NPS-CE-13-123

ACQUISITION RESEARCH PROGRAM
CASE STUDY

Case Study of the U.S. Army's Should-Cost Management Implementation

3 December 2013

MAJ Yeong "Sam" M. Choi, USA

MAJ Jason A. Morneault, USA

MAJ Daniel J. Poole, USA

Thesis Advisors: Dr. Daniel Nussbaum, Professor
E. Cory Yoder, Senior Lecturer

Graduate School of Business & Public Policy

Naval Postgraduate School

Prepared for the Naval Postgraduate School, Monterey, CA 93943.

Report Documentation Page

Form Approved
OMB No. 0704-0188

1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
03 DEC 2013		**00-00-2013 to 00-00-2013**

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
Case Study of the U.S. Army's Should-Cost Management Implementation	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **Naval Postgraduate School,Graduate School of Business & Public Policy,Monterey,CA,93943**	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

On May 22, 2009, President Barack Obama signed into law the Weapon Systems Acquisition Reform Act (WSARA). The intent of this law is to reform acquisition processes, control unsustainable cost growth, and make programs more affordable. In 2010, despite WSARA, program cost, schedule overruns, and lessthan-desirable performance were still prevalent in DoD acquisition. In response, Ashton Carter, under secretary of defense for acquisition technology, and logistics (USD[AT&L]), issued his Better Buying Power (BBP) memorandum directing the implementation of Should-Cost Management (SCM). In April 2011, Carter issued an additional directive that should-cost estimates would be required for all acquisition category (ACAT) programs and that SCM initiative progress would be briefed at every milestone review. In November 2012, Frank Kendall, Carter?s successor, issued an update to the original BBP initiative (BBPi) reinforcing the success of the BBPi. Kendall?s update incorporated lessons learned from two years of implementation and feedback from the acquisition workforce. Our case study examines how the Army has implemented SCM as part of the BBPi. We analyze actions taken from the program manager to the Army acquisition executive using Program Executive Office (PEO) Aviation as our case study focus.

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			
unclassified	**unclassified**	**unclassified**	**Same as Report (SAR)**	**127**	

The research presented in this report was supported by the Acquisition Research Program of the Graduate School of Business & Public Policy at the Naval Postgraduate School.

To request defense acquisition research, to become a research sponsor, or to print additional copies of reports, please contact any of the staff listed on the Acquisition Research Program website (www.acquisitionresearch.net).

ACQUISITION RESEARCH PROGRAM
GRADUATE SCHOOL OF BUSINESS & PUBLIC POLICY
NAVAL POSTGRADUATE SCHOOL

Abstract

On May 22, 2009, President Barack Obama signed into law the Weapon Systems Acquisition Reform Act (WSARA). The intent of this law is to reform acquisition processes, control unsustainable cost growth, and make programs more affordable. In 2010, despite WSARA, program cost, schedule overruns, and less-than-desirable performance were still prevalent in DoD acquisition.

In response, Ashton Carter, under secretary of defense for acquisition, technology, and logistics (USD[AT&L]), issued his Better Buying Power (BBP) memorandum directing the implementation of Should-Cost Management (SCM). In April 2011, Carter issued an additional directive that should-cost estimates would be required for all acquisition category (ACAT) programs and that SCM initiative progress would be briefed at every milestone review. In November 2012, Frank Kendall, Carter's successor, issued an update to the original BBP initiative (BBPi), reinforcing the success of the BBPi. Kendall's update incorporated lessons learned from two years of implementation and feedback from the acquisition workforce.

Our case study examines how the Army has implemented SCM as part of the BBPi. We analyze actions taken from the program manager to the Army acquisition executive using Program Executive Office (PEO) Aviation as our case study focus.

Keywords: Project Management, Weapon Systems, Military Procurement, Cost Overruns, Military Acquisition, Efficiency

THIS PAGE INTENTIONALLY LEFT BLANK

Acknowledgments

We would like to thank Dr. Daniel Nussbaum and Senior Lecturer Elliott (Cory) Yoder for their guidance and mentorship throughout the completion of our MBA project. Their expertise, professionalism, and dedication proved vital to our navigation of the Army's implementation of Should-Cost Management.

We also would like to thank our wives and children for their support and understanding during the course of this project. The project would not have been possible without their love and dedication.

Finally, we would like to thank USD(AT&L)'s Office of the Director for Acquisition, Resources, and Analysis, ASA(ALT)'s PARCA Office, and all of PEO Aviation for allowing us access to and the use of their organization in this case study. The project would not have been a success without their expertise and access to key data during our site visit and subsequent correspondence.

THIS PAGE INTENTIONALLY LEFT BLANK

About the Authors

Major Yeong (Sam) Choi is a native of Cerritos, CA. He enlisted in the Army in 1993 and served on active duty for seven years before returning to college on an ROTC (Green to Gold) Scholarship. He received his commission as a military police (MP) officer from Pacific Lutheran University in May 2002. In 2010, he transferred to the Army Acquisition Corps (FA51) and was assigned to Program Executive Office (PEO) Soldier at Fort Belvoir, VA. While assigned to PEO Soldier, he performed duties as the Assistant Product Manager for Soft Armor, responsible for the total life-cycle management of the Improved Outer Tactical Vest (IOTV), Concealable Body Armor (CBA), Advanced Bomb Suit (ABS), and Pelvic Protection Systems (PPS). After graduating from the Naval Postgraduate School, Major Choi will be assigned to the U.S. Army Intelligence and Security Command (INSCOM) at Fort Belvoir, VA, as the Senior Capability Developer for Network Warfare. Major Choi is married to the former Ms. Lauren Kwon and is the proud father of two boys, Matthew and Alexander.

Major Jason Morneault is a native of Saint Petersburg, FL. He received his commission in 1998 as a ROTC Distinguished Military Graduate at the University of South Florida. In 2009, He transferred to the Army Acquisition Corps where he performed the duties of the assistant product manager for personal parachutes and head protection at Fort Belvoir, VA. After graduating from the Naval Postgraduate School, Major Morneault will be assigned to the Capabilities Development and Integration Directorate (CDID) at Fort Benning, GA. He is married to Darejan Morneault and has one child, Anna Lynne.

Major Daniel Poole is a native of Yucaipa, CA. He received his commission in 1998 from Valley Forge Military College in Wayne, PA. In 2009, he transferred from the Armor branch to the Force Management functional area (FA50), and was assigned to the Force Development, Deputy Chief of Staff, G-8, at the Pentagon. While assigned to G-8, he performed duties as integration officer for the Battle Command Division (FDC) and as the executive officer to the director of materiel. After graduating from the Naval Postgraduate School, Major Poole will be assigned to the United States Army Pacific (USARPAC) Headquarters, at Fort Shafter, HI. He is married to the former Ms. Charity Navalesi.

THIS PAGE INTENTIONALLY LEFT BLANK

NPS-CE-13-123

ACQUISITION RESEARCH PROGRAM
CASE STUDY

Case Study of the U.S. Army's Should-Cost Management Implementation

3 December 2013

MAJ Yeong "Sam" M. Choi, USA

MAJ Jason A. Morneault, USA

MAJ Daniel J. Poole, USA

Thesis Advisors: Dr. Daniel Nussbaum, Professor
E. Cory Yoder, Senior Lecturer

Graduate School of Business & Public Policy

Naval Postgraduate School

THIS PAGE INTENTIONALLY LEFT BLANK

Table of Contents

THIS PAGE INTENTIONALLY LEFT BLANK

List of Figures

List of Tables

THIS PAGE INTENTIONALLY LEFT BLANK

List of Acronyms and Abbreviations

AAE	Army Acquisition Executive
AAR	After Action Review
ACAT	Acquisition Category
ACH	Advanced Combat Helmet
ACP	Army Cost Position
ADM	Acquisition Decision Memorandum
AFATDS	Advanced Field Artillery Tactical Defense System
AIM-9X	Air Intercept Missile 9X (Sidewinder)
AMC	Army Materiel Command
AMCP	Army Materiel Command Pamphlet
AOTD	Active Optical Target Detector
APB	Acquisition Program Baseline
APM	Assistant Product Manager
AR	Army Regulation
ARA	Acquisition Resources and Analysis
ASA(ALT)	Assistant Secretary of the Army for Acquisition, Logistics, and Technology
ASD(L&MR)	Assistant Secretary of Defense for Logistics and Materiel Readiness
AVN	Aviation
BBP	Better Buying Power
BBPi	Better Buying Power Initiative
BSIG	Business Senior Integration Group
CAC	Common Access Card
CAE	Component Acquisition Executive
CAPE	Cost Assessment and Program Evaluation
CARD	Cost Analysis Requirements Description
CBAR	Contract Business Analysis Repository

CPARS	Contractor Performance Assessment Reporting System
CPSR	Contractor Purchasing System Review
CR	Continuing Resolution
CRA	Continuing Resolution Agreement
CSL	Centralized Selection List
DA	Department of the Army
DAB	Defense Acquisition Board
DAES	Defense Acquisition Executive Summary
DAMIR	Defense Acquisition Management Information Retrieval
DASA CE	Deputy Assistant Secretary of the Army for Cost and Economics
DASA PPR	Deputy Assistant Secretary of the Army for Plans, Programs, and Resources
DASM	Deputy for Acquisition and Systems Management
DAU	Defense Acquisition University
DAWIA	Defense Acquisition Workforce Improvement Act
DCAA	Defense Contract Audit Agency
DCAPE	Director of Cost Assessment and Program Evaluations
DCMA	Defense Contract Management Agency
DCMO	Deputy Chief Management Officer
DEPMS	Department of Defense Enterprise Performance Management System
DFAR	Defense Federal Acquisition Regulation Supplement
DLA	Defense Logistics Agency
DoD	Department of Defense
DoDI	Department of Defense Instruction
DPAP	Defense Procurement Acquisition Policy
DPEO	Deputy Program Executive Office
DPM	Deputy Product/Project/Program Manager
DT	Developmental Test
ECP	Engineering Change Proposal

EMD	Engineering and Manufacturing Development
EOQ	Economic Order Quantity
FAR	Federal Acquisition Regulation
FARA	Federal Acquisition Reform Act
FASA	Federal Acquisition Streamlining Act
FFP	Firm Fixed Price
FMS	Foreign Military Sales
FOC	Full Operational Capability
FRP	Full Rate Production
FSR	Field Service Representative
FY	Fiscal Year
G&A	General and Administrative
GAO	Government Accountability Office
GFE	Government-Furnished Equipment
GS	General Schedule
GWOT	Global War on Terrorism
IAMD	Integrated Air and Missile Defense
ICAT	Integrated Cost Analysis Team
ICE	Independent Cost Estimate
IPT	Integrated Project Team
IRAD	Internal Research and Development
IT	Information Technology
JPEO	Joint Program Executive Office
JROC	Joint Requirements Oversight Council
LCMC	Life Cycle Management Command
LOE	Level of Effort
LPTA	Lowest Price Technically Acceptable
LRIP	Low Rate Initial Production
LTPO	Lower Tier Project Office
MDA	Milestone Decision Authority

MDAP	Major Defense Acquisition Program
MILDEP	Military Department
NDAA	National Defense Authorization Act
NPV	Net Present Value
OEM	Original Equipment Manufacturer
OH	Overhead
OSD	Office of the Secretary of Defense
OSRVT	One System Remote Video Terminal
OT	Operational Test
P3I	Pre-Planned Product Improvement
PARCA	Performance Assessment and Root Cause Analysis
PATRIOT	Phased Array Tracking Radar to Intercept On Target
PBL	Performance-Based Logistics
PDUSD	Principal Deputy for the Under Secretary of Defense
PEO	Program Executive Office
PM	Product Manager/Project Manager/Program Manager
PM UAS	Project Manager Unmanned Aircraft Systems
PMO	Product/Project/Program Management Office
PMT	Program Management Training
POA&M	Plan of Action and Milestones
POE	Program Office Estimate
POI	Plan of Instruction
POM	Program Objective Memorandum
RDT&E	Research, Development, Test, & Evaluation
ROI	Return on Investment
SAR	Selected Acquisition Report
SC	Should-cost
SCM	Should-cost Management
SME	Subject Matter Expert
SOCOM	Special Operations Command

SPE	Soldier Protective Equipment
SSIP	Superior Supplier Incentive Program
SSS	Superior Supplier Status
TIPS	Three Integrated Pillars of Success
TMD	Technical Management Division
UCA	Undefinitized Contract Action
UGCS	Universal Ground Control Station
UGDT	Universal Ground Data Terminal
USC	United States Code
USD(AT&L)	Under Secretary of Defense for Acquisition, Technology, and Logistics
VE	Value Engineering
VECP	Value Engineering Change Proposal
WBS	Work Breakdown Structure
WSARA	Weapon Systems Acquisition Reform Act
WSMR	White Sands Missile Range

THIS PAGE INTENTIONALLY LEFT BLANK

I. INTRODUCTION AND BACKGROUND

A. INTRODUCTION

Acquisition reform has been an elusive goal for the Department of Defense (DoD). Congress and the DoD have tried many different acquisition reform efforts, yet many programs are still failing to meet cost, schedule, and performance goals. On May 22, 2009, President Barack Obama signed the Weapon Systems Acquisition Reform Act (WSARA) of 2009. The act was created to reform the DoD acquisition process with the intent to control unsustainable costs and make programs more affordable. The act was also a response to unsustainable cost growth across multiple major defense acquisition programs (MDAPs).

