities on BCL Model



12.3.6.3.1. Stakeholder Feedback

One of the major activities during O&S is the evaluation & feedback of the fielded capability by the users, the PM, and the Functional Sponsor. After considering results against the desired outcome for the capability, resourcing, remaining service life, Business Enterprise Architecture (BEA) compliance and technology improvements, this feedback may lead to changes in the software, the product support package, Business Process Re-engineering (BPR), and/or requirements for the next increment. Sustainment is covered by the program's Lifecycle Sustainment Planning and Execution, which seamlessly spans a systems entire life-cycle, from the Analysis of Alternatives (AoA) to disposal. It translates business capability and performance requirements into tailored product support to achieve specified and evolving life cycle product support availability, maintainability, sustainability, scalability, reliability, and affordability parameters. It is flexible and performance-oriented, reflects an evolutionary approach, and accommodates modifications, upgrades, and re-procurement.

12.3.6.3.2. Lifecycle Sustainment

During Lifecycle Sustainment, the program manager (PM) optimizes operational readiness and the Functional Sponsor conducts continuing reviews of sustainment strategies, comparing performance expectations as defined in performance agreements and the Business Case to actual performance results. The Functional Sponsor and PM continuously identify deficiencies in these strategies and update the Business Case as necessary to meet performance requirements.

DAG Chapter 5, Section 5.1.2, "Life-Cycle Sustainment and the DoDI 5000.02 Acquisition Environment" goes into significant depth into sustainment planning. For software development, the following additional guidance is provided:

- Leverage commercial off-the-shelf (COTS) products as much as possible and support them via warranties and Support Agreements to minimize costs.
- Whenever possible, do not customize COTS software. If the software is not customized, the vendor/ developer maintains complete version control of their products, including

interoperability, maintainability, and security. This enables modernization of the capability with newer technology without new integration/configuration efforts.

- When COTS products are used in the same manner in the government environment as in the commercial environment (with added physical, information, and operational security), they should be already be covered by organizational standing operating procedures (SOP). When developing the sustainment plans, use existing these SOPs, rather than creating new plans, for both modernization and disposal.
- Due to the nature of DBS capabilities, whenever possible, develop and leverage portfolio sustainment planning (i.e., for those capabilities that utilize the same infrastructure and have similar life-cycle sustainment requirements),), rather than developing a separate plan for each capability.

For DBS, life-cycle sustainment planning evolves throughout BCL:

- ***Prior to Milestone A.*** Planning begins with the Analysis of Alternatives (AoA), describing the notional high-level product support and maintenance concepts to be used for each alternative. When the preferred alternative is selected, these concepts are expanded into a strategy for the entire program, based on the technologies used and acquisition approach. Considerations should include optimizing readiness and minimizing total life-cycle costs.
- ***Prototyping Phase.*** Sustainment planning evolves from the strategy for the program to the management plan for the increment. By the end of this phase, planning should include what sustainment efforts are required for the technology selected; the acquisition approach; and achieves the cost, schedule, and performance parameters outlined in the Business Case.
- ***Engineering Development Phase.*** The sustainment plan evolves into a detailed execution plan for how the product support plan is to be implemented and maintained. As part of the acquisition approach, this includes how the life-cycle support is going to be managed, assessed, and modified. Detailed measures should be developed as part of the acquisition approach and utilized from the initial fielding through disposal.
- ***Limited Fielding and Full Deployment Phase and O&S.*** For the rest of the life-cycle, sustainment planning is constantly monitored and modified to adapt to the addition of new capabilities, glitches, and opportunities in order to achieve desired sustainment measures.

DAG Chapter 5, Section 5.1.2.2, "Life-Cycle Sustainment Plan (LCSP)" Figure 5.1.2.2.F1 provides an outline that can be used to document the program manager's plan for implementing the sustainment strategy. This planning should be modified to fit the DBS acquisition and include, at a minimum, the following:

- ***Life-Cycle Support Strategy.*** Who is going to be responsible for what aspect of support, throughout the product's life-cycle? This responsibility information is normally summarized in the Program Charter.
- ***Life-Cycle Approach.*** In many cases, support will be provided by multiple entities, each specialized in a different area. This includes COTS vendors, enterprise services, software hosting facilities, and other logistics support.

- ***Supportability Test and Evaluation (T&E) Concept.*** Ensure that T&E for supportability is in place prior to the initial fielding and how issues will be mitigated. Re-use (and reference) similar, proven concepts, and modify them to fit this specific acquisition, rather than developing new concepts.
- ***Integrated Logistics Support Planning.*** A large portion of the life-cycle sustainment planning will be addressed in this section. However, most of the information is contained in other program planning documents. The objective is to ensure the information requirements are addressed, not to repeat this information in another plan.
    - *Design Interfaces.* Should be integrated with SE and Information Support Planning / interface documentation. Normally, it is in the form of DoD Architecture Framework (DoDAF) products at the detailed level.
    - *HAZMAT, Human Systems Integration (HSI), & ESOH.* Generally will not need to be addressed, as COTS capabilities will be utilized as in a similar commercial environment.
    - *Quality Assurance (QA).* Address who is responsible for implementing the QA plan and who provides oversight. Responsibilities are to be covered in the Program Charter.
    - *Reliability and Maintainability (R&M).* Reliability is a systems ability to operate and perform it's intended function for a specified interval under stated conditions. Maintainability is the ease and rapidity with which a system or equipment can be restored to operational status following a failure.

Reliability and maintainability parameters relate to the operational environments, scenarios, and the support that will be provided under these conditions. Reliability and maintainability performance parameters are typically defined in the Business Case, along with other capability measures, and assist the Functional Sponsor in the early identification of issues.

DBS are normally COTS-based. This approach provides a reliable and stable foundation that is easily maintainable for the customer developed application. The use of COTS hardware and software products means commercial sources are available to provide maintenance and support. The program management office may maintain hardware and software maintenance contracts with the appropriate vendors to provide support to the development, test, and operation of systems.

