

Department of the Army  
Headquarters, United States Army  
Training and Doctrine Command  
Fort Monroe, Virginia 23651-1047

TRADOC Circular 11-11-1

11 April 2011

(Expires 11 April 2013)

**Organization and Functions**

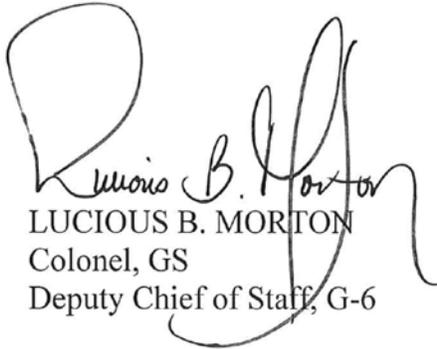
**COST-BENEFIT ANALYSIS TO SUPPORT ARMY ENTERPRISE DECISIONMAKING**

---

FOR THE COMMANDER

OFFICIAL:

JOHN E. STERLING, JR.  
Lieutenant General, U.S. Army  
Deputy Commanding General/  
Chief of Staff



LUCIOUS B. MORTON  
Colonel, GS  
Deputy Chief of Staff, G-6

**History:** This publication is a new circular.

**Summary.** This circular establishes policies, procedures, and responsibilities for cost-benefit analysis to support Army enterprise decisionmaking. Army Regulation 11-18 will be supplemented to incorporate this guidance.

**Applicability.** This circular is applicable to all U.S. Army Training and Doctrine Command (TRADOC) units, activities, and organizations.

**Proponent and exception authority.** The proponent for this circular is the TRADOC G-3/5/7. The proponent has the authority to approve exceptions or waivers to this circular that are consistent with controlling law and regulations.

**Army management and control procedures.** This circular does not contain management control provisions.

**Suggested improvements.** Users are invited to send comments and suggested improvements on Department of the Army Form 2028 (Recommended Changes to Publications and Blank Forms) directly to the TRADOC DCS, G-3/5/7 (ATTG-CP), 5 Fenwick Road, Fort Monroe, VA 23651.

TRADOC Circular 11-11-1

Suggested improvements may also be submitted using DA Form 1045 (Army Ideas for Excellence Program (AIEP) Proposal).

**Distribution.** This publication is available only on the TRADOC Homepage at <http://www.tradoc.army.mil>.

---

**Contents**

	<b>Page</b>
Chapter 1 Introduction .....	4
1-1. Purpose .....	4
1-2. References .....	4
1-3. Explanation of abbreviations and terms .....	4
1-4. Responsibilities.....	4
Chapter 2 Policies and Procedures.....	5
2-1. Policy.....	5
2-2. C-BA requirement .....	5
2-3. C-BA process.....	5
2-4. TRADOC CBARB .....	6
2-5. C-BA training .....	6
Appendix A References .....	8
Section I Required Publications.....	8
Section II Related Publications.....	8
Section III Prescribed Forms .....	8
Section IV Referenced Forms .....	8
Appendix B Standard Operating Procedures for C-BA Review Board.....	9
B-1. Purpose.....	9
B-2. CBARB mission.....	9
B-3. Membership .....	9
B-4. Responsibilities of CBARB members .....	9
B-5. Procedures.....	10
Appendix C Applying C-BA to Capability Documents .....	11
C-1. Reference .....	11
C-2. Purpose.....	11
C-3. Overview.....	12
C-4. CNA .....	13
C-5. C-BA (FAA, FNA, FSA).....	13
C-6. Attributes, categories of attributes, and capabilities .....	14
C-7. ICDs .....	14
C-8. CDDs.....	14
C-9. CPDs .....	16
C-10. Summary.....	16
Glossary .....	17
Section I Abbreviations.....	17

**Figure list**

Figure C-1. Defense Acquisition Management System.....	11
--	----

## **Chapter 1**

### **Introduction**

#### **1-1. Purpose**

This circular establishes policies, procedures, and responsibilities for the preparation of cost-benefit analysis (C-BA) to support Army enterprise decisionmaking within U.S. Army Training and Doctrine Command (TRADOC).

#### **1-2. References**

Referenced and related publications and referenced forms are listed in [appendix A](#).