On March 3, 2009, Senator Carl Levin addressed the Senate Armed Services Committee, stating, "Overall, DoD's 95 defense MDAPs have exceeded their research and development budgets by 40%, seen their acquisition costs grow by an average of 26%, and experienced an average schedule delay of two years" (*Acquisition of Major Weapons Systems*, 2009, p. 2). Unrealistic cost and performance estimates across all services were cited as the main reasons for the cost and schedule delays. The WSARA of 2009 directed that the Director of Cost Assessment and Program Evaluation (CAPE) be created as an independent cost estimation agency for the secretary of defense to fix the deficiencies in the cost estimation process. The Office of the Secretary of Defense (OSD) CAPE is required to provide an independent cost estimate (ICE) for all Acquisition Category (ACAT) I programs.

Program cost, schedule overruns, and less than advertised performance were still systemic in 2010 despite the WSARA. How could DoD acquisition leadership control unsustainable program costs to increase program affordability? What management practices could they apply to its cost problem? In response to continued unsustainable program, acquisition, and contract costs on most major weapons systems in the DoD, Ashton Carter, Under Secretary of Defense for Acquisition, Technology, and Logistics (USD[AT&L]), issued a memorandum to all acquisition professionals on September 14, 2010, titled *Better Buying Power: Guidance for Obtaining Greater Efficiency and Productivity in Defense Spending*. Carter's memo directed the implementation of Should-Cost Management (SCM) as part of the larger Better Buying Power initiative (BBPi) for the DoD to ensure that program managers (PM) incorporated productivity improvements into programs in contract negotiations and program execution (Carter, 2010b).

In April 2011, Carter (2011a) provided an additional directive that should-cost estimates would be required by all ACAT programs. Should-cost initiative progress

was required to be briefed as part of every milestone review. Additionally, the directive prescribed PMs to develop, own, track, and report should-cost estimates annually. Furthermore, service acquisition executives would track and report their should-cost savings to their service's assistant secretary for financial management and comptroller to be validated. This is consistent with Carter's message to the acquisition workforce, "We must do more without more" (Carter, 2010b, p. 1), and SCM is a technique for attaining the set goals.

In November 2012, Frank Kendall, the new USD(AT&L), issued an update to the original BBPi titled *Better Buying Power 2.0: Continuing the Pursuit for Greater Efficiency and Productivity in Defense Spending*. Kendall (2012) introduced his updated guidance to reinforce the success of the BBPi through a modification of the original 23 initiatives into 36 initiatives organized into seven focus areas. The changes were made based on lessons learned from two years of initial implementation and feedback from the acquisition workforce. The basic goal of BBP 2.0 remains unchanged from the original BBP guidance to "deliver better value to the taxpayer and Warfighter by improving the way the Department does business" (Kendall, 2012, p. 1). The BBPi as well as SCM are a management philosophy and culture change for the acquisition workforce.

B. RESEARCH PURPOSE AND OBJECTIVES

The purpose of this research is to conduct a case study analysis of how the Army has implemented Carter's (2011a) should-cost initiative issued on April 22, 2011, titled *Implementation of Will-Cost and Should-Cost Management* and Frank Kendall's (2013b) follow-on guidance titled *Implementation Directive for Better Buying Power 2.0—Achieving Greater Efficiency and Productivity in Defense Spending*. The case study examines the should-cost process across various leadership levels, including the Army acquisition executive (AAE), a selected Army program executive officer (PEO), PEO Aviation, and the PEO's PM offices. We specifically analyze Army and PEO leadership directives, program manager execution practices, and metrics and reporting directives back to Army leadership and milestone decision authorities. The overarching goals of the project are to identify how SCM is being implemented, identify any best practices that can be promulgated to the acquisition community, and make recommendations on how to improve the SCM process. Our case study objectives are to report on SCM progress made to date and the best practices that can be promulgated to the rest of the acquisition corps.

The DoD has mandated the use of SCM as part of its BBPi. SCM is a fundamental change in the way program offices do business and asks PMs to look at cost estimates differently. PMs executing SCM take the independent cost estimate (ICE), or "will-cost," and drive down the cost of their program to the "should-

cost" estimate through various management methods. It has been three years since the implementation of SCM, and an analysis of the progress made to date is warranted. We identify what guidance has been given to Army PMs, what techniques are being used to reach should-cost estimates, and how PMs are reporting their progress back to Army leadership and Milestone Decision Authorities (MDAs).

C. SIGNIFICANCE OF RESEARCH

The BBPi and SCM have been in effect for more than three years now. Little research and few case studies have been undertaken to analyze the effect of implementation of SCM and the BBPi. The Defense Acquisition University (DAU) has started to build a should-cost body of knowledge and best practices, which is still a work in progress. The results of this case study will be added to the DAU body of knowledge and other lessons learned repositories to provide the acquisition workforce with should-cost best practices and continuous process improvement techniques. It is Army policy for all ACAT programs to have MDA-approved should-cost targets by January 1, 2012 (Shyu, 2011). The effects of this policy are unknown due to limited data available during our literature review research. We anticipate this project will add to the conversation and collaboration of SCM best practices in the Army acquisition community.

D. RESEARCH QUESTIONS

Our primary research question addressed in this paper is as follows: Using PEO Aviation as the case study focus, how has the Army implemented SCM as directed by BBP 1.0 and 2.0? From this question, the following secondary questions aid in answering the primary research question:

- What are the directives related to SCM from the BBPi from the Office of the Secretary of Defense (OSD), Army, and PEO?
- What is the organizational process for SCM in the Army?
- What are the best should-cost practices to promulgate to the acquisition workforce?

E. SHOULD-COST OVERVIEW AND BACKGROUND

1. Should-Cost and Will-Cost Defined by the Better Buying Power Initiative

The definitions of *should-cost* and *will-cost* in the BBPi are important for understanding the concepts used throughout this case study. SCM is not a new concept to the acquisition community. Should-cost definitions have been redefined and expanded in the Federal Acquisition Regulation (FAR) Subpart 15.407-4 and the

United States Army Materiel Command's pamphlet, *Procurement: Should-Cost Analysis Guide* (United States Army Materiel Command [AMC], 1972). Understanding the differences between the multiple variations of should-cost is critical to implementing the BBP version of should-cost. The BBPi defines *will-cost* and *should-cost* as follows:

- Will-cost is the ICE or program estimates and other cost projections funded in the budget (Carter, 2011b).
- Should-cost is defined as what the system should cost after the PM develops and implements a holistic life-cycle plan for achieving cost savings below the ICE or will-cost estimate. According to Kendall (2012), "should-cost is the concept that our managers should set cost targets below independent cost estimates and manage with the intent to achieve them" (p. 3).

SCM is both a philosophy and a management system to scrutinize program costs during each phase of a product's lifecycle. In addition, it is a continuous improvement process to lower costs without sacrificing quality and performance or damaging contractor relations. Additionally, should-cost is comparable to lean manufacturing in that its goal is to eliminate waste and non-value-added processes in the product's lifecycle. In short, SCM is essentially a contract between the American taxpayer and the product/project/program management office (PMO) to cut costs and make programs affordable. Carter (2010b) directed all PMs to

> conduct a Should-Cost analysis justifying each element of program cost and showing how it is improving year by year or meeting other relevant benchmarks for value. Meanwhile, the Department of Defense will continue to set the program budget baseline (used also in Acquisition Decision Memorandum (ADMs) and Selected Acquisition Reports (SARs)) using an ICE. (p. 3)

The BBP and should-cost directives are to be used as a guide, and execution of the initiative is expected to vary by program, depending on its lifecycle stage.

2. Should-Cost History

The United States military has experienced cyclical periods of war and peace since its founding. Periods of war, mobilization, and rapid procurement are typically followed by precipitous peacetime declines in military spending. The United States is currently in a downward trend of defense spending following the end of combat in Iraq, the planned withdrawal of combat forces from Afghanistan in 2014, and the ongoing recovery from a global recession. The United States was in a similar situation financially and militarily at the end of the Vietnam War in the early 1970s. The Vietnam War was coming to a close, and military budgets were being reduced

to typical peacetime levels. In the 1970s, inflation and the cost of new technology were making defense programs unaffordable. Meanwhile, the American people did not have an appetite for defense spending and voted to focus more on domestic issues. The DoD developed SCM practices to become better stewards of taxpayer money to combat these realities.

In May 1972, the Army Materiel Command (AMC) published the AMC Pamphlet (AMCP), *Procurement: Should-Cost Analysis Guide*. The guidebook is advisory in nature and is intended to be used by acquisition practitioners to accomplish should-cost analysis. Should-cost is defined by the AMCP 715-7 as

> an approach to cost analysis through fully coordinated efforts of a team of Government specialists in engineering, pricing, audit, procurement, and management. The specialists review in detail the contractor's engineering and manufacturing operations, accounting procedures, cost estimating systems, purchasing procedures, make-or-buy decisions, organizational structure, and any other elements of cost and management control required for contract performance. The analysis is used to identify uneconomical or inefficient practices in the contractor's operation, and to formulate the Government's negotiation position, on the basis of the team's estimate of what the contract should cost to perform, based on reasonably achievable economies and efficiencies. (p. 1-1)

This AMCP version of should-cost is similar to traditional cost analysis but differs in two ways: the depth and scope of analysis, and the level to which the government challenges contractor inefficiencies through onsite inspections.

Should-cost is not a new concept to the acquisition or commercial business community. According to Naval Postgraduate School senior lecturer Elliott Cory Yoder (2012),

> Should-cost will-cost is not a new concept. As early as the mid-1950s, should-cost analysis was proposed as a means to get better, more accurate estimates on what systems ought to cost, versus what they will cost based on historical data that may have included numerous inefficiencies in production and management. (p. 5)

SCM is a common sense approach to getting a product for what it really should cost versus what it was estimated to cost. However, according to Yoder (2012), the name should-cost has led to confusion because the should-cost methodology in the BBPi is different in scope from previous versions of should-cost. Therefore, Yoder recommended a name change for the BBPi's should-cost to differentiate between the FAR's definition of should-cost and the BBPi's version.

F. CHAPTER SUMMARY

In this chapter, we gave an introduction to and background of SCM. In the introduction section, we gave an overview of SCM as a component of the larger BBPi, the purpose of this project, and the primary question and supporting questions that this project intends to answer. Additionally, we explained the significance of the project. In the background section, we gave a definition of should-cost and will-cost from the BBP definition. The definition is important to understand because the BBPi should-cost is different and larger in scope than previous versions of should-cost that are in the FAR. Finally, we discussed should-cost history. SCM means different things to different people. It is important for readers of this research to understand the difference between the variations of should-cost.