- *Failure Modes Effects and Criticality Analysis (FMECA) (or a similar Component process).* Is generally addressed during Information Assurance (IA) planning and should cover what is considered a critical failure, time-limit's for fixing critical failures, and who is responsible.
- *Damage Modes and Effects Analysis (DMEA) (or similar Component process).* Damage modes are errors or defects in a process, design, or item, especially those that affect the intended function of the capability and/or the process (can be potential or actual).). Effects analysis refers to studying the consequences of those failures.

DMEA is a procedure used in the life-cycle for analysis of potential failure modes within a system to classify the severity and likelihood of the failures. A successful DMEA activity helps a team to identify potential failure modes based on past experience with similar products or

processes, enabling the team to design those failures out of the system with the minimum of effort and resource expenditure, thereby reducing development time and costs.

- *Risk Management.* Addressed in a Risk Management Plan. The Program Charter should identify who is responsible for risk management.
- *Safety Engineering.* Safety Engineering is defined as "An engineering discipline that employs specialized professional knowledge and skills in applying scientific and engineering principles, criteria, and techniques to identify and eliminate hazards, in order to reduce the associated mishap risk." If this is necessary (normally not for COTS), it should be addressed as part of the IAS.
- *Standardization, Interchangeability & Interoperability (SI&I)* . Refer to the Business Enterprise Architecture (BEA) . Ensure any interface agreements are documented and can be referenced.
- ***Maintenance Concept for Hardware.*** Address responsibilities for installation, maintenance, refresh, or upgrade of the hardware, to include warranties, agreements, and funding.
- ***Maintenance Concept for Software.*** Address responsibilities for all aspects of the software maintenance, throughout the lifecycle. This includes:
    - Ongoing maintenance to correct existing processing, performance and implementation failures or faults. Based on user feedback, if the program manager/product support manager determines that a problem can only be resolved by changing the software baseline, the program manager must determine the extent of the changes required. If such changes are minor, such changes should be included in the next scheduled maintenance release of the baseline affected.
    - Preventive maintenance for software efficiency and to prevent corruption (e.g., anti-virus tools).
    - Identification of new requirements or upgrades to improve performance, maintainability, and add functionality. If the major changes are required, the program manager should discuss with the MDA prior to implementation.
- ***Tech Support.*** Address operations of the "Service Desk" and different tiers of support. Ensure organizational agreements for different support tiers are addressed in the Program Charter (e.g., the program could document this information in their life-cycle support plan and then reference the Program Charter to that plan.)
- ***Manpower and Personnel.*** Addressed in accordance with the Doctrine, Organization, Training, Leadership and education, Personnel, Facilities, and Policy (DOT_LPF-P) analyses and as part of delivering the comprehensive Doctrine, Organization, Training, Materiel Leadership and education, Personnel, Facilities, and Policy (DOTMLPF-P) capability. There is a high likelihood that this will be effected by the Business Process Re-engineering (BPR), but may fall outside the scope of the PM and/or the Functional Sponsor.
- ***Training and Training Devices.*** Ensure training requirements, strategy, responsibilities, and methods that will be employed to deliver the best possible instruction are covered, in accordance with the DOTMLPF-P capability delivery.
- ***Supply Support.*** Generally will not apply to DBS. Supplies will primarily be satisfied though hardware and software concepts described above. If not, then ensure they are described.

- ***Support and Test Equipment.*** For COTS, maximum use of commercial service warranties and service contracts are normally utilized. No special tools, General Purpose Electronic Test Equipment or Special Purpose Electronic Test Equipment are normally required to support. If special tools are needed, ensure they are described.
- ***Technical Data.*** See DAG Chapter 5, Section 5.1.6, "Data, Software, and Intellectual Property Rights" .
- ***Packaging, Handling, Storage, and Transportation.*** DBS capabilities generally will not have any unique facility, special packaging, handling, or transportation needs. If they do, ensure they are addressed.
- ***Facilities and Installation.*** Generally, no new facilities are required for DBS. If they are, then they should be addressed.
- ***Support Transition Planning.*** Sustainment Transition Plans are developed to support a program (or increment) after the initial operational capability is achieved and the system moves into full operational capacity where it requires operational support. Since DBS uses an evolutionary approach and is developed in Increments with capability releases, the system is constantly and rapidly evolving to provide new capabilities and functional enhancements. As a result, the operation and sustainment period is very brief as the system transitions from release to release. The activities normally associated within O&S of a system (security and performance management, patches, bug fixes, COTS hardware and software updates, usability improvements, and interoperability updates) are addressed during the development of successive increments or as data updates to fielded versions as required.

However, if a capability is scheduled to cease new development (i.e., the final increment, prior to the MS B decision) and move fully into O&S, this transition planning must be planned for and the appropriate agreements put into place.

- ***Support Resource Funds.*** Ensure funding aspects are adequately addressed. Normally this is for funding that is outside the purview of the program manager. Examples would include hardware replacement and licensing costs while in O&S, development of new capabilities after a Program Office has been deactivated, and organizational O&M costs.
- ***Configuration Management.*** Although CM is normally captured in a program's CM plan (and considered to be part of the SE discipline) it is crucial for life-cycle support, as different support options may be needed for the different version of the software or technologies that have been released.
- ***Demilitarization, Reutilization and Disposal (DR& D) Strategy.*** At the end of its useful life, a DBS or one or more increments of a DBS is disposed of in accordance with all statutory and regulatory requirements and policy relating to safety, security, and the environment. During the design process, the program manager should estimate and plan for safe disposal. Hardware no longer needed should be disposed of according to each organization equipment disposal procedures or be transferred to another program for reutilization. Software produced or purchased will be maintained in the configuration management library and will be available for reutilization as needed.