#### **1-3. Explanation of abbreviations and terms**

Abbreviations and special terms used in this regulation are explained in the [glossary](#).

#### **1-4. Responsibilities**

- a. The TRADOC Deputy Commanding General (DCG)/Chief of Staff (CoS). The DCG/CoS will approve changes to this circular.
- b. The TRADOC Deputy Chief of Staff (DCS), G-3/5/7. The TRADOC DCS, G-3/5/7 will:
  - (1) Serve as the lead for this circular.
  - (2) Serve as the authority for all C-BA specified in [paragraph 2.1](#).
  - (3) Review and coordinate proposed changes and forward recommendations for approval to the TRADOC DCG/CoS.
  - (4) Serve as the staff lead for the CBA Review Board (CBARB).
- c. The TRADOC DCS, G-8. The TRADOC DCS, G-8 will:
  - (1) Assist the DCS, G-3/5/7.
  - (2) Serve as co-chair of the TRADOC CBARB.
- d. The TRADOC DCS, Futures (Army Capabilities Integration Center (ARCIC)) will:
  - (1) Approve all C-BA for Army Joint Capabilities Integration and Development System (JCIDS) documents. ARCIC guidance is located at [appendix C](#).
  - (2) Serve on CBARB as required.
- e. The TRADOC DCS, G-1/4, G-2, and G-6 will provide subject matter expertise, when requested by the G-3/5/7, to assist with CBARB.

f. Major Subordinate Organizations (MSOs) and Centers of Excellence (CoEs) will ensure that they comply with the training requirements in [paragraph 2-5](#).

---

## **Chapter 2**

### **Policies and Procedures**

#### **2-1. Policy**

This policy is designed to ensure scarce Army resources are only expended on programs in which benefits outweigh costs, enable integration and prioritization of JCIDS requirements, endorse/reinforce Army policy within TRADOC, and to institutionalize a cost-benefit mindset within TRADOC.

#### **2-2. C-BA requirement**

C-BAs will be prepared for all requirements (new programs or modification to existing programs) that require additional resources. This includes:

- a. Requirements exceeding \$5M in one year or \$25M over the program objective memorandum years.
- b. Army Campaign Plan decision points.
- c. Budget Review Plan or Army Requirements and Resource Board submissions.
- d. All concept plans.
- e. In response to any directive from Army leadership, Office of the Secretary of Defense, Congress, or as requested by Army or TRADOC leadership.
- f. All command submissions in support of the Headquarters (HQ), Department of the Army (DA) Equipment Review and Validation Board.
- g. All contract requirements that will be reviewed and approved through the Executive Contract Approval Board (ECAB) process provided they meet any of the thresholds listed above. The C-BA approval must be obtained in advance of the ECAB review.

#### **2-3. C-BA process**

The DASA-CE has developed a C-BA guide, dated 12 January 2010, and a decision brief format for use in preparing C-BA packages. Both documents can be found at the Cost Performance Portal (CPP) located at

[https://cpp.army.mil/portal/page/portal/Cost\\_Performance\\_Portal/ CPP\\_Home\\_Page](https://cpp.army.mil/portal/page/portal/Cost_Performance_Portal/ CPP_Home_Page). (The CPP requires registration for access.) All C-BAs must adhere to the template and briefing format specified in the C-BA Guide. C-BA packages should include all spreadsheets with documented analysis and any supporting documents. If possible, proposed "tradeoffs" or billpayers to offset the cost of the new requirement should also be included (Note: HQDA requires identification of billpayers or tradeoffs). The C-BA will be submitted through the appropriate decisionmaker who

controls the required resources within the chain of command. For requirements meeting the threshold specified in paragraph 2-1 above, submit C-BAs through the TRADOC G-8 to the G-3/5/7, Command Priorities and Integration Directorate. Submit C-BAs supporting JCIDS capabilities documents to Director, ARCIC for approval.

#### **2-4. TRADOC CBARB**

A TRADOC CBARB has been established, not to alter the decisionmaking authority of commanders, but to ensure that decisions are analytically sound and based on robust analysis. The standard operating procedures for the CBARB are located at [appendix B](#). The TRADOC board is patterned after the DA board to facilitate better hand-off of requirements. Standing members of the TRADOC board include representatives from the offices of the DCS, G-3/5/7, the DCS, G-8, who will co-chair the board, and on an as needed basis, a representative from office of the Director, ARCIC. Other organizations may have representatives on the board, dependent on the content/subject matter of the C-BA. Once approved by the board, the board will send the C-BA to the appropriate resourcing forum for consideration, and will go through the usual decisionmaking process.