In the next chapter, we conduct an extensive literature review to analyze all previously published BBPi and SCM guidance and research found through open sources. This literature review provides a foundational knowledge base for the SCM initiative case study.

II. LITERATURE REVIEW

Carter's BBPi is an aggressive endeavor to improve the DoD's acquisition process by reducing redundancy and waste, streamlining processes, improving efficiency, and educating its workforce with the aim of saving billions of taxpayer dollars. The focus of this literature review is to provide a comprehensive look at all major memoranda, directives, and policy letters pertaining to Carter's BBPi, from genesis to its current state, and more specifically, the implementation guidance for the SCM section of the BBPi. This literature review provides the foundational information for our project, which is to analyze Army leadership directives, PM execution practices, and reporting requirements relating to the SCM aspect of BBP.

A. BETTER BUYING POWER LITERATURE

This section highlights all documents related to the implementation of Carter's BBPi. The directives began in June 2010, with the release of the first document pertaining to the new cost-saving initiative. The documents are listed in chronological order to show the building of implementation guidance over time.

1. Better Buying Power: Mandate for Restoring Affordability and Productivity in Defense Spending (June 28, 2010)

This memorandum from Ashton Carter, the former USD(AT&L), outlined his preliminary guidance on how to

- Deliver the warfighting capability we need for the dollars we have
- Get better buying power for our warfighters and taxpayers
- Restore affordability to defense goods and services
- Improve defense industry productivity
- Remove government impediments to leanness
- Avoid program turbulence
- Maintain a vibrant and financially healthy defense industry. (Carter, 2010a)

This memo is the genesis of the BBPi and was promulgated to the entire acquisition workforce. The memo was prompted by former Secretary of Defense Robert Gates' speech at the Eisenhower Library on May 8, 2010. In his speech, Gates (2010) stated that the Defense Department must be "respectful of the American taxpayer at a time of economic and fiscal distress" (p. 1).

The memo stated that after the terrorist attacks on September 11, 2001, DoD spending increased dramatically and was focused primarily on providing warfighting capabilities quickly. As a result, during the course of the Global War on Terror (GWOT), acquisition inefficiencies mounted. The memo further stated that despite the fact that the budget for defense would cease to grow, the DoD would continue to grow its force structure and increase its modernization efforts at a rate of 3% annually. To compensate for these intended actions, the Department would need to cut its budget in other areas. According to the memo, the initial goal was to save $100 billion over a five-year period, with the bulk of those savings coming from the BBPi. The memo was accompanied by a department-level briefing that discussed BBP and laid the foundation for the follow-on memo, which included a roadmap and a more refined BBP briefing. This follow-on memo, which was released to the acquisition workforce on September 14, was titled *Better Buying Power: Guidance for Obtaining Greater Efficiency and Productivity in Defense Spending* (Carter, 2010b).

2. *Better Buying Power: Guidance for Obtaining Greater Efficiency and Productivity in Defense Spending* (September 14, 2010)

This memo from the USD(AT&L) is the follow-on to the memo promulgated to the acquisition workforce on June 28, 2010, mandating better value for taxpayers and warfighters alike by improving defense acquisition. In this memo, Carter (2010b) stated,

> We have a continuing responsibility to procure the critical goods and services our forces need in the years ahead, but we will not have ever-increasing budgets to pay for them. We must therefore strive to achieve what economists call productivity growth: in simple terms, to "DO MORE WITHOUT MORE." (p. 1)

The memo provides specific guidance to acquisition professionals on how to achieve better efficiencies. Carter (2010b) provided 23 points that were geared towards improving efficiencies and organized into five major categories: Target Affordability and Control Cost Growth, Incentivize Productivity and Innovation in Industry, Promote Real Competition, Improve Tradecraft in Services Acquisition, and Reduce Non-productive Processes. Of the five categories, the first one, Target Affordability and Control Cost Growth, is directly related to this MBA project; one of its subcategories is to *drive productivity growth through Will Cost/Should Cost management*. The memo states,

> During contract negotiations and program execution, our managers should be driving productivity improvement in their programs. They should be scrutinizing every element of program cost, assessing whether each element can be reduced relative to the year before, challenging learning curves, dissecting overheads and indirect costs,

> and targeting cost reduction with profit incentive—in short, executing to what the program *should cost.* (Carter, 2010b, p. 3)

In this subcategory,Carter further stated,

> I will require the manager of each major program to conduct a Should Cost analysis justifying each element of program cost and showing how it is improving year by year or meeting other relevant benchmarks for value. Meanwhile, the Department will continue to set the program budget baseline using an independent cost estimate (ICE). (Carter, 2010b, p. 3)

According to the memo, the acquisition community comprised of senior logisticians, systems command leaders, OSD staff, component acquisition executives (CAE), PEOs, and PMs, worked collectively to build the "Guidance Roadmap" (Carter, 2010b), which summarizes the 23 principal points. The Guidance Roadmap (Figure 1) was issued along with this memo. Carter's (2010b) guidance contained in this memo and roadmap was to affect approximately 60% of the $700 billion defense budget—roughly $400 billion dollars—and was expected to save $100 billion over the following five years. Carter (2010b) stated,

> Those who hesitate to go down the road of greater efficiency must consider the alternative: broken or canceled programs, budget turbulence, uncertainty and unpredictability for industry, erosion of taxpayer confidence that they are getting value for their defense dollars and, above all, lost capability for the warfighter in a dangerous world. (p. 2)

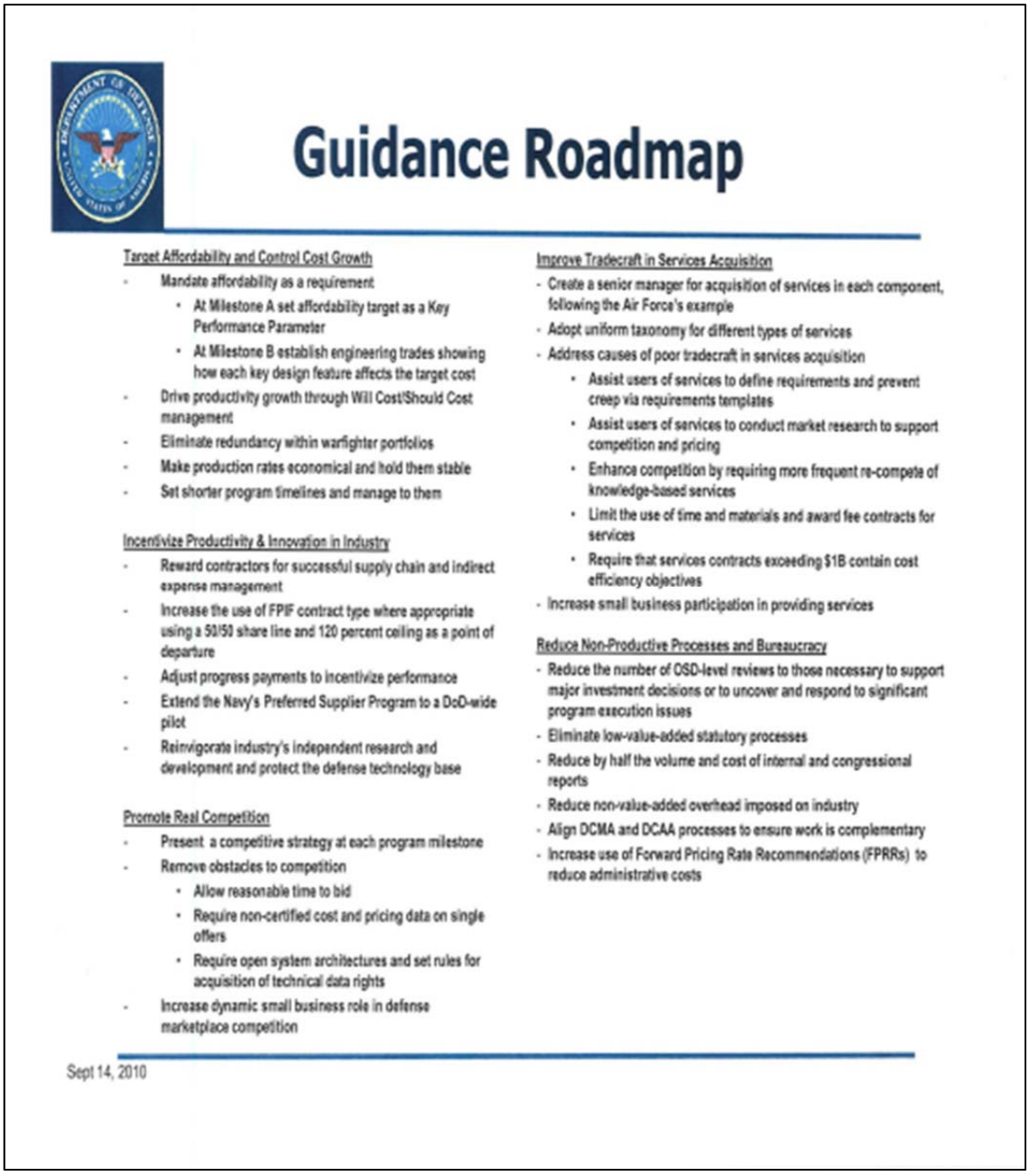


Figure 1. Guidance Roadmap
(Carter, 2010b)

3. *Implementation Directive for Better Buying Power: Obtaining Greater Efficiency and Productivity in Defense Spending* (November 3, 2010)

In this memo, Carter (2010c) provided specific implementation directives to the military departments (MILDEPs) and defense agency directors for each of the five categories specified in his previous memo dated September 14, 2010: Target Affordability and Control Cost Growth, Incentivize Productivity and Innovation in

Industry, Promote Real Competition, Improve Tradecraft in Services Acquisition, and Reduce Non-productive Processes. In the memo (as it pertains to this research), he mandated affordability-based decision-making at milestone decision points for all ACAT I programs.

In addition, Carter (2010c) directed all MILDEPs and directors of defense agencies to establish should-cost targets for all ACAT I programs for consideration in major milestone decisions "using sound estimating techniques that are based on bottom-up assessments of what programs should cost, if reasonable efficiency and productivity enhancing efforts are undertaken" (Carter, 2010c, p. 2). These costs would be the basis for contract negotiations and incentives and would be used to track contractor and PEO/PM performance. Carter further directed that PEO/PMs would use SCM to establish estimates for ACAT II and III component milestone decisions and use this management technique to track all ACAT II and III programs. The memo also directed a bottom-up review of all internally generated reporting requirements to better streamline reporting and eliminate up to 50% of redundant reporting requirements and shorten the remaining ones (Carter, 2010c).

4. Better Buying Power: An Army Program Manager's Perspective (Thesis, May 2012)

In this May 2012 Senior Service College Fellowship study, Patrick J. Layden looked at Carter's BBPi and Guidance Roadmap from the perspective of the PMs and attempted to gather feedback on how to improve the program's overall guidance and implementation. The significance of this study is that BBP is a relatively new concept that places the bulk of the responsibility for implementation on the shoulders of the PMs. Although there have been numerous documents promulgated to the workforce, there has been very little research conducted on this topic to measure program effectiveness and discover gaps in implementation (Layden, 2012). This assertion made by the author of this report two years after Carter's BBPi was first released is significantly important and is the reason why this particular literature is relevant to our research on Army SCM.