12.3.6.3.3. Close Out Review

In O&S, the program manager and Functional Sponsor conduct a Close Out Review, which also serves as the Post Implementation Review (PIR) and fulfills the requirements of such, with the Investment Review Board (IRB) to determine whether or not the delivered capability achieved the outcomes defined in the business case. The Close Out Review is an important vehicle for lessons-learned since it incorporates user feedback and to enable understanding of how well a recently-completed increment meets the needs of users before finalizing the requirements for a subsequent increment. It also informs the IRB of how well an investment performed against expectations and how future increments of capability can be expected to perform.

12.4. DBS-specific Criteria

12.4.1. Time-Limited Development

12.4.2. BCL Governance

12.4.3. Roles and Responsibilities

12.4. DBS-specific Criteria

12.4.1. Time-Limited Development

The reasons for Time-Limited Phases in the Business Capability Lifecycle (BCL) are that:

- Technical capabilities and software development are strongly related to Moore's law, roughly doubling in ability every 18 months (or less); and
- User requirements almost always change as soon as a capability is fielded - as more users take advantage of the solution, new ideas for enhancement or additional capability tend to increase.

Unlike a traditional "waterfall" acquisition, where requirements and technologies can be defined much earlier in the acquisition process, information technology (IT) acquisitions (specifically in this chapter, defense business systems (DBS)) are characterized by fluid requirements and rapidly changing technology.

The key to successfully fielding IT is to quickly get capability into the hands of users. Too often, users and developers spend years trying to specify requirements in this dynamic environment and never field any capability. Instead, the functional stakeholders should define the business outcomes they want to achieve, how they are going to measure achievement, and acknowledge that things will change.

The success of the BCL approach depends on end-users' prioritization of requirements, the subsequent scoping of each increment, and focusing on fielding useable capability as rapidly as possible. The key is to prioritize requirements and divide them into small, useful capabilities by performing technology trades against cost and requirements to achieve delivery within Milestone

Decision Authority (MDA)-approved timelines.

Time-limiting considerations, by phase, are as follows:

- ***Business Capability Definition (BCD) Phase.*** Although this phase is not time limited, it is critical to the success of all the other phases; it defines the problem to be solved and frames the scope of the acquisition. In this Phase, the Functional Sponsor (representing the needs of the end user) defines:
    - What the need / gap / problem is (the Problem Statement);
    - How they will know when the problem is fixed (the high-level outcome(s)); and,
    - How they are going to measure progress towards those outcomes.

Although there are other relevant tasks to be accomplished (see a complete discussion of the Business Capability Definition (BCD) Phase in Section **12.1** , *Business Capability Definition (BCD) Phase*), these have the highest impact on time-limited development (if these are not adequately articulated and agreed to by the Functional Sponsor, it will be unclear what constitutes success and will likely be revisited / redefined).

- ***Investment Management (IM) Phase.*** The time-limit for the IM Phase is 12 months or less. At the start of this Phase, the optimal "To-Be" Doctrine, Organization, Training, Materiel, Leadership and education, Personnel, Facilities, and Policy (DOTMLPF-P) process should have already been selected, though it is not yet complete. A materiel need is identified, but the specific solution to fulfill it is undefined. Using the Problem Statement, an Analysis of Alternatives (AoA) is conducted to select the best materiel *approach* to solve the problem, or a scoped portion of the problem (i.e., a single problem statement could spawn multiple programs.) Keys for success within the time-limitation are:
    - Define the approach to the materiel solution (e.g., an ERP or Web 2.0 technologies). Ensure assumptions, scope, boundaries and constraints are well-articulated (you may not be able to solve the entire problem with the selected technical solution *today* . Tomorrow brings new technologies, new versions of more-capable software, and updated requirements.)
    - Understanding assumptions, scope, boundaries and constraints. Determine which are statutory and which are "artificial" (an AoA is mandatory, but a subordinate 75-day sub-process may be artificial.) Agreements made with Functional Sponsor(s) and/or the MDA can mitigate artificial constraints.
    - Keep planning at the strategic level. Do not over-plan, because in this environment the plan is going to change. At this stage, the users desired outcomes will be at a very high level. (i.e., "full auditability"). There is no way to address all of the issues that are encountered this early in the process and, even so, requirements would change before completing the associated plans. The result would be an endless do-loop of changing your plans to fulfill new requirements. A key to success is to be able to clearly articulate the approach to solving the problem using the preferred materiel solution (and over-time, the preferred materiel solution is going to change.).
- ***Prototyping Phase.*** BCL mandates completion of Prototyping within 12 months or less

of contract/option award. This time-limit also to each subsequent Increment (after Authorization to Proceed (ATP) is granted) as well. The key to completing Prototyping within 12 months is to limit the scope of activities to those absolutely necessary, such as the following:

  - It is critical to obtain the preferred materiel solution as rapidly as possible.
  - Ensure the Functional Sponsor has prioritized requirements (business outcomes) before the MS A decision. Expect this prioritized list to be more requirements than can be fulfilled in 18 months. Part of this phase's activities is scoping the requirements for the Increment to achieve a useful capability that can be delivered in less than 18 months. Multiple prototype or pilot demonstrations may be necessary to reach agreement on an acceptable, operationally useful, and affordable increment of capability that can be delivered within this timeframe.
  - Significant emphasis must be placed on leveraging enterprise services and existing infrastructures. These are known entities and will significantly reduce engineering development and testing risks in the next phase.
  - Develop a reasonable plan to build and deploy. Also, set user expectations. The objective is not to maximize the number of requirements that can be incorporated into an 18 month schedule; rather it is to get the useful capabilities out to the user as rapidly as possible. When the program manager and the Functional Sponsor have agreed which requirements are going to be satisfied and the technologies to be used for the Increment, the Business Case must be updated and the Functional Sponsor must provide a description of what will constitute IOC.