#### **2-5. C-BA training**

C-BA training is available through several options:

a. For those individuals identified as Assistants to the Commander for the Enterprise or Cost Management Advisors, training is available through nomination and attendance at the Cost Management Certificate Course (CMCC), Naval Postgraduate School (NPS) in Monterey, California. The CMCC course is designed to teach students at the GS-13/04/E8 level and above, how to manage Army business operations efficiently and effectively through the accurate measurement and thorough understanding of the "Full Cost" of business processes, products, and services. Nominees should have demonstrated expertise both operationally and analytically to provide the necessary credibility for instituting a cost benefit mindset in the organization. It is critically important that the *right* person is chosen to attend. Upon graduation, this individual should serve as a trusted advisor to the senior leader on cost management issues. My expectation is that each MSO, CoE, and branch schools within each CoE, will have at least one graduate of the CMCC. Consideration of others will be on an as needed basis. ARCIC/Capabilities Development Integration Directorate attendance is spelled out in reference ARCIC memorandum at [appendix A, section I](#).

(1) For CMCC attendance, prepare applications in accordance with guidelines established by the DASA-CE at <https://www.us.army.mil/suite/page/616700>.

(2) For nominations for attendance to the CMCC contact the Civilian Education Training Office, Generating Force Training Directorate, and TRADOC G-3/5/7 at phone (757) 788-5915 or DSN 680-5915.

b. For C-BA specific training, training is available through:

(1) United States Department of Agriculture (USDA) Graduate School. The course is titled, "Cost Benefit Analysis Workshop," with course number PGMT8100. This is a 3-day course, taught at USDA locations across the United States.

(2) Army Logistics University (ALU). The ALU has a "Special Topics" course, available on request, taught through the Operational Research Systems Analysis School (ORSA). This is a 4-hour course taught on request. Contact ALU registrar for information or ORSA Department Chair, Dr Kenneth Lewis at e-mail [Kenneth.w.lewis@us.army.mil](mailto:Kenneth.w.lewis@us.army.mil).

c. DASA-CE conducts a 4-hour course on C-BA, taught at the Pentagon. To schedule training, contact the C-BA training administrator at 703-692-7496 or [CBATraining@conus.army.mil](mailto:CBATraining@conus.army.mil).

---

**Appendix A**  
**References**

**Section I**  
**Required Publications**

AR 11-18, The Cost and Economic Analysis Program, dated 31 January 1995

ARCIC Memorandum, subject: Implementing Cost-Benefit Analysis (C-BA) Guidance for Joint Capabilities Integration and Development System (JCIDS) Capabilities Documents, dated 28 June 2010

CBA Guide, version 1.0, dated 12 January 2010

HQDA, DCS G-3/5/7, Memorandum, subject: Concept Plan Guidance, dated 31 March 2010

HQ TRADOC Memorandum, subject: Cost-Benefit Analysis to Support Army Enterprise Decisionmaking, dated 31 August 2010

VCSA/USA Memorandum, subject: Cost-Benefit Analysis to Support Army Enterprise Decision Making, dated 30 December 2009

**Section II**  
**Related Publications**

Cost Management Handbook, dated 13 April 2009

**Section III**  
**Prescribed Forms**

C-BA Checklist, version 9, dated 29 November 2010

**Section IV**  
**Referenced Forms**

DA Form 1045  
Army Ideas for Excellence Program (AIEP) Proposal)

DA Form 2028  
Recommended Changes to Publications and Blank Forms

---

## **Appendix B**

### **Standard Operating Procedures for C-BA Review Board**

#### **B-1. Purpose**

This document prescribes the mission, membership, and operating procedures for the TRADOC C-BA Review Board.

#### **B-2. CBARB mission**

To ensure that TRADOC C-BA submissions are completed within established guidelines, are analytically sound, and provide the necessary analysis, TRADOC has instituted a CBARB comparative to the DA CBARB. The TRADOC DCG/CoS memorandum, subject: Cost Benefit Analysis to Support Army Enterprise Decisionmaking, establishes a requirement for the preparation and submission of C-BAs and states that representatives of the TRADOC DCS, G-3/5/7 and the DCS, G-8 will co-chair the CBARB, with a representative from the ARCIC serving on an as needed basis.