Layden's (2012) study investigated PMs' understanding of the various aspects of the BBPi and also their perspectives on the initiative's potential impacts on their respective programs. Layden attempted to provide a progress report on the initiative and at a minimum open up discussion on how to make improvements to the program. An applied research methodology was used to collect data for this project. Quantitative data was collected from O-6 (colonel)–level PMs and deputy PMs in the following Army and Joint PEOs:

- PEO Aviation
- PEO Ammunition

- PEO Combat Support and Combat Service Support
- PEO Command, Control and Communications-Tactical
- PEO Ground Combat Systems
- PEO Intelligence, Electronic Warfare and Sensors
- PEO Simulation, Training, and Instrumentation
- JPEO Chemical and Biological Defense

The researcher attempted to answer the following questions:

1. Are the PMs familiar with the BBP initiative, and are the initiatives impacting their programs?
2. Do Army PMs believe there is enough formal direction and practice to properly implement all elements of the BBP initiative on their programs, or do they feel they need additional support (i.e., guidance, tools, and training)?
3. What elements of the BBP initiative do Army PMs believe can meet the cost savings objectives? (Layden, 2012, p. 7)

There are three hypotheses in this study:

1. The majority of Army PMs are only somewhat familiar with BBP, and the initiatives are having a minimal impact on their programs.
2. The majority of Army PMs believe there is not enough formal direction and practice to effectively implement several aspects of the BBP initiatives and require additional guidance, training, and tools.
3. A majority of Army PMs believe only a few of the BBP initiatives can produce significant cost savings (Layden, 2012, pp. 7–8).

Layden (2012) concluded that the first hypothesis was correct. PMs were only generally familiar with the various initiatives for BBP, and they felt the initiatives "are not having a very significant impact on current programs" (Layden, 2012, p. 60). Layden concluded that the second hypothesis was not true. The data collected in this study indicated "additional guidance, training, and tools are of value, but not substantially so" (p. 61). Layden concluded that the third hypothesis was true. The PMs that participated in the study rated the cost savings potential to be high.

Layden (2012) made the following five recommendations to help the BBP program achieve its cost saving objectives:

1. Continually monitor the value of each initiative and make adjustments as necessary.

2. ASA(AL&T) leadership should use the study to formalize Army BBP feedback to program leadership and evaluate the potential to improve Army implementation.
3. At milestone B, establish engineering trades, showing how each key design feature affects the target cost; enforce open system architectures and set rules for acquisition of technical data rights; and help users of services conduct market research to support competition and pricing.
4. Across the board, acquisition professionals should review this study to determine if insight can be gained on specific BBP questions or issues they may have
5. BBP stakeholders should focus on identifying and taking advantage of the most promising cost savings initiatives. (pp. 63–64)

Based on the findings of this work, it is clear that more detailed research is needed in this area to leverage the work done by Layden and provide further insight into the best ways to support the BBPi. The data collected from PMs on their understanding of BBP and how they perceive its implementation provide data for our research into the link between OSD guidance and implementation by the Army. Layden's thesis is very valuable to our study as it provides us with the research on how each PM interpreted the BBPi implementation.

5. Professional Services Council Recommendation Letter to Under Secretary Kendall on Better Buying Power 2.0 Initiative (September 26, 2012)

Stan Soloway, president and chief executive officer of Professional Services Council (PSC), signed a letter addressed to Kendall on behalf of PSC's 350-plus member companies. The letter presented three trends that would benefit from additional BBP guidance: contract length, buying for value, and squeezing profit to drive cost reductions.

The letter stressed that the BBPi specified limiting contract lengths to three years to encourage competition. The three-year contract limits the company's ability to realize returns on investments unless the investments are made in the first year of the contract. Soloway recommended that "BBP stress to DoD components the importance of focusing on their requirements and on seeking and rewarding new solutions and innovations" (2012, p. 1), thereby establishing quality competitions as opposed to continuous competition.

Soloway addressed squeezing profit to drive cost reductions by stating that profits to the manufacturer are not tied to work performed by the manufacturer and

the risks it assumes. He cited the frequency with which audits are conducted on competitive fixed-price procurements as a clear example. The recommendation was to remind the force what the profit margin awarded to the contractor was supposed to be based upon. Establishing a fair profit margin for the contractor would help shield it from various initiatives of BBPi seeking cost reductions (Soloway, 2012).

6. *Better Buying Power 2.0: Continuing the Pursuit for Greater Efficiency and Productivity in Defense Spending* (November 13, 2012)

This memo from the USD(AT&L) provided additional guidance to acquisition professionals on the BBPi. In this memo, Kendall (2012), who replaced Carter, provided 36 points that were similar to the original 23 points from BBP 1.0 and laid out the same basic goals to "deliver better value to the taxpayer and warfighter by improving the way the Department does business" (p. 1). His 36 points, which were organized into seven main focus areas, were geared toward improving efficiencies. These focus areas included the following: achieve affordable programs, control costs throughout the product lifecycle, incentivize productivity and innovation in industry, eliminate unproductive processes and bureaucracy, promote effective competition, improve tradecraft in services acquisition, and improve the professionalism of the total acquisition workforce (Kendall, 2012). Kendall (2012) emphasized that BBP 2.0 is a management philosophy of continually making improvements in the acquisition process.

The memo was accompanied by an informational briefing sheet titled *Better Buying Power 2.0* (see Figure 2) and a BBP information paper. The briefing sheet depicts seven focus areas with all 36 points on one sheet of paper, and the information paper describes each of the 36 points. One of the points, which is directly related to our research, is under the focus area of *Control costs throughout the product lifecycle* and is titled *Implement "should cost" based management*. This point makes the claim that "managers should set target costs below independent cost estimates and manage with the intent to achieve them" (Kendall, 2012, p. 3). In this area, Kendall asserted that SCM is "well on its way to becoming part of the DoD culture" (Kendall, 2012, p. 3). According to Layden's (2012) research, however, it seems PMs are not so sure. Therefore, Kendall's assertion deserves further investigation.

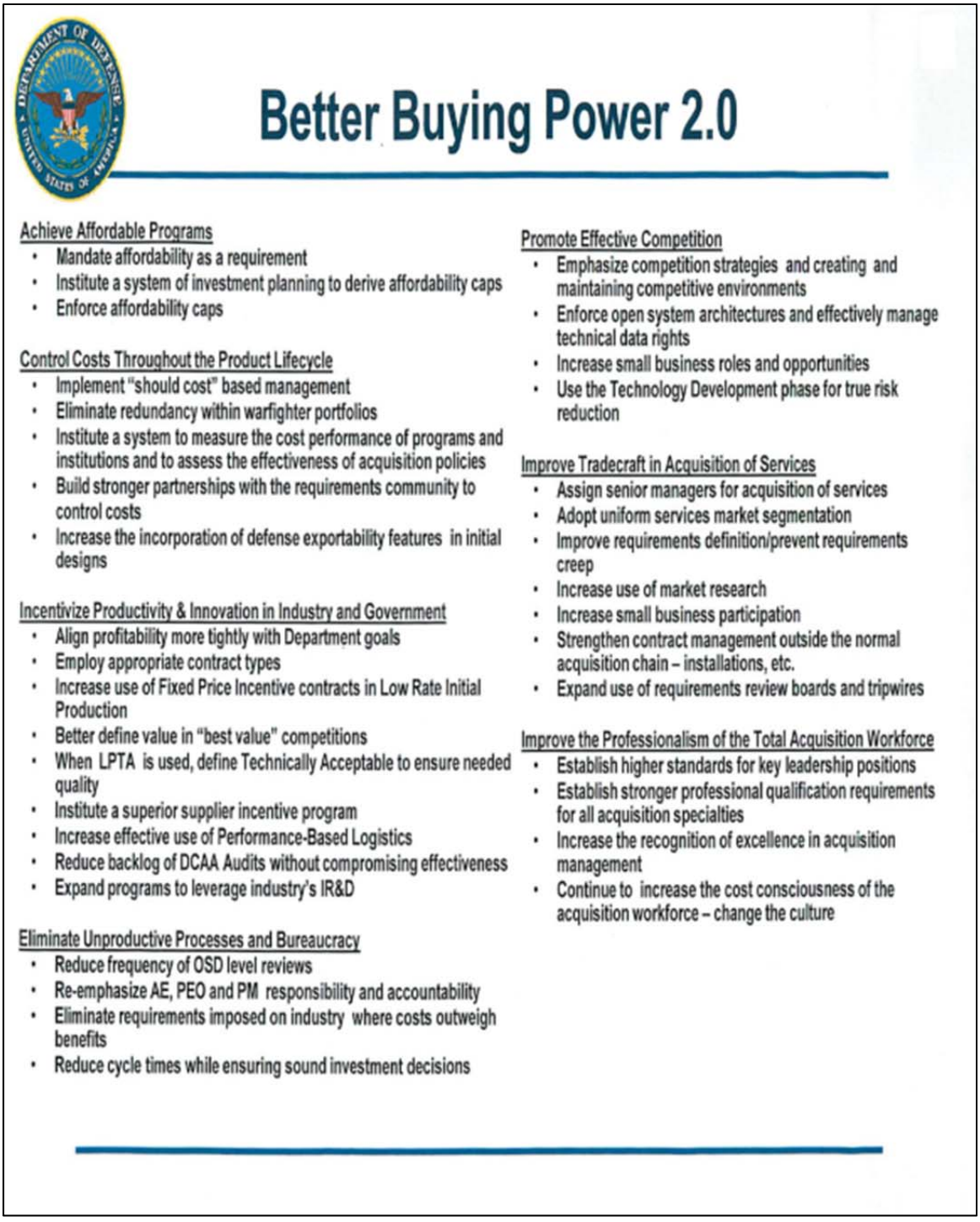


Figure 2. Better Buying Power 2.0 Information Sheet
(Kendall, 2012)

7. GAO Report—*Defense Management: Opportunities Exist to Improve Information Used in Monitoring Status of Efficiency Initiatives* (December 4, 2012)

In the Government Accountability Office (GAO) report dated December 4, 2012, the primary research question was whether the DoD needed to develop methodologies and matrices for reporting efficiency initiatives for all MILDEPs so they could provide senior leaders with accurate information. Senior leaders need accurate information to monitor progress in achieving programmatic and budgetary goals. This report emphasized the need for standardized data collection methods and baseline metrics for measuring or quantifying successful implementation of BBPis.

The GAO was mandated to evaluate the extent of DoD compliance to the National Defense Authorization Act (NDAA) for Fiscal Year (FY) 2012, specifically, how the DoD has tracked and realized the savings proposed in the initiative to identify a minimum of $100 billion in efficiencies during FY2012–2016 (see Table 1). The DoD promulgated its approach for reporting efficiency initiatives to the MILDEPs; however, the approach lacks guidance on reporting procedures and methodologies, resulting in inaccurate reports. This limits the visibility of senior leaders and hinders their ability to monitor progress in achieving programmatic and budgetary goals (GAO, 2012). This report addressed the level of compliance by the MILDEPs and the DoD's progress in establishing a department-wide efficiency initiative reporting procedure.

For both the objectives, the GAO took a sampling of DoD efficiency initiatives included within the $100 billion of efficiency initiatives that were identified by MILDEPs and used the *DoD Efficiency Initiatives Fiscal Year 2012 Budget Estimates* justification book to choose seven samplings of initiatives to use as case studies—two each from the Army, Navy, and Air Force and one from Special Operations Command (SOCOM). To make a determination on the extent of compliance to this initiative, the GAO interviewed officials and reviewed budget documents and progress reports to identify the processes and procedures put in place, if any, to track implementation. The GAO also reviewed data maintained in the OSD's DoD Enterprise Performance Management System (DEPMS), electronic spreadsheets on all of the efficiency initiatives, and status update reports submitted to the USD(Comptroller) and DoD Deputy Chief Management Officer (DCMO).

Table 1. Projected Savings Identified by the Military Departments and SOCOM Under the Secretary of Defense's Efficiency Initiative (Fiscal Years 2012 Through 2016)
(GAO, 2012)

Dollars in billions	Fiscal years 2012-2016				
Category of reduction	Army	Navy	Air Force	SOCOM	Total for fiscal years 2012-2016
Reorganizations	5.4	15.4	4.2	0	25
Better business practices	10.3	14.1	20.6	0.4	45.4
Program reductions/terminations	11	5.5	3.7	1.3	21.5
Reductions in lower priority programs	2.8	0	4.8	0.6	8.2
Total	**29.5**	**35**	**33.3**	**2.3**	**100.1**

To ensure complete and consistent reporting and improve the DoD's ability to monitor the efficiency initiatives, the GAO recommended that the USD(AT&L) develop specific guidance with standardized definitions and methodologies for the MILDEPs and SOCOM to use in reporting their efficiency initiatives and actual savings (GAO, 2012). For example, an event-driven cost estimate reporting requirement for all ACAT I, II, and III programs that includes specific metrics for measuring success of should-cost estimates (initial and updated) to compare with will-cost estimates (initial and updated) to quantify actual realized savings would greatly improve senior leaders' ability to make informed budgetary and programmatic decisions. This GAO report further reinforces the need for a thorough analysis of how the U.S. Army has implemented Carter's should-cost initiative.