- ***Engineering Development (ED) and Limited Fielding Phases.*** After the Engineering Development Phase contract is awarded (post-MS B) the a MAIS DBS program has 18 months to obtain a Full Deployment Decision (FDD) to include achieving Initial Operating Capability (IOC). This should be the focus of all of the program's efforts. When achieving IOC appears imminent, focus can be shifted to the next goal(s) - the Full-Deployment Decision (FDD) and possibly the next increment.
- ***Full Deployment Phase and O&S.*** These phases are not time-limited.

The timelines for the phases of BCL must be taken into consideration during program planning, scoping, and Business Case development. Violations of these timelines require re-validation of the Business Case by the Investment Review Board (IRB) (and the MDA, as required), and can potentially slow down the delivery of capability to the user. Table **12.4.1.T1** outlines BCL timelines.

Table 12.4.1.T1 - BCL Timelines

Decision Period	**Time Allotted**
Materiel Development Decision (MDD) to Milestone (MS) A	12 months
MS A to IOC*	Within 5 years
MS A to Full Deployment Decision (FDD)	Within 5 years (or if no MS A, from when the preferred alternative was selected by the MDA)

MS A (contract / option award) to MS B	12 months or less***
ATP** (contract / option award) to MS B	12 months or less***
MS B (contract / option award) to FDD	18 months or less***

- *IOC is a Functional Sponsor written declaration; though the MDA will generally not grant a MS A if it is not clear that IOC is achievable within 5 years of MS A.
- **Authority to Proceed (ATP) is for follow-on increments. There is one MS A for the overall program, but there may be multiple ATPs (if there are multiple increments). ATP will "kick off" an increment.
- ***If activities can be conducted in time periods much less than the maximum time allotted, reflecting this in schedules and plans promotes visibility, and rapid capability delivery.

12.4.2. BCL Governance

The Business Capability Lifecycle (BCL) aligns defense business system (DBS) requirements, investment, and acquisition processes into a single, tiered integrated decision-making framework that provides oversight commensurate with program complexity and risk. The Functional Sponsor is a key focal point at the Component level in the earliest stages of the capability and partners with the program manager (PM) throughout the process as the capability matures. This integrated model of governance is depicted in Figure **12.4.2.F1** :

Figure 12.4.2.F1 - Governance

Each Investment Review Board (IRB) assesses investments in its portfolio relative to their functional needs, as well as the impact on end-to-end business process improvements as guided by the Business Enterprise Architecture (BEA) , articulated in the DoD Enterprise Transition Plan (ETP), the DoD Strategic Management Plan (SMP), and/or described in Component architectures and transition plans. These products provide both the end-state and the roadmap to deliver more robust business capabilities.

For MAIS, the IRBs review requirement changes and technical configuration changes during the development process that have the potential to result in cost and schedule impacts to the program. Such changes will generally be disapproved or deferred to future increments and will not be approved unless funds are identified and schedule impacts mitigated.

The Defense Business Systems Management Committee (DBSMC) guides the Department in developing and implementing integrated business functions and capabilities. The DBSMC is the final approval authority for all certification decisions.

The MDA is responsible for making DBS acquisition decisions and relies on the IRB's advice in its role as OIPT and information provided by the Component to include: functional requirements; the Business Case; appropriate Business Process Re-engineering (BPR) and BEA compliance (as determined by the Pre-Certifying Authority (PCA));and a DBSMC-approved investment decision.

12.4.3. Roles and Responsibilities

DoD officials and organizations have specific investment and acquisition-related roles and responsibilities throughout the Business Capability Lifecycle (BCL), as outlined in Table **12.4.3.T1.** and **T2** .

Table 12.4.3.T1 - DoD Component-Level Roles and Responsibilities

DoD Component	Role and Responsibility
Chief Management Officer (CMO)	Responsible for determining those DBS investments within their area of responsibility have adequately performed BPR activities and complies with the Business Enterprise Architecture (BEA)
Component Acquisition Executive (CAE)	Responsible for all acquisition functions within their Component. This includes both the Service Acquisition Executives (SAEs) for the Military Departments and acquisition executives in other DoD Components. The CAE designates the MDA for DBSs other than MAIS (or as otherwise delegated).
Pre-Certification Authority (PCA)	Generally, assesses and pre-certifies compliance with the BEA and BPR. Also ensures required documentation is available for IRB review prior to the IRB meeting.
Functional Sponsor	Represents the end-user / user community. Responsible for activities of the BCD Phase, defining the business need (problem / gap), desired outcomes, and acceptance criteria, remaining actively engaged in the program throughout its lifecycle in order to achieve the complete Doctrine, Organization, Training, Materiel, Leadership and education, Personnel, Facilities, and Policy (DOTMLPF-P) solution, and for declaring IOC and the criteria for declaring Full Deployment (FD). Works with the program manager to complete the Program Charter. Generally, the Functional Sponsor establishes and continues a strong working relationship with the program manager throughout the lifecycle of the DBS beginning early in IM.

Program Manager (PM)	Designated early during IM and is accountable for the successful development and deployment of the DBS to deliver on the outcomes defined by the Functional Sponsor. The program manager develops the APB for each increment and manages the program to meet cost, schedule, and performance objectives. program managers shall have requisite experience and competency in delivering IT solutions, including the ability to build and manage multi-disciplinary integrated teams and in identifying and mitigating risk. The program manager also establishes and continues a strong working relationship with the Functional Sponsor throughout the lifecycle of the DBS beginning early in IM.