#### **B-3. Membership**

The TRADOC CBARB will have two standing members and a number of optional members that will vary from case to case.

a. Standing members: In all cases, the CBARB will include one or more representatives from each of the following organizations:

- (1) DCS, G-3/5/7 (chair)
  - (a) Command Priorities and Integration Directorate
  - (b) Analysis and Evaluation Directorate
- (2) DCS, G-8 (Planning, Analysis, and Evaluation Directorate) (co-chair)
- (3) Director, ARCIC (as needed)

b. The standing members may designate additional required reviewers in other organizations to assist as needed.

#### **B-4. Responsibilities of CBARB members**

All CBARB members may offer comments and recommendations on any aspect of a C-BA that has been submitted for review. However, primary responsibility for portions of the review is assigned to designated members.

a. The G-3/5/7 representative(s) has the primary responsibility for determining whether a C-BA is complete and clearly and logically presented. The G-3/5/7 also has the responsibility for determining whether the C-BA properly identifies information on benefits, contains adequate backup documentation on benefits, and for determining whether a proposed billpayer is consistent with the commander's priorities and considers all reasonably feasible courses of action.

b. The G-8 representative(s) is primarily responsible for ensuring cost data is from authoritative sources and is supported by adequate backup documentation, makes economic sense, and uses analytical techniques appropriate for the situation.

c. If called upon, the G-1/4, G-2, and G-6 members have the primary responsibility for determining whether issues within their areas of expertise are properly addressed.

d. If called upon, members from functional proponent organizations (TRADOC subject matter experts) assist in determining that the problem statement, assumptions, and constraints are clear and realistic; that all reasonably feasible courses of action (COAs) have been considered; and that the recommended COA is functionally sound and can be reasonably expected to achieve the stated objective.

### **B-5. Procedures**

a. The C-BA and supporting documents will be distributed via e-mail. CBARB meetings and discussions may be conducted in person or via e-mail, as deemed appropriate by the chair.

b. The CBARB review process begins when the proponent for the C-BA submits the C-BA for review. Using the Cost Benefit Analysis Guide, the submission must include the complete C-BA, supporting documentation, and the name and contact information for the C-BA point of contact (POC). The supporting documentation must identify data sources, models, inflation indexes, and rationale used to complete all eight steps of a C-BA, as summarized on pages 11 and 12 of the CBA Guide, and must be sufficiently detailed so that it can stand alone, without explanation by the preparer. Before submitting the C-BA, the C-BA POC should ensure it is complete by using the C-BA checklist provided at the CPP.

c. The CBARB chair will forward the package to appropriate analysts in his/her division or other staff elements, as required for review. Each reviewer will forward the C-BA, as needed to address areas of responsibility and will, as necessary, contact the C-BA POC to address any questions or resolve any issues. Upon completing the review, each member will send one of the following messages to the chair:

(1) I concur with the C-BA as submitted. There are no unresolved issues or questions.

(2) I have discussed the C-BA with the C-BA POC, who has submitted revised information to address questions or recommendations. I concur with the C-BA as revised.

(3) I have been unable to resolve issues with the C-BA POC. Recommend the C-BA be considered deficient for the following reasons: [specify any shortcomings].

Those C-BAs determined to be deficient will be sent through the DCS, G-3/5/7 to the originator for correction. The chair will review all responses and may discuss unresolved issues with the CBARB members or with the C-BA POC, as needed to reach a viable solution/conclusion. Once approved by the board, C-BAs will be sent to the appropriate resourcing forum for consideration, and will go through the usual decisionmaking process.