8. Frank Kendall Letter: To Our Industry Partners (March 4, 2013)

This letter written by USD(AT&L) Kendall (2013a) addressed the defense industry explaining the rather bleak realities of sequestration and its effects on the industrial base. He explained that the DoD will reduce its budget in FY2013 by $41 billion, which includes $18 billion for research and development and production. Kendall (2013a) stated that the "sequestration problems are exacerbated by the allocation of funds under the current continuing resolution (CR), which provides insufficient dollars in the operating accounts that fund the many service contracts that support readiness" (p. 1). He further elaborated, "Since the CR funds the DoD base budget at roughly the FY2012 appropriations level, we face an additional reduction of $6 billion" (p. 1). He went on to say that as a result of the fiscal uncertainty, damage to the DoD and the defense industry is unavoidable (Kendall, 2013a). Kendall invited the leaders of industry to engage in open dialogue with the DoD to help minimize the impact the current fiscal environment will have on both the

DoD and industry. This letter really shows the dire situation of our economy and how it will impact not only the DoD but also the defense industrial base.

9. *Implementation Directive for Better Buying Power 2.0: Achieving Greater Efficiency and Productivity in Defense Spending* (April 24, 2013)

This memo was an update to the November 13, 2012, memo that addressed acquisition professionals and introduced BBP 2.0 and the seven focus areas for achieving efficiency and productivity. Kendall's (2013b) seven areas are as follows: achieve affordable programs, control costs throughout the product lifecycle, incentivize productivity and innovation in industry, eliminate unproductive processes and bureaucracy, promote effective competition, improve tradecraft in services acquisition, and improve the professionalism of the total acquisition workforce. Kendall (2013b) provided his key overarching principles that govern BBP and all its accompanying efforts. The principles are as follows:

- *Think*. BBP 2.0 is not dogma. "It is guidance subject to professional judgment" (p. 1). The acquisition workforce needs "to apply our education, training, and experience through analysis and creative, informed thought to address our daily decisions" (p. 1).
- *People.* All the policies and processes we have are of no use if we do not have the right people "who are experienced, trained and empowered to apply them effectively" (pp. 1–2). In the end, "qualified people are essential to successful outcomes, and professionalism, particularly in acquisition leaders, drives results more than any policy change" (p. 2).
- *Start with the basics*. Kendall emphasized the need to apply the basics of acquisition in everything acquisition professionals do simply because they work.
- *Streamline decisions*. All acquisition processes and oversight need to be streamlined in order to provide added value (Kendall, 2013b, pp. 1–2).

BBP 2.0 implementation guidance with specific actions to be taken in each of the seven focus areas was included as an attachment to this memo. In regard to SCM, Kendall provided in the attachment his general guidance stating that should-cost is "fundamental to proactive cost control throughout the acquisition lifecycle" (Kendall, 2013b, Attachment 2, p. 2). He added that will-cost estimates will continue to be the basis for the president's budget, but "we cannot accept these estimates as self-fulfilling" (p. 2). Kendall (2013b) said that our goal should be to "identify opportunities to do better and to manage toward that goal" (p. 2). PMs should

scrutinize every estimate and find ways to reduce cost without trading off value. He further stated that the goal is to eliminate "low value added ingredients of program cost and to appropriately reward those who succeed in doing this, both in Government and in industry" (p. 3). The specific actions pertaining to SCM that Kendall (2013b) addressed in his BBP 2.0 Guidance and Actions, Attachment 2, are as follows:

- Acquisition manager's performance evaluations should consider effective cost control including implementation of should cost management;
- ACAT I through III programs should have should cost targets in place by August 1, 2013, or the next milestone decision, whichever comes first;
- The Principal Deputy USD (PDUSD[AT&L]) will refine, clarify, and re-issue guidance from BBP 1.0 by June 1, 2013, to ensure understanding, implementation, and reporting of should cost management. Guidance will cover acquisition of both products and services;
- PEOs and PMs will report should cost targets for all ACAT I programs and progress in achieving them at all Defense Acquisition Executive Summaries (DAES) and Defense Acquisition Board (DAB) program reviews;
- The Defense Acquisition University (DAU) will create a repository for best practices and create rapid deployment training for the acquisition workforce by August 1, 2013. DAU will work with the component acquisition executives (CAEs) to collect successful should cost studies and lessons learned. DAU will also improve and better integrate should cost management principles across all DAU curricula by November 1, 2013;
- The Defense Contract Management Agency (DCMA) will collaborate with the CAEs to implement an annual planning process to maximize the use of the DCMA Cost and Pricing Center capability for assisting program offices and PEOs with should cost activities by June 1, 2013 (p. 3).

B. SHOULD-COST MANAGEMENT LITERATURE

This section highlights all documents related to the SCM aspect of Carter's BBPi. The directives begin in April 2011 with a two-page memorandum tasking service acquisition executives, PEOs, and PMs to implement will-cost and SCM into

each ACAT program. The documents are listed in chronological order to show the building of implementation guidance over time.

1. Federal Acquisition Regulation: Should-Cost Management Reviews (March 2005, Reissued April 1, 2013)

The FAR mentions should-cost reviews in subpart 15.407-4 (2013). Guidance for should-cost reviews in FAR 15 is different than the guidance issued in the BBPi. The FAR specifically states the following (original section numbering intact):

> 15.407-4 Should-cost review.
>
> (a) General.
>
> (1) Should-cost reviews are a specialized form of cost analysis. Should-cost reviews differ from traditional evaluation methods because they do not assume that a contractor's historical costs reflect efficient and economical operation. Instead, these reviews evaluate the economy and efficiency of the contractor's existing work force, methods, materials, equipment, real property, operating systems, and management. These reviews are accomplished by a multifunctional team of Government contracting, contract administration, pricing, audit, and engineering representatives. The objective of should-cost reviews is to promote both short and long-range improvements in the contractor's economy and efficiency in order to reduce the cost of performance of Government contracts. In addition, by providing rationale for any recommendations and quantifying their impact on cost, the Government will be better able to develop realistic objectives for negotiation.
>
> (2) There are two types of should-cost reviews—program should-cost review (see paragraph (b) of this subsection) and overhead should-cost review (see paragraph (c) of this subsection). These should-cost reviews may be performed together or independently.
>
> (b) Program should-cost review.
>
> (1) A program should cost review is used to evaluate significant elements of direct costs, such as material and labor, and associated indirect costs, usually associated with the production of major systems.
>
> (2) A program should-cost review should be considered, particularly in the case of a major system acquisition (see Part 34), when—
>
> (i) Some initial production has already taken place;
>
> (ii) The contract will be awarded on a sole source basis;
>
> (iii) There are future year production requirements for substantial quantities of like items;
>
> (iv) The items being acquired have a history of increasing costs;

(v) The work is sufficiently defined to permit an effective analysis and major changes are unlikely;

(vi) Sufficient time is available to plan and adequately conduct the should-cost review; and

(vii) Personnel with the required skills are available or can be assigned for the duration of the should-cost review. (FAR 15.407-4, 2013)

2. *Implementation of Will-Cost and Should-Cost Management* (April 22, 2011)

This memo to acquisition and logistics professionals from Carter was a follow-up to his September 2010 directive to implement "an internal management tool for all ACAT I, II, and III programs" (Carter, 2011a, p. 1). This memo provided clear direction of implementing will-cost and SCM and scrutinizing every element of government and contractor costs (Carter, 2011a). Will-cost and SCM are used to increase productivity in contract negotiations, program execution, and sustainment in order to eliminate cost overruns and deliver independent cost estimate programs below budget. Incentives for both the government and industry manager will be a key to success of the SCM program. Carter (2011a) recommended sharing savings realized as an incentive in the form of additional program resources and professional recognition for the government manager and increased profit and corporate recognitions for the industry manager.

This memo's main focus was to direct PMs to develop, own, track, and report against should-cost estimates. Carter recommended using all available resources within the DoD, such as the DCMA, to assist in development of should-cost estimates. The estimates will then be reviewed at every milestone decision and at each Defense Acquisition Executive Summary review. Each service acquisition executive must also send an annual report of should-cost progress beginning in November 2011 (Carter, 2011a).

Carter tasked the service acquisition executives, PEOs, and PMs to find the best method of meeting the initiative's intent. Should-cost estimates can be developed using any three methods described by the initiative or in any combination of the methods. The first method is a bottoms-up estimate if the detailed analysis is useful. The second method is to identify actionable and achievable reductions from the will-cost estimate. Any reductions that are achieved from an immediate investment should be brought to the MDA for approval before being considered a should-cost estimate. The third method is using competitive contracting and contract negotiations to find should-cost savings (Carter, 2011a).

Finally, this memo included two attachments, *Ingredients of Should-Cost Management* and *A List of Will-Cost and Should-Cost Management Pilot Programs*.

The ingredients are a list of activities and practices that, if utilized, will help achieve should-cost savings. Specifically, Carter's SCM ingredients are as follows:

> 1) Scrutinize each contributing ingredient of program cost and justify it. Why is it reported or negotiated? What reasonable measures might reduce it?
>
> 2) Particularly challenge the basis for indirect costs in contractor proposals.
>
> 3) Track recent program cost, schedule, and performance trends and identify ways to reverse negative trend(s).
>
> 4) Benchmark against similar DoD programs and commercial analogues (where possible), and against other programs performed by the same contractor or in the same facilities.
>
> 5) Promote Supply Chain Management to encourage competition and incentivize cost performance at lower tiers.
>
> 6) Reconstruct the program (government and contractor) team to be more streamlined and efficient.
>
> 7) Identify opportunities to breakout Government-Furnished Equipment versus prime contractor-provided items
>
> 8) Identify items or services contracted through a second or third party vehicle. Eliminate unnecessary pass-through costs by considering other contracting options.
>
> 9) In the area of test:
>
> > a. Take full advantage of integrated Developmental and Operational Testing to reduce overall cost of testing;
> >
> > b. Integrate modeling and simulation into the test construct to reduce overall costs and ensure optimal use of National test facilities and ranges.
>
> 10) Identify an alternative technology/material that can potentially reduce development or life cycle costs for a program. Ensure the prime product contract includes the development of this technology/material at the right time. (Carter, 2011a, p. 3)

3. *Army Implementation of Under Secretary of Defense (Acquisition, Technology, and Logistics) (USD[AT&L]) Affordability Initiatives* **(June 10, 2011)**

This memo for Army PEOs by Heidi Shyu, the Acting Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASA[ALT]), is the Army's implementation directive and a show of its support for Ashton Carter's BBPi. The main focus of the memo is to provide detailed guidance on the implementation of the Target Affordability and Cost Growth portion of the BBPi, of which SCM is the tool

used to achieve the initiative. Shyu (2011) directed five initiatives: "(1) mandate affordability as a requirement, (2) drive productivity growth through should-cost/ will-cost management, (3) eliminate redundancy in Warfighter portfolios, (4) make production rates economical and hold them stable, (5) set shorter timelines and manage to them" (p. 1).

The memo provides specific instructions regarding should-cost/will-cost management. According to the memo, each ACAT I, II, and III program will use SCM to push leanness into their programs. Conducting should-cost analysis against the will-cost estimate assists in achieving lean programs. Each program was directed to ensure that the will-cost estimate was independently verified prior to milestone decisions. Additionally, should-cost analysis should not be conducted one time to achieve one estimate. Should-cost analysis should be continuous and conducted throughout the life of the program, from contract negotiations, through program execution, and into sustainment. Should-cost estimates are established, and then the PM is directed to manage to that estimate using initiatives that achieve the savings.