Table 12.4.3.T2 -OSD-Level Roles and Responsibilities

OSD Component	Role and Responsibility
Assistant Secretary of Defense, Research and Engineering ASD(R&E)	If the MDA determines that a Technology Readiness Assessments (TRA) is required, the ASD(R&E) coordinates with DoD Component representatives to accomplish.
Certification Authorities (CA) (Approval Authorities, per 10 U.S.C., 2222)	Via the IRBs, provides oversight of investment review processes and procedures for DBSs supporting their area(s) of responsibility to certify investments and make recommendations to the DBSMC. CA's also advise the MDA on acquisition matters. CAs may serve as IRB Chairs, or may designate an IRB Chair.
Defense Business Systems Management Committee (DBSMC)	Per sections 186 and 2222 of Title 10, U.S.C., provides investment oversight for DBS and guides the transformation activities of the business areas of the DoD. The DBSMC approves IRB Certifications and CMO/DCMO BPR determinations, and is the final authority for DBS requirements.
Director, Cost Assessment and Program Evaluation (DCAPE)	Provides independent analysis and advice to inform decision-making. Responsible for developing and approving Analysis of Alternatives (AoA) Study Guidance for MAIS DBS. May also review, assess and / or conduct independent cost estimates, cost analyses, and economic analyses, as appropriate.
Deputy Assistant Secretary of Defense, Developmental Test and Evaluation DASD(DT&E)	Ensures that developmental test and evaluation is effectively addressed throughout the entire lifecycle of the DBS. DASD(DT&E) works in partnership with the DOT&E) to review and approve the Test Plan section(s) for MAIS described in the Business Case and to collaborate on an integrated testing approach.

Director, Operational Test and Evaluation (DOT&E)	Responsible for the test and evaluation of each DBS. Works with the Functional Sponsor and program manager to ensure that roles and responsibilities, along with required test resources, are adequately addressed with mutual agreement early on in the testing process. The DOT&E also works with the DASD(DT&E) to approve the Test Plan section(s) for MAIS described in the Business Case and to collaborate on an integrated testing approach.
Deputy Assistant Secretary of Defense, Systems Engineering DASD(SE)	Reviews and approves the systems engineering sections of the Business Case for MAIS.
DoD Chief Information Officer (CIO)	Works with DoD Components, the IRBs, the DBSMC, and other stakeholders to ensure that DBSs develop in compliance with applicable statute (i.e., the Clinger-Cohen Act (CCA)), regulations, and in accordance with DoD policy on architecture, design, interoperability, security, and information assurance (IA).
Deputy Chief Management Officer (DCMO)	Responsible for determining BPR efforts have been undertaken as appropriate and for determining BEA compliance for non-military department and joint DBS. The DCMO may also hold delegated MDA authority for certain DBS and may also serve as the Chair of governance forums for review and decision making purposes.
Enterprise Risk Assessment Methodology (ERAM) Team	Conducts independent assessments to identify risk, recommend risk mitigations to the program manager, and provide insight to decision-makers as part of BCL.
Information Review Board (IRB)	Advise the IRB Chair and the MDA and provide cross-functional expertise and oversight for DBS. The IRBs serve as the OIPT for the MDA for DBS. The IRBs review Problem Statements (for all potential DBS), Business Cases, and requirements changes / technical configuration changes for MAIS in development that have the potential to impact program cost and schedule. The IRBs also work to ensure that investments are aligned with the BEA to ensure that DBS support enterprise priorities.
IRB Chair	In addition to reviewing all information mentioned above as a member of the IRB, the IRB Chair has decision authority, and will therefore decide on Problem Statement approvals, make acquisition-related recommendations to the MDA, serve as the validation authority for DBS requirements, and hold specific duties regarding IRB Certification actions.
Milestone Decision Authority (MDA)	Responsible for making DBS acquisition decisions as well as determining the appropriate BCL entry / acquisition phases and the extent to which regulatory and other non-statutory documentation can be tailored. The MDA is also advised by the IRB Chairs during the review process.

12.5. Tools and Methods

12.5.1. Business Case

12.5.1.1. Content Updates

12.5.1.2. General Guidance

12.5.1.3. Evaluation

12.5.2. DOTMLPF-P Analysis

12.5.3. Outcomes and Measures Development

12.5. Tools and Methods

12.5.1. Business Case

The Business Case is a summarization of the Doctrine, Organization, Training, Materiel, Leadership and education, Personnel, Facilities, and Policy (DOTMLPF-P) solution performed for a point in time. It is a brief, high-level document, with input from the Functional Sponsor and program manager, which outlines the program/increment and typically does not provide the detail data that the program office produces.

The principal purposes of the Business Case are to:

- Facilitate a way of thinking that causes Components to consider a business capability's value, risk and relative priority as fundamental elements of submission;
- Require those proposing a solution to justify its value and to self-eliminate any proposals that are not of demonstrable value;
- Enable DoD leadership to rapidly determine if a concept or proposed solution is of value to the enterprise and is achievable compared to the relative merits of alternative proposals; and
- Enable DoD leadership to objectively measure the subsequent achievement of the capability's benefit’s.

The Business Case provides a compelling, defendable and credible justification for the DOTMLPF-P solution to the defined problem, with corresponding outcomes and performance measures for use throughout the capability's lifecycle. It is an evolving document, with the intent of providing an overview of the current program status in a condensed format. It is structured to best support the program and does not have a mandatory format, but it must cover all of the statutory and regulatory information requirements.

Supporting the Business Case is program documentation. This documentation is what the Component feels is necessary to successfully implement the capability. Each Component has approval processes for documentation and normally does not require Office of the Secretary of

Defense (OSD) approval (the DoDI 5000.02 directs the Heads of the DoD Components to keep the issuance of any additional guidance necessary to implement the mandatory procedures to a minimum). Programs still need to make this documentation available to oversight bodies: It just does not require their approval. In select cases, the applicable office with statutory authority (e.g., DASD(DT), DOT&E, etc...) sign-off on the appropriate section of the Business Case to agree that the program plans are adequately addressed.