**Appendix C**  
**Applying C-BA to Capability Documents**

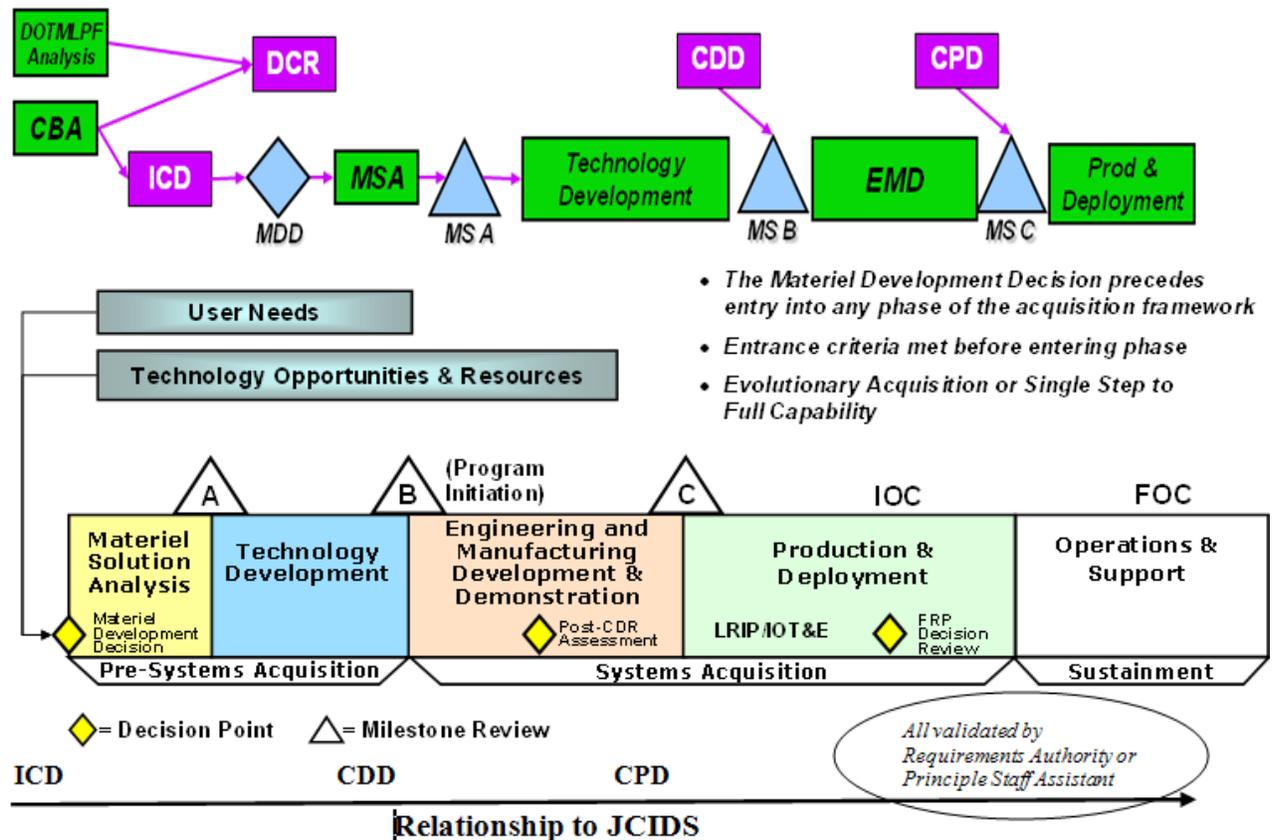
**C-1. Reference**

U.S. Army Cost Benefit Analysis Guide, Version 1.0, Office of the Deputy Assistant Secretary of the Army (Cost and Economics), 12 Jan 10.

**C-2. Purpose**

a. This paper provides interim guidance for implementing TRADOC’s approach for conducting C-BAs in support of capability development, to include approval of initial capabilities documents (ICDs), capabilities development documents (CDDs), and capabilities production documents (CPDs), and other force modernization. Figure C-1 provides the depiction of the Defense Acquisition Management System.

b. ARCIC’s G-3/5/7 and Studies and Analysis Division will coordinate to finalize this interim guidance by updating TR 71-20 and the existing ICD, CDD, and CPD writer guides. ARCIC’s goal is to complete the TR 71-20 and writer guide updates by mid-summer 2011.