Shyu (2011) directed that all ACAT I, II, and III programs have MDA-approved should-cost execution targets. Each PM and PEO was directed to manage, report, track, and defend the targets and initiatives identified to achieve the targets. Progress would be tracked during each milestone decision and from annual reports submitted by PEOs and PMs to ASA(ALT) not later than October 30 of each year.

Regarding the program funding, all program funding would be issued using the should-cost estimate for the program. The difference in funding between the should-cost estimate and the will-cost estimate would be withheld at the MDA, typically ASA(ALT) for ACAT I and the PEO for ACAT II and III. The MDA is the approval authority to issue any additional funds to the program.

Finally, the memo provided two enclosures containing additional reporting requirements and should-cost implementation details. Enclosure 1 is the slide template for a Defense Acquisition Board (DAB), which provides a will-cost/should-cost management report slide example. Enclosure 2 provides SCM definitions, management processes and procedures, and reporting processes and procedures (Shyu, 2011).

4. *Should-Cost and Affordability* (August 24, 2011)

This memo for defense acquisition and logistics professionals from Carter was an effort to clarify any confusion between the affordability as a requirement and SCM initiatives. Affordability as a requirement directs goals to be established based on design and capability trades to achieve what the service can pay in production and sustainment costs. These should be set early in the program, prior to Milestone

B. While affordability is the driving cost-management initiative, assumptions about future costs are made during early program analysis and development. Should-cost can still be used early on to bring down overhead and government costs.

SCM focuses on the continuous fight to lower costs throughout program execution through initiatives to drive leanness into the program, typically at and after Milestone B. Both initiatives could come into conflict around Milestone B. However, should-cost initiatives should not trade capability or long-term sound design practices for near-term savings. Simply put, SCM is used to challenge the assumptions embedded in those analyses, formulate should-cost estimates for production and sustainment, and work to achieve those estimates (Carter, 2011b).

5. "Should-Cost Management: Why? How?" (October 2011)

This article written by Carter and John Mueller was published in the September–October 2011 edition of *Defense AT&L* magazine. The article explained the logic and reason for implementing will-cost and SCM and made the case for PMs to use the will-cost estimate of the ICE as the program cost ceiling, as opposed to the floor. Unfortunately, the ICE has historically become the floor from which costs rise. The will-cost estimate is generally created using historical costs, deriving an estimate of future costs. The use of historical data creates many opportunities to utilize SCM analysis and techniques to drive down program costs.

The article also laid out objectives for should-cost implementation and Carter's expectations: scrutinize every element of program costs, look for savings in repetitive activities, leverage the learning curves, examine overhead and indirect costs, and incentivize contractors to achieve cost savings. Each of the previous expectations is an area in which SCM could be effective due to the nature of will-cost estimate creation (Carter & Mueller, 2011).

6. "Should-Cost Review: A Pragmatic Approach to Affordability" (November 2011)

Randy Garber and Bob Willen (2011) from AT Kearney, a public consulting firm, published an article about the differences between traditional cost estimation and should-cost analysis, and the characteristics needed in order for a SCM to succeed. Successful SCM should reduce government costs without reducing the manufacturer's profit. Garber and Willen stated that when AT Kearney conducts should-cost analysis in its business, it sees total system costs realizing 5% to 15% savings and some subsystems realizing up to 40% savings (Garber & Willen, 2011).

The secret to AT Kearney's success is in five characteristics: bring best practices to bear, perform rigorous analysis, establish the right incentives, translate opportunities into tangible actions, and track performance against cost-reduction

plans (Garber & Willen, 2011). Garber and Willen's (2011) figure from the article best illustrates the five characteristics of successful should-cost reviews (see Figure 3).

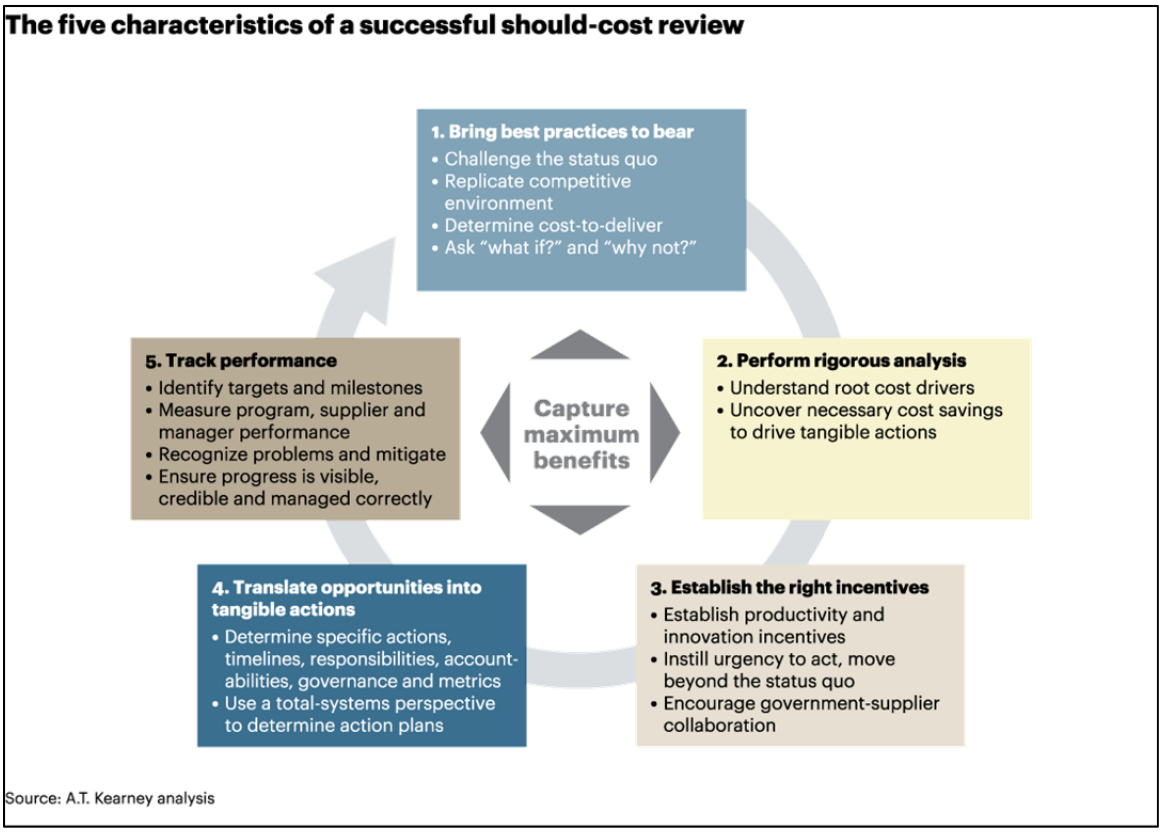


Figure 3. A. T. Kearney's Five Characteristics of a Successful Should-Cost Review
(Garber & Willen, 2011, p. 3)

7. *Should-Cost Templates* (December 12, 2011)

This memo published by Nancy Spruill, the Director of Acquisition Resources and Analysis and the DAB Secretary, is guidance on should-cost templates for all DAB board members and advisors. The attachment to the memo is a template for PEO and PM should-cost initiatives to be presented at all MDA decision meetings at Milestone B and later for ACAT I programs. It is also recommended for use by all ACAT II and III programs to be used at their Milestone B and later decision meetings.

The slide template requires the PM to report each should-cost initiative used in all phases of the program's lifecycle, as well as the amount of savings the PM expects to realize from the initiative. The template starts at FY0, indicating the current year, and continues through FY+3. This template makes no reference to any savings realized during prior years from should-cost initiatives (Spruill, 2011).

8. *An Analysis of Potential Impacts of Ashton Carter's "Should-Cost" Memorandum on Defense Contracting* (September 17, 2012)

E. Cory Yoder, a senior lecturer at Naval Postgraduate School, published a thesis of his research on the potential impacts of Carter's SCM portion of the BBPi. Yoder's research was conducted using a thorough literature review of policy documents and interviews with key individuals associated with the should-cost initiative. The primary focus of Yoder's research examined a potential conflict between the should-cost initiative and the definition and use of commercial items in Federal Acquisition Reform Act (FARA) and Federal Acquisition Streamlining Act (FASA) statutes. Yoder (2012) recommended fixing the potential conflict by making the definition of commercial items in statutes less broad.

Yoder's research also examined the differences between should-cost reviews as defined in FAR 15 and the initiative's version of SCM. He found that Carter's initiative expands beyond the scope of FAR 15, which mostly covers capturing overhead savings during contract negotiations. This conflict between the initiative and the FAR was found to cause confusion in stakeholders who initially believed Carter's intent was to merely revitalize an old practice. Yoder captured the essence of the conflict between the FAR and the initiative with Figure 4.

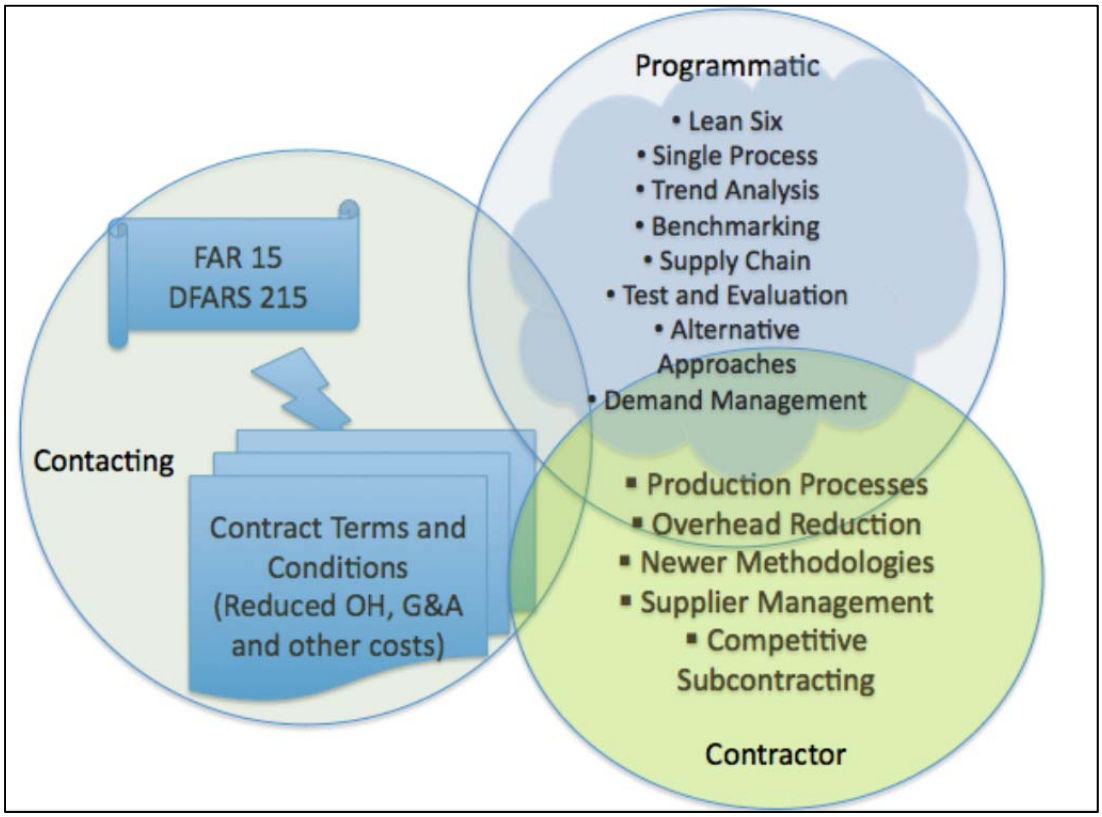


Figure 4. Should-Cost Consciousness in Carter's Initiative
(Yoder, 2012, p. 52)

Yoder's research also examined potential impacts of should-cost implementation due to how the DoD is currently structured. Yoder structured his analysis using his Three Integrated Pillars of Success (TIPS) framework: Personnel, Platforms, and Protocols. He defined *Personnel* as "having the right number and mix of personnel with the right credentials and experience that enables them to perform needed functions in DoD organizations" (Yoder, 2012, p. 55). Through interviews, it was revealed that the DCMA had an increase of 350 personnel and DCAA had an increase of 700 personnel to accommodate the should-cost initiative. Additionally, Yoder recommended that each program form Integrated Cost Analysis Teams (ICAT) composed of engineering, program management, pricing, and DCMA personnel for successful SCM implementation (Yoder, 2012).