The Business Case provides a template to ensure that a problem, it's root cause and DOTMLPF-P issues are thoroughly analyzed; that all options have been considered; that risks are identified; risk mitigation plans are sufficient; and that there is a high degree of confidence the expenditure of resources and funds are justified and value-added. It provides leadership with sufficient information to make informed investment decisions within the context of enterprise priorities and available resources. Components are responsible for the development and maintenance of the Business Case.

12.5.1.1. Content Updates

In coordination with the Functional Sponsor, the Component Acquisition Executive (CAE), and the Investment Review Board (IRB), the program manager (PM) must review and, when necessary, update the Business Case to incorporate any changes driven by an increment to ensure that:

- The problem to be solved remains valid;
- The selected solution is still appropriate to achieve the desired outcomes;
- The materiel solution can continue to be executed within the established cost, schedule and performance parameters; and
- The expected benefit's will be realized.

Additionally, the PM must update and/or revise the Business Case if changes occur to the problem scope, context or the requirements for additional modernization funding.

For follow-on increments, it is recommended that an "addendum" be added to the existing Business Case to preserve all program-level information, to reduce rewrites, and to show history and continuity of the program.

If the Business Case is deemed no longer valid, but the capability is still needed, the Functional Sponsor, along with the CAE, must notify the IRB and the MDA immediately to determine how to proceed. If the Business Case is deemed no longer valid and the capability no longer needed, the Functional Sponsor, along with the CAE, must immediately notify the IRB and the Milestone Decision Authority (MDA) of their intention to discontinue the program.

12.5.1.2. General Guidance

- The Business Case is not a technical proposal, though it will contain technical information.
- Utilize tables to summarize information as much as logically possible.

- Up front, explain the decision or action being sought (i.e., seeking a MS A decision in order to do X, Y, and Z.).
- Do not write the Executive Summary until the rest of the content is finished. The Executive Summary should be updated each time a decision is being sought (**Note:** after the first Executive Summary is written, it may only require cursory updates in the future).
- The Executive Summary should be concise and focused on the issue at hand. Do not discuss "general knowledge" data or information (such as, the history of ERPs in the Department, the largesse of the DoD, the challenges of the DoD IT environment, easily "Google-able" information, etc.).
- Clarify between usage of increments or releases, what operational business capability will be delivered in a specific increment or release, and how each works toward achieving the overall outcome from a measures perspective (is it 25% of the overall capability?)
- Measures should not focus on compliance - rather, what compliance will a Law, Regulation, Policy enable (i.e., compliance with SFIS requirements will enable _____.) or conversely, if required compliance with an L, R, or P introduces risk or additional requirements.
- As a general guideline, the complete Problem Statement analysis section for a (projected) MAIS solution should be less than 7 pages in total length and, depending on the number of alternatives considered, the total Business Case may vary from 15 to 40 pages.
- A Problem Statement should never be more than 3-4 sentences in length.
- The Business Case will always be judged on the quality of information it contains, not on the length of the content.

12.5.1.3. Evaluation

A Business Case will be evaluated to ensure:

- The investment has value to the enterprise and aligns with enterprise priorities;
- A materiel solution has not been selected too early in the process, and evidence that robust analysis has been conducted;
- Proper management and support of senior officials for the proposed solution;
- Definition of the scope for the proposed solution and measurable desired outcomes;
- Clear evidence that BPR has been done or is being completed;
- Ability of the Component to deliver the benefits; and
- Dedicated resources are working on the highest value opportunities.

12.5.2. DOTMLPF-P Analysis

Doctrine, Organization, Training, Materiel, Leadership and education, Personnel, Facilities, and Policy (DOTMLPF-P) is an analytical approach and method for defining the operational context of a perceived problem. There are many options for how to approach a DOTMLPF-P analysis; however, it may be valuable to establish an internal or DoD Component standard. A valuable reference are the JCIDS materials .

Doctrine.

- Is there existing doctrine that addresses or relates to the business need? Is it Joint? Service? Agency?
- Are there operating procedures in place that are NOT being followed which contribute to the identified need?
- If no doctrine is in place which pertains to the defined need, does new doctrine need to be developed and implemented that will provide a total or partial solution to the need?

Organization.

- Where is the problem occurring? What organizations is the problem occurring in?
- What are the primary and secondary mission / management focus of those organizations?
- What are the organizational values and priorities?
- Is the organization properly staffed and funded to deal with the issue?
- Are commanding officers / senior management aware of the issues?
- Is the issue already in some type of organizational issue list?
- If so, why isn't the issue being resolved?
- Who exactly is aware of / being impacted by the issue?

Training.

- Is the issue caused, at least in part, by a complete lack of or inadequate training?
- Does training exist which addresses the issue?
- Is the training being delivered effectively?
- How are training results being measured and monitored?
- Is the issue caused by a lack of competency or proficiency on existing systems and equipment?
- Was the issue discovered in an exercise or during training?
- Do personnel affected by the issue have access to training?
- Is the training effort supported by leadership?
- Is training properly staffed and funded?

Materiel.

- Is the issue caused, at least in part, by inadequate systems or equipment?
- What legacy systems exist where the problem is occurring?
- What functionality would a new system provide that currently does not exist?
- What increases in operational performance are needed to resolve the issue?
- Is the issue caused by a lack of competency or proficiency on existing systems and equipment?
- Can increases in performance be achieved without development of a new system?
- Who would be the primary and secondary users of the proposed systems or equipment?

- Is interoperability either a driver or barrier in issue resolution?

Leadership and education.

- Is the issue caused, at least in part, by inability or decreased ability to cooperate/coordinate / communicate with external organizations?
- Does leadership understand the scope of the problem?
- Does leadership have resources at its disposal to correct the issue?
- Has leadership been trained on effective change management principles?
- Has leadership properly assessed the level of criticality, threat, urgency, risk, etc. of the operational impact(s) of the issue?
- Is leadership aware of the drivers and barriers to resolving the issue within her / his own organization?
- Has leadership identified inter-service / agency cultural drivers and barriers which hinder issue resolution?