**Figure C-1. Defense Acquisition Management System**

### C-3. Overview

a. C-BA is a process that provides information to enable decisionmakers to evaluate proposed COAs, consider whether incremental or interim solutions are available, and determine whether the benefits of the proposed COA outweigh the costs. The costs in a C-BA include monetary considerations and burdens associated with additional personnel (operators, crew, mechanics, and trainers) and infrastructure requirements (test equipment, training devices, ranges, classrooms).

b. The C-BA provides a resource informed perspective of potential tradeoff considerations related to proposed solutions developed through the capabilities needs analysis (CNA); organizationally based assessments (OBA); capabilities based assessments (CBAs) and their elements (functional area analysis (FAA), functional needs analysis (FNA), and functional solutions analysis (FSA)); and analysis of alternatives (AoA).

c. The CNA, informed by the OBA, assists the Army's future force development to meet joint warfighting responsibilities by identifying and assessing joint and Army required capabilities; assessing and integrating the programmed doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) solutions supporting the joint and Army required capabilities; and identifying and prioritizing residual capability gaps from a total program perspective.

d. C-BAs provide initial information on required capabilities, capability gaps, and broad cost assessments of conceptual solutions within a functional area or a subset of a functional area. The CBA provides the basic capability gap information that generates the ICD. Then the C-BAs provide further investigation of the tradeoff considerations related to the solutions initially presented in the CBA's FSA.

e. DASA-CE and HQDA G-3/5/7 recognize that AoAs fulfill the requirement of the C-BA to support CDDs and CPDs. However, ARCIC requires C-BAs be included in appendix D of the CDDs and CPDs to provide ARCIC with the rationale for why the proposed solution strategy is the best choice; to present alternative options; and to explain the cost, performance, and operational risk associated with each COA.

f. The conduct of cost-benefit analyses throughout the capability development process will allow senior leaders to make resource-informed decisions. These decisions will encompass the DOTMLPF domains. The COEs and other force modernization proponents will be responsible for conducting C-BAs. They will assess tradeoffs within their warfighting functional portfolios, and ARCIC will coordinate across proponentcies to assess tradeoffs across warfighting functional portfolios. The key to success lies in understanding the timing of proposed solutions, their critical dependencies, and the use of accepted metrics such as those associated with the Army's Capstone Concept and core operational actions. While not universally appropriate for every C-BA, the consistent use of these metrics to the extent possible will enable comparisons to be made across warfighting functions, and help identify potential trades.

g. Capabilities may be binned into near (0-2 years), mid (3-7 years), and far term solutions (8 years and beyond), and must be aligned with capability sets and the Army force generation

(ARFORGEN) process. While we may plan the deployment of a capability in years 5-7, our portfolio plans must ensure we are not buying at rates significantly different than what can be fielded based on ARFORGEN. This requires close synchronization with the Assistant Secretary of the Army for Acquisition, Logistics, and Technology community.

h. The COAs considered in the C-BA should be linked to the required capabilities and capability gaps from the most recent functional concept FNA or from the latest CNA. These COAs should be compared to improvement over the current capability, which may also be referred to as the "status quo." The COA analysis must identify the extent the system or capability will be able to mitigate the capability gap risk.

i. Changes in warfighting functional portfolio priorities will inform, and be informed by, changes in the CNA priorities or when a functional CBA is performed; and they may also change due to the progress of dependent or enabling capabilities. For example, if fielding of an increment of capability is critically dependent on the delivery of another (an enhancing capability), then the cross-portfolio C-BA could recommend slipping the dependent program or undertaking steps to accelerate the progress of the delayed system.

j. A key element of the cost-benefit and capability integration discussion is acceptable metrics for comparison within and across portfolio sets. The Capstone Concept and core operational actions may provide metrics to enable comparisons across warfighting functions. Metrics related to cost, personnel requirements, training impacts, and operational availability have broad applicability across all capabilities. TRADOC CoEs need to establish a consistent set of metrics within their warfighting function; these metrics allow for reasoned trades within a warfighting function. Development of some metrics will require help from outside sources, for example, DASA-CE will assist with the fully burdened cost of fuel estimate.

k. C-BAs should include evaluation of 2<sup>nd</sup> and 3<sup>rd</sup> order effects related to selection of a COA. Examples might include synchronizing the delivery of dependent capabilities such as sensors, communications payloads or means, or personnel/leader qualification and training to complete the capability. If significant, these effects have impact on the full decision cost.