Yoder's framework defined Platforms as referring to all "systems, including hardware and software systems, management information systems, report generation, and visibility to those who need them" (Yoder, 2012, p. 55). He discovered that the DCMA launched the Contract Business Analysis Repository (CBAR) designed to capture, in real-time:

- Forward pricing rate agreements/recommendations
- Latest contractor business systems
- Contractor Purchasing System Review (CPSR) data, deficiencies, and corrective action plans
- Company data including but not limited to
    - Cash flow
    - Profit and/or fee, and
    - Return on investment (ROI)
    - Results of recent contract negotiations (business clearance versus actual negotiation results)
    - Etc. (Yoder, 2012, p. 60)

Yoder's framework defined *Protocols* as "statutory, regulatory, and business rules and processes that guide the DoD through the acquisition and contracting process" (Yoder, 2012, p. 55). The outcome of his research determined that the initiative protocols have been structured to provide maximum flexibility to PMs and PEOs. However, Yoder highlighted the confusion of the name of the initiative and the conflict with the same term in FAR 15. The initiative directs SCM to gain efficiencies throughout the program, whereas FAR 15 refers primarily to cost analysis being conducted in support of contract negotiations. Yoder's recommendation to fix the confusion is to change the name of the initiative to *Cost Consciousness* (Yoder, 2012).

Yoder's research is the foundation for our case study research examining how one particular PEO and PM have implemented should-cost analysis into their organization. We plan to utilize Yoder's framework of Personnel, Platforms, and Protocols to analyze their implementation of the initiative into the organization.

C. CHAPTER SUMMARY

The literature reviewed provides the initial guidance from DoD and Army leadership for implementing SCM as part of the BBPi, the previous understanding of SCM as defined in the FAR, and some additional implementation recommendations from A. T. Kearney for successful should-cost reviews. The leadership guidance in each memorandum is broad enough to allow programs the flexibility to implement based upon individual program lifecycles. The U.S. Army has implemented SCM with one memorandum of guidance found in our literature research. Interviews with personnel from ASA(ALT) and PEO Aviation revealed some additional SCM implementation guidance.

Chapter III details our research methodology used to answer our primary and secondary research questions. The research methodology primarily consists of an extensive literature review, site visits to key organizations, and analysis of documents received during the site visits.

III. RESEARCH METHODOLOGY

The structure of our research is based on Robert Yin's (2009) *Case Study Design*. Yin's case study methodology utilizes the steps of plan, design, prepare, collect, analyze, and share (p. 2). The focus of the case study is to answer "how the Army has implemented SCM as part of BBP." Our research design is exploratory in nature because our literature review indicates that no other research has been conducted on how the Army has implemented SCM. We chose an exploratory case study research method to lay a foundation on the subject for other researchers to conduct follow-on research. The intent of our research is to create a baseline for Army should-cost implementation study.

A. DESCRIPTION OF RESEARCH

The data collection process began at the Naval Postgraduate School with an extensive literature review to analyze all previously published BBPi and SCM guidance and research found through open sources. The literature review was used to determine what pertinent information was available and identify the gaps that would need to be filled through other means to answer our research questions. We reviewed all published policy letters from USD(AT&L) and ASA(ALT) through September 2013. Analysis during the literature review led us to conclude that more information was needed to determine how PEOs and PMs have used published guidance to implement SCM at their levels.

To add more fidelity to how the Army implemented SCM, particularly at the PEO and PM levels, we conducted site visits to key organizations in the SCM chain. Site visits allowed us to gather additional documentation not easily found in open sources and to observe how each organization has implemented SCM under the current published guidance.

Site visits and data collection occurred at the following organizations:

- Office of the Under Secretary of Defense (Acquisition, Technology, and Logistics; USD[AT&L]), Acquisition Resource and Analysis (ARA)
- Office of the Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASA[ALT]), Performance Assessment and Root Cause Analysis (PARCA)
- PEO Aviation and subordinate PMs Utility Helicopter, and Unmanned Aircraft Systems (UAS)
- Defense Acquisition University (DAU)

Our research uncovered a large amount of documentation, including policy memorandums, PowerPoint slide presentations, and published articles, that needed to be analyzed. To structure our analysis of the documents, we utilized Glenn Bowen's "Document Analysis as a Qualitative Research Method" (2009). Bowen (2009) defined document analysis as "a systematic procedure for reviewing or evaluating documents—both printed and electronic (computer based and Internet-transmitted) material" (p. 27). Additionally, Bowen (2009) listed five functions of documentary material:

> First, as indicated above, documents can provide data on the context within which research participants operate—a case of text providing context, if one might turn a phrase.
>
> Second, information contained in documents can suggest some questions that need to be asked and situations that need to be observed as part of the research.
>
> Third, documents provide supplementary research data.
>
> Fourth, documents provide a means of tracking change and development.
>
> Fifth, documents can be analyzed as a way to verify findings or corroborate evidence from other sources. (2010, pp. 29–30)

Analysis of documents provided a wealth of information to our research and was used to complement our other research and analysis techniques.

The data collected during the site visits and document analysis was then analyzed against Naval Postgraduate senior lecturer E. Cory Yoder's (2012) Three Integrated Pillars of Success (TIPS) model. The TIPS model consists of *Personnel*, *Platforms*, and *Protocols*. *Personnel* refers to the people who are responsible for executing the process. *Platforms* refers to the systems, both hardware and software, that are required to process and share the data of a process. *Protocols* refers to the business rules, regulations, and laws that guide and regulate a process. Together personnel, platforms, and protocols form the pillars for any successful process.

Finally, our research is organized in five chapters. Chapter I contains an introduction, definition, background, history of SCM, and research questions and objectives. Chapter II consists of a literature review of the BBPi and SCM key documents and memos directing its implementation. In the literature review, we also analyze papers on PMs' perspectives on the BBPi and potential impacts of SCM on defense contracting. Chapter IV contains an analysis and findings from our Army/PEO case study. Finally, in Chapter V we provide an overall summary, conclusion, and recommendations for further research.

B. CHAPTER SUMMARY

In this chapter, we provided an overview of the methodology used in writing this report. We discussed using Yin's case study method, Bowen's document analysis method, and Yoder's TIPS model. The three models were used to plan and frame our data. In Chapter IV, we discuss the findings and analysis of our research.

THIS PAGE INTENTIONALLY LEFT BLANK

IV. FINDINGS AND ANALYSIS

The purpose of this chapter is to present and analyze the findings of our research in order to answer our primary research question: How has the Army implemented Should-Cost Management as directed by BBP 1.0 and BBP 2.0? We present all material found during our literature review, site visits, and document analysis. This chapter also answers our secondary research questions: What are the directives related to SCM from OSD, the Army, and the PEO; what is the organizational process for SCM in the Army; and what are the best should-cost practices found in this study to promulgate to the acquisition workforce at large?

In 2012, Yoder examined the potential impacts of should-cost implementation on defense contracting using his TIPS model (Yoder, 2012). We use this model as a structure from which to present and analyze how the Army has implemented SCM. Yoder's three pillars are personnel, platforms, and protocols. In a system, each of the pillars works in harmony with the others in order to achieve success.

Yoder (2012) defined *personnel* as having the right people in the right organizations, with the right skills in order to successfully execute the needed functions of the system. The personnel pillar not only includes the personnel inside the system, but also any stakeholders outside the system. We present the personnel pillar in the Army SCM system as the chain of command link between the PM and the AAE and stakeholders from DoD organizations that are stakeholders in the system.

Platforms are the systems used by the personnel to execute their functions (Yoder, 2012). These systems can be any hardware or software systems, reporting systems, information systems, and so forth. To present the Army's platforms in SCM, we focus on presenting the Army's new system built specifically to execute SCM, the Army Should-Cost Database, and do not discuss any typical software commonly used by the Army, such as Microsoft products.

Yoder (2012) defined *protocols* as "the statutory, regulatory, and business rules and processes that guide the DoD through acquisition and contract processes" (p. 85). We apply this pillar to the protocols we discovered that provide the greatest assistance to the Army's should-cost process. Protocols are presented at every level in the should-cost chain of command, from reporting protocols at the AAE level to should-cost development protocols at the PM level. Figure 5 shows the consolidated Personnel, Platforms, and Protocols for the Army's SCM process.

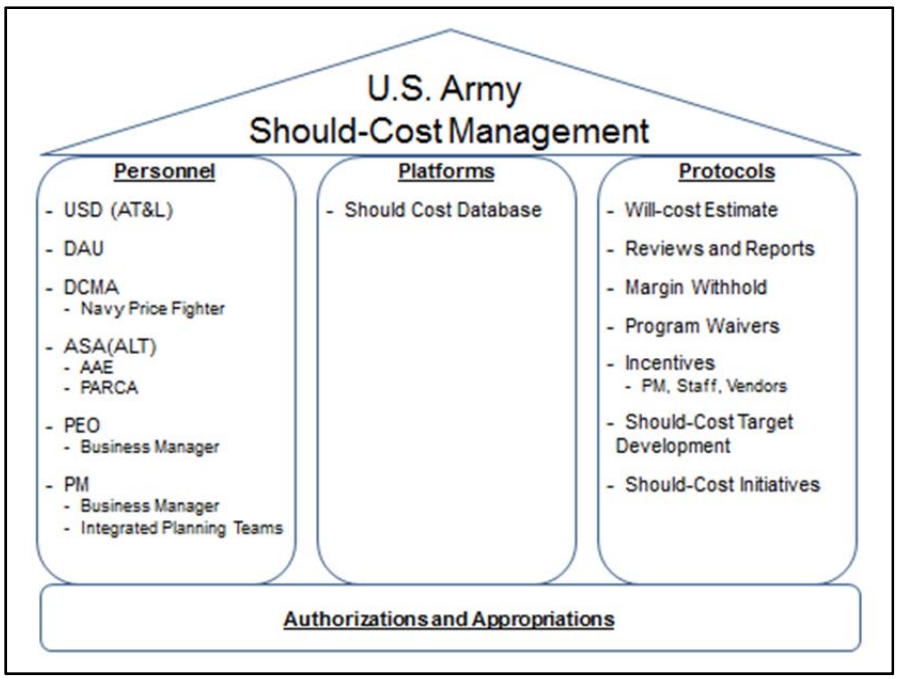


Figure 5. Army's Should-Cost Management Three Pillars of Integrative Success

A. PERSONNEL: THE FIRST PILLAR OF INTEGRATIVE SUCCESS

The personnel pillar in the Army's SCM process is a product of all the key personnel in the Army's should-cost chain of command, as well as all stakeholders outside the chain, such as DoD-level agencies or PEO and PM industry partners. Figure 6 is an illustration of the personnel in the Army's SCM process.