Personnel.

- Is the issue caused, at least in part, by inability or decreased ability to place qualified and trained personnel in the correct occupational specialties?
- If issue resolution is likely to involve new materiel, systems, or equipment, are different occupational specialty codes needed to properly staff new systems?
- Do new personnel have support to onboard to their jobs?
- Are the right personnel in the right positions (skill set match)?

Facilities.

- Is the problem caused, at least in part, by inadequate infrastructure?
    - Is physical distance of equipment, etc. leading to other problems?
- Are there proper environmental controls?
- Is there a lack of operations and maintenance?

Policy.

- Is there existing policy that addresses or relates to the business need? Is it Joint? Service? Agency?
- If no policy exists which pertains to the defined need, does new policy need be developed and implemented that will provide a total or partial solution to the need?
    - Can policy be developed and signed at the Component level? Will policy require OSD-level sponsorship, coordination and / or signature?

12.5.3. Outcomes and Measures Development

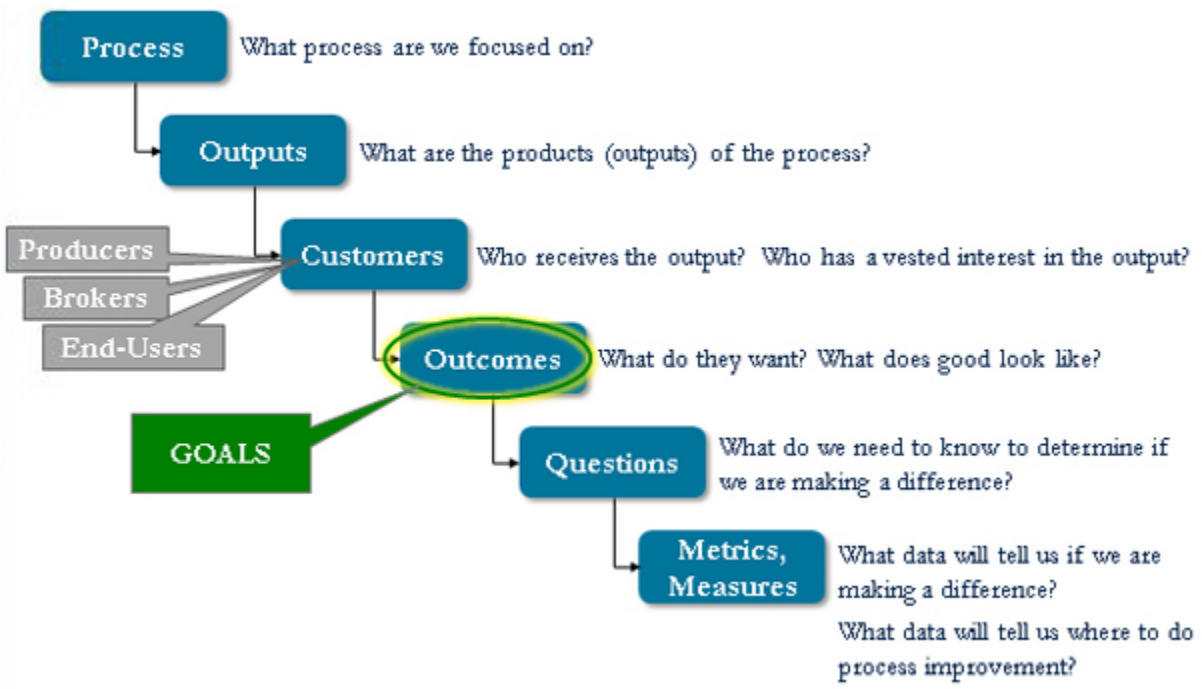
Outcomes and measures development begins during the Business Capability Definition Phase (BCD), helping to scope the effort and identify outcomes that will be used at a future point for testing. During subsequent Business Capability Lifecycle (BCL) activities, outcomes and

measures are refined and the Functional Sponsor works closely with the acquisition and testing communities in order to ensure the information is appropriate and relevant to the program at applicable lifecycle points.

The outcome should explicitly state the business value of the resources to be invested and to allow management to prioritize and weigh investments. The outcome provides strategic alignment and clear criterion against which to evaluate potential approaches. It always starts with the desired functional result and is used to focus behaviors and results by answering the "what's in it for me?" question. Corresponding measures must be specific, actionable, measureable, relevant, and timely operational capabilities that can be achieved against their corresponding outcomes.