#### **C-4. CNA**

For unfunded requirements (UFRs) identified during the CNA process, C-BAs are used to determine the UFR's relative cost-benefit value as the ratio of the UFR's cost and its utility value measured across all the CNA required capabilities. The CNA uses available utility value, benefits, risks, and offset/billpayer information from CBA and CNA work communicated in the operational terms of required capabilities and capability gaps. Capability developers should identify offsets within their warfighting functional portfolio to pay for the UFR.

#### **C-5. C-BA (FAA, FNA, FSA)**

Cost-benefit considerations are already included in the FSA identification and assessment of potential DOTMLPF solutions for mitigating the capability gaps determined in the FNA. The CBA process is designed to identify and assess the nonmateriel solutions first due to the potential for those solutions to satisfactorily mitigate the gap at the least cost. If there is a residual capability gap that requires a materiel solution, then the assessment of the evolutionary,

transformational, and information technology solutions will consider the projected magnitude of the costs involved when recommending potential solutions. This initial C-BA assessment provides a starting point for development of the C-BA for the ICD.

#### **C-6. Attributes, categories of attributes, and capabilities**

An important building block for the ICD C-BA and the CDD C-BA are the attributes that go into development of the standards used to define mission and task requirements. Attributes are sometimes grouped in categories or rolled up to describe a capability. The attribute characteristics provide threshold values, allow for incremental possibilities, and enable tradeoff considerations. In the ICD, the attributes are usually less defined and may be grouped into categories of attributes. For example, a C-BA for an ICD should be focused at the category of attribute level, with some consideration of special, high-interest, high-priority attributes within a category. Then, the C-BA for the CDD should focus down to the individual attributes that make up each category of attribute and across categories. A way to think of this is that a category of attributes equates to a capability, such as mobility or lethality.

#### **C-7. ICDs**

a. The ICD establishes the need for the capability and provides information to establish initial cost assessments for the capability (as opposed to cost for a specific program). The ICD C-BA should estimate a rough cost of the expected capability in appropriate terms (for example., personnel, time, and monetary expenses). If necessary, express the cost as a range band of values and characterize your confidence in that data. At the ICD stage, it will be difficult to capture accurate costs and there will be great uncertainty in any cost data. DASA-CE has the CPP at <http://www.cpp.army.mil> that may provide help in developing capability cost assessments through their capabilities knowledge base (CKB). The CKB is an analytical tool designed to assist in development of early cost estimates. The tool can assist in gathering life cycle cost data to the fullest extent possible or practical based on analogy to systems that provide similar capabilities.

b. The ICD C-BA may refer to the FAA and FNA to develop the initial system attributes and metrics important to providing the required capability and mitigating the capability gap. The CDD C-BA will develop these attributes more closely in future cost-benefit tradeoff considerations.

c. If the ICD proposes more than one solution to one or more of the capability gaps, the C-BA should assess the relative priority of the potential solutions within the ICD based on ICD capability gap priorities and the relevance to CNA priorities. This assessment will establish a priority of effort for future work and funding decisions.

#### **C-8. CDDs**

a. The CDD establishes the first detailed system attributes, quantities, and program costs. While DASA-CE and HQDA G-3/5/7 recognize a completed AoA as meeting the requirements for a C-BA in support of a CDD, TRADOC requires the C-BA to assist with program integration and prioritization decisions.

b. A C-BA for a CDD includes consideration of an incremental approach that allows for successive tradeoff decisions about attributes (benefits) and costs in determining what force modernization is affordable and achievable. Well-defined attributes may allow for future system upgrades without requiring a rewrite of the CDD (or CPD).

c. At this stage, the available information should allow for a detailed review of the individual attribute metrics and identification of potential tradeoffs and cost drivers in specific system attribute values and proposed solutions. These tradeoff and cost driver considerations need to include assessments of system integration and interoperability effects, as well as risk, cost, training implementation rate, and personnel effects.

d. Cost and benefit trades should be considered at the attribute level to address how specific attributes affect the system's performance and drive costs. The C-BA needs to address the cost and performance impacts of operationally relevant attribute values.

e. The CDD C-BA will define the status quo (the current capability) COA and consider the attribute related performance and cost driver values in development of alternative COAs. It will also identify and assess costs and benefits of potential incremental capabilities. Once the COAs are defined, the C-BA determines the cost and performance impacts of each COA.

f. The C-BA tradeoffs should consider the potential to vary COAs to reflect alternative basis of issue plans (BOIPs) and procurement quantities informed by ARFORGEN requirements. There are two distinct types of fielding tradeoffs to consider.

(1) The first consideration relates to the classic BOIP. That is, who gets the system within an organization and what are the operational benefits realized? The COA tradeoffs would consider what units (or individuals) in an organization would get the system improvement. The C-BA would consider the cost and performance impacts of different levels of system distribution within the unit. This part of the C-BA will evaluate the cost-benefit of alternative BOIPs based on Armywide buy quantities.

(2) The second tradeoff consideration is the timing of the fielding. What units get the system when? For example, does it make sense to skip some units in an ARFORGEN reset cycle and what are the operational consequences? These COA decisions on the fielding schedule determine what organizations get the system improvements over a time period (changing the pace of fielding). This assessment would identify the cost and performance impacts of selected levels of fielding over time.

g. At this stage of development, the CDD should have more mature cost data available to it through the program manager or program executive office. While the C-BA may still need to provide confidence level estimates for the cost data, a life cycle cost estimate should be available. These costs should consider the savings or expense of displaced systems.

h. The C-BA should also identify the sensitivity of COA benefit assessments to tradeoffs or uncertainties in the cost and attribute values.

### **C-9. CPDs**

a. The CPD determines the final system attributes, quantities, and program costs. The CPD C-BA will update the assessment of the metrics, system attributes, cost drivers, and the benefits assessment based on engineering and manufacturing development phase events. Again, while DASA-CE and HQDA G-3/5/7 recognize a completed AoA as meeting the requirements for a C-BA in support of a CPD, TRADOC requires the C-BA to assist with program integration and prioritization decisions.

b. The CPD C-BA will make a final assessment of alternative COAs related to alternative buy quantities and fielding plans (informed by ARFORGEN requirements). The intent is to identify performance and cost tradeoffs of affordable increments of operationally relevant COAs. As with the CDD assessment, the CPD BOIP discussion should consider what units (or individuals) in an organization should get the system improvement; and provide final recommendations on the fielding schedule tradeoffs.

### **C-10. Summary**

In order for the Army to meet its requirements while building affordable capabilities, the Army, and in particular TRADOC, must conduct C-BAs to inform the capabilities and materiel development processes outlined in Chairman, Joint Chief of Staff Instruction 3170 and Department of Defense Instruction 5000.02. C-BA will also support cross-portfolio trades and allow senior leaders to adjust portfolio investments due to changes in assumptions, budget allocations, or operational considerations that require changes in the type or quantities of capabilities to support our strategy. The rigor applied to the C-BA will vary depending on the maturity of the capability under development – whether a DOTMLPF solution or a new start materiel solution. While early analysis will need to rely on basic analytic principles, we can expect decisions on mature capabilities to be informed by detailed metrics and C-BA.

---

## Glossary

### Section I Abbreviations

ALU	Army Logistics University
AoA	analysis of alternatives
AR	Army Regulation
ARCIC	Army Capabilities Integration Center
ARFORGEN	Army force generation
BOIP	basis of issue plans
CBA	capabilities based assessments
C-BA	cost-benefit analysis
CBARB	CBA review board
CDD	capabilities development documents
CKB	capabilities knowledge base
CMCC	Cost Management Certificate Course
CNA	capabilities needs analysis
COA	course of action
CoE	Center of Excellence
CoS	Chief of Staff
CPD	Capability Production Document
CPP	Cost Performance Portal
DASA-CE	Deputy Assistant Secretary Army-Cost and Economics
DCG	deputy commanding general
DCS	Deputy Chief of Staff
DOTMLPF	doctrine, organization, training, materiel, leadership and education, personnel, and facilities
ECAB	Executive Contract Approval Board
FAA	functional area analysis
FNA	functional needs analysis
FSA	functional solutions analysis
HQDA	Headquarters, department of the Army
ICD	initial capabilities documents
JCIDS	Joint Capabilities Integration and Development System
MSO	major subordinate organization
NPS	Naval Postgraduate School
OBA	organizationally based assessments
ORSA	Operational Research Systems Analysis
POC	point of contact
POM	program objective memorandum
TRADOC	U.S. Army Training and Doctrine Command
UFR	unfunded requirements
USDA	United States Department of Agriculture