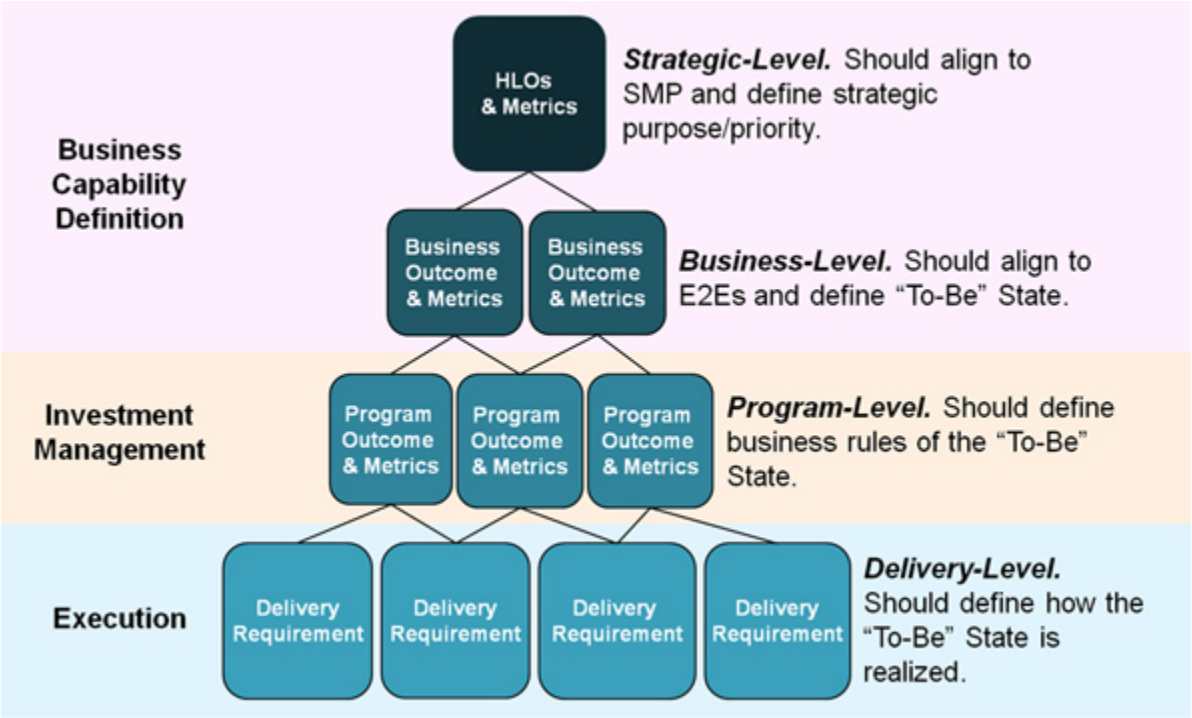
Figure **12.5.3.F1** depicts a logical manner of thought in which a process can be decomposed into goals, and finally into metrics and / or measures:

Figure 12.5.3.F1 - Developing Measures and Metrics



Correspondingly, Figure **12.5.3.F2** portrays an example hierarchy of outcomes and metrics / measures in BCL. They decompose from a strategic level to an execution (operational) level of specificity.

Figure 12.5.3.F2 - Outcome Hierarchy



High-Level Outcomes (HLOs). HLOs are developed during BCD as part of the "To-Be" Analysis, support one or more Strategic Management Plan (SMP) goals/objectives, and constrain business outcomes. They address the strategic alignment principle - programs must enable effective portfolio management by aligning individual investments to SMP goals and objectives - that is central to BCL.

HLO measures are developed at the same strategic level as HLOs. They define measurements for strategic purpose and priority and address how the investment will meet enterprise-level expectations in finite terms.

Business Outcomes . Business outcomes are developed during BCD when the "To-Be" Analysis is refined as a result of BPR. Business outcomes should align to specific end-to-end (E2E) business processes defined in the Business Enterprise Architecture (BEA) and describe the functional users intended result of fulfilling an identified business capability gap. They are the HLOs decomposed into observable and measureable business results or changes in business performance.

Business outcome measures, like HLO measures, should address how the investment will meet enterprise-level expectations. They should also add increasing level of detail to determine how the investment will meet the business results outlined in the business outcomes.

Program Outcomes. Program outcomes support business outcomes and are developed during IM based on the preferred solution. Program outcomes are scoped to the preferred solution and

should include specific business rules that explicitly define the "To-Be" state and should address expectations of how the preferred solution will address business outcomes and HLOs.

Program outcome measures must demonstrate the value of the preferred solution to the Department and should provide cost and period of performance expectations for each business capability to be delivered as part of the preferred solution, taking into account the Better Buying Power affordability target.

System Requirements. System requirements fulfill program outcomes and are developed throughout Execution as the chosen solution is built and realized against the HLOs and capability levels are added; they represent the capability delivery aspects of a chosen solution.

TIP: System-level requirements are generally NOT included in the Business Case; but are critical for the operation of the program.

System requirements measures, like their outcomes counterparts, gain increasing level of detail as a chosen solution matures through building, testing, and deployment.

- During Prototyping, system requirements address solution design and program plan tracking and are tied to a work breakdown structure and schedule.
- During Engineering Development, system requirements address developing the solution by executing the plan, include development testing results, and should join the cost, schedule, and performance measures of program realization to support a MS C decision.
- During Limited Fielding, system requirements should include technical quality criteria and cost, schedule, and performance measures. They should focus on displaying added detail to support end-user testing and the results of initial operational test and evaluation (IOT&E) to support initial operating capability (IOC) and a Full Deployment Decision (FDD).
- During Full Deployment, system requirements should reflect program execution details and sustainment activities (help desk, operations) to coincide with transitioning from execution to O&S.

12.5.4. BEA and BCL

12.5.4. BEA and BCL

The Business Enterprise Architecture (BEA) is the enterprise architecture for all DoD defense business systems (DBS) and capabilities and reflects the DoD business transformation priorities; the business capabilities required to support those priorities; and the combinations of enterprise systems and initiatives that enable those capabilities. It also supports use of this information within an end-to-end (E2E) Framework. BCL investment decisions require this Departmental perspective provided by the E2Es to compare investment opportunities across the Department and to allow effective portfolio management of DBS . Access to the BEAs contents is provided on the DCMOs BEA webpage.

The E2E Business Flows that comprise the Departments E2E Framework play a critical role in

how DoD builds business capabilities, as business processes actually span, rather than operate within, functional areas. Each E2E Business Flow represents the life-cycle of business processes that are executed in order to fulfill a business requirement/need of organizations throughout DoD. In order to achieve business process optimization, specific DoD organizations need to identify and decompose the E2E Business Flows across the functional silos of the organization.

Decomposing the E2E flows first requires each organization to identify those E2E Business Flows that apply to them. Next, the organization can break down the E2E Business Flow reference model into a representation of the specific Business Processes they perform, identify Business Process inefficiencies both within and across functional silos, and optimize the organizations E2E Business Flows accordingly.

For more detailed information on BEA Compliance, decomposing E2E Business Flows, and more general information on both the BEA and the E2Es, refer to the DCMOs BEA webpage .