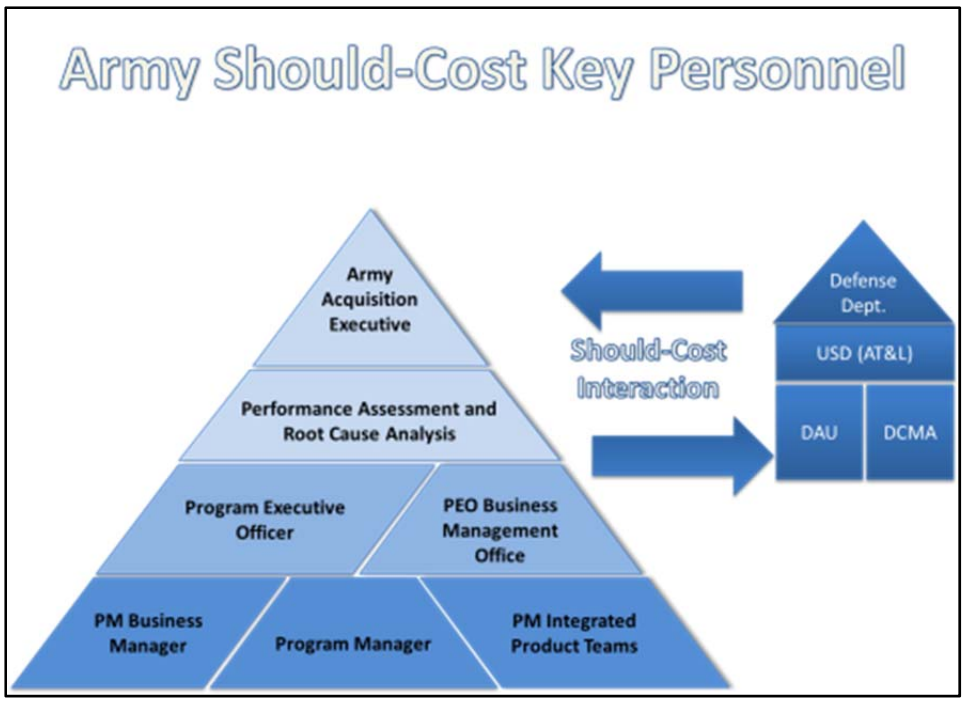


Figure 6. Army's Should-Cost Management Personnel Pillar

1. Office of the Secretary of Defense Agencies

a. Under Secretary of Defense for Acquisition, Technology, and Logistics (USD[AT&L])

The USD(AT&L) is the principal advisor and assistant to the secretary of defense as well as the deputy for all DoD acquisition matters. As legislated by Congress, the USD(AT&L) supervises and establishes policies for all DoD acquisitions, to include (1) procurement of goods and services, (2) research and development, (3) contract administration, and (4) developmental testing. In addition, the USD(AT&L) oversees all matters pertaining to logistics, maintenance, and sustainment support for all elements of the DoD and establishes policies for maintaining the U.S. defense industrial base (USD[AT&L], 2013). As the current USD(AT&L), Frank Kendall places great top-level emphasis on the BBP and SCM initiatives carried over from his predecessor, Ashton Carter. Kendall presides over all Defense Acquisition Executive Summaries (DAESs) and Defense Acquisition Board (DAB) program reviews personally to determine whether PEOs and PMs are actively pursuing and achieving should-cost targets for all ACAT I programs.

Frank Kendall is in the top tier of all the key personnel within the DoD's should-cost chain of command. All BBP and SCM directives flow down to all the services from him. Kendall, through a series of memos and published directives, laid out his focus areas where improvements needed to be made and provided specific guidance to PEOs and PMs to make the acquisition process more efficient. In his

BBP 2.0 memo, Kendall (2012) provided his 36 points geared towards improving efficiencies. Kendall emphasized the importance of making improvements continuously throughout the acquisition process. In regard to controlling costs, he specifically called for setting cost targets below the ICE and managing programs with the intent to actually getting to those targets (Kendall, 2012). In his letter to industry partners, Kendall (2013a) explained the harsh realities of sequestration and its effects on the industrial base and petitioned industry leaders to engage with the DoD to help find ways to minimize the impact of the current fiscal environment to both the DoD and industry. On April 24, 2013, Kendall (2013b) published his BBP 2.0 implementation directive and overarching principles. The principles are as follows:

- *Think*. BBP 2.0 is not dogma. "It is guidance subject to professional judgment" (p. 1). The acquisition workforce needs "to apply our education, training, and experience through analysis and creative, informed thought to address our daily decisions" (p. 1).
- *People.* All the policies and processes we have are of no use if we do not have the right people "who are experienced, trained and empowered to apply them effectively" (pp. 1–2). In the end, "qualified people are essential to successful outcomes, and professionalism, particularly in acquisition leaders, drives results more than any policy change" (p. 2).
- *Start with the basics*. Kendall emphasized the need to apply the basics of acquisition in everything acquisition professionals do simply because they work.
- *Streamline decisions*. All acquisition processes and oversight need to be streamlined in order to provide added value (Kendall, 2013b, pp. 1–2).

The following are the specific actions pertaining to SCM that Kendall (2013b) addressed in his BBP 2.0 Guidance and Actions, Attachment 2:

- Acquisition manager's performance evaluations should consider effective cost control including implementation of should cost management;
- ACAT I through III programs should have should cost targets in place by August 1, 2013, or the next milestone decision, whichever comes first;
- The Principal Deputy USD (PDUSD[AT&L]) will refine, clarify, and re-issue guidance from BBP 1.0 by June 1, 2013, to ensure

understanding, implementation, and reporting of should cost management. Guidance will cover acquisition of both products and services;

- PEOs and PMs will report should cost targets for all ACAT I programs and progress in achieving them at all Defense Acquisition Executive Summaries (DAES) and Defense Acquisition Board (DAB) program reviews;
- The Defense Acquisition University (DAU) will create a repository for best practices and create rapid deployment training for the acquisition workforce by August 1, 2013. DAU will work with the component acquisition executives (CAEs) to collect successful should cost studies and lessons learned. DAU will also improve and better integrate should cost management principles across all DAU curricula by November 1, 2013;
- The Defense Contract Management Agency (DCMA) will collaborate with the CAEs to implement an annual planning process to maximize the use of the DCMA Cost and Pricing Center capability for assisting program offices and PEOs with should cost activities by June 1, 2013 (p. 3).

b. Defense Acquisition University

According to BBP 2.0, the DAU is responsible for creating a repository for best practices and a rapid deployment training program for the acquisition workforce; working with CAEs to collect successful should-cost studies and lessons learned; and improving and integrating should-cost management principles across all DAU curricula (Kendall, 2013b). To this end, DAU professors have been compiling should-cost best practices from across all services and have incorporated SCM best practices and lessons learned into their Program Management Training (PMT) 401, Program Manager's Course. PMT 401 is a nine-week executive-level resident course designed to accommodate experienced acquisition professionals that have been selected for attendance due to their potential as leaders of major acquisition programs, integrated project teams (IPTs), and major command division chiefs. By statute (Defense Acquisition Workforce Improvement Act [DAWIA], 1990), PEOs, Deputy PEOs (DPEO), and ACAT I and II PMs and Deputy PMs (DPMs) are required to complete an advanced program management course beyond DAWIA Level III certification. PMT 401, combined with the DAU's Executive Program Manager's Course (PMT 402), meets this training requirement (Schoonover, 2012). The following are PMT 401's eight overarching themes that involve studies of real world acquisition challenges:

> (1) leading a program in a rapidly changing environment; (2) leading program management operations in different acquisition phases; (3) working effectively with higher headquarters; (4) working effectively with industry; (5) achieving and maintaining excellent customer relations; (6) applying appropriate tools for the evolving information environment; (7) working effectively with external organizations; and (8) leading joint and international programs. (Defense Acquisition University iCatalog, 2013)

Since September 2010, when BBP 1.0 first directed the use of SCM as a tool to drive down costs and promote efficiency and productivity in DoD acquisition programs, the DAU has been collecting should-cost best practices and lessons learned and sharing the information with future PEOs, PMs, and DPMs during their attendance at the PMT 401 course. The programs (case studies) studied by PMT 401 students execute various should-cost management strategies that are based on the individual characteristics of the program and its life-cycle phase. These strategies include

> 1) partnering with the contractor to identify and prioritize cost reduction opportunities through traditional operational research methods;
>
> 2) investing in automation to achieve manpower savings that reduce Total Ownership Costs;
>
> 3) conducting a comprehensive should cost analysis based on FAR Part 15 to inform negotiations prior to a major contract award;
>
> 4) maximizing competition through innovative contracting strategies;
>
> 5) obtaining Congressional approval for Multi-Year procurement based on savings justified in a Business Case Analysis;
>
> 6) partnering with the contractor to enable Economic Order Quantities (EOQ) from the prime and sub-tier suppliers;
>
> 7) optimizing manufacturing and assembly processes to more efficiently utilize facilities and labor;
>
> 8) insuring that government and industry share the benefits of favorable financing arrangements, based on the OSD cash flow model; and
>
> 9) stabilizing production rates and achieving learning curve and EOQ savings through sales to international allies and partner nations. (Husband, 2013, p. 1)

Figures 7 through 13 are examples of successful SCM strategies (best practices) that have been employed by various program offices. These strategies and lessons are promulgated to future PEOs, DPEOs, PMs, and DPMs during the DAU's PMT 401 course at Fort Belvoir, VA.

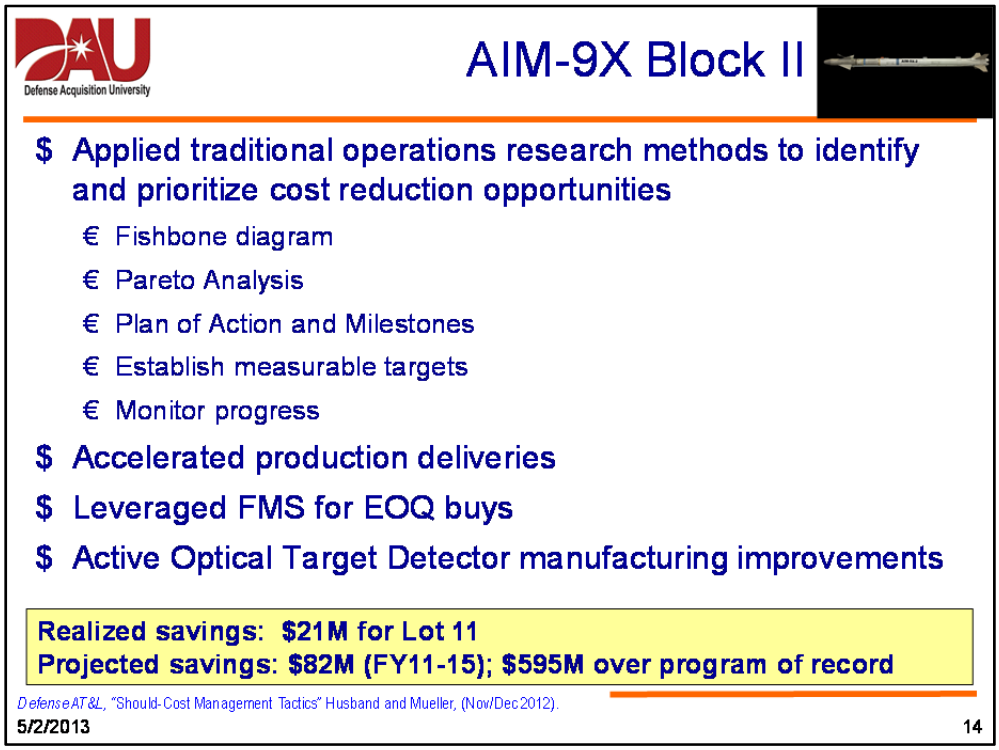


Figure 7. AIM-9X Block II
(Husband, 2013, p. 5)

Figure 7 shows an aggressive application of SCM strategies coupled with effective contract negotiations for the AIM-9X program. The initiatives resulted in $21 million in realized savings in 2011 for this program. The AIM-9X team was able to purchase 120 units for $21 million less than planned, and with the savings they were able to purchase an additional 28 units, reinvest in future cost reductions, and pay "pop-up" obsolescence bills (Husband, 2013). By utilizing traditional operations research methodologies such as fishbone diagrams, Pareto analysis, plan of action and milestones, establishing measurable targets, and monitoring progress, the PM was able to identify and prioritize cost reductions (Husband, 2013). The PM and his team used a three-step process shown in Figures 8, 9, and 10 to achieve cost savings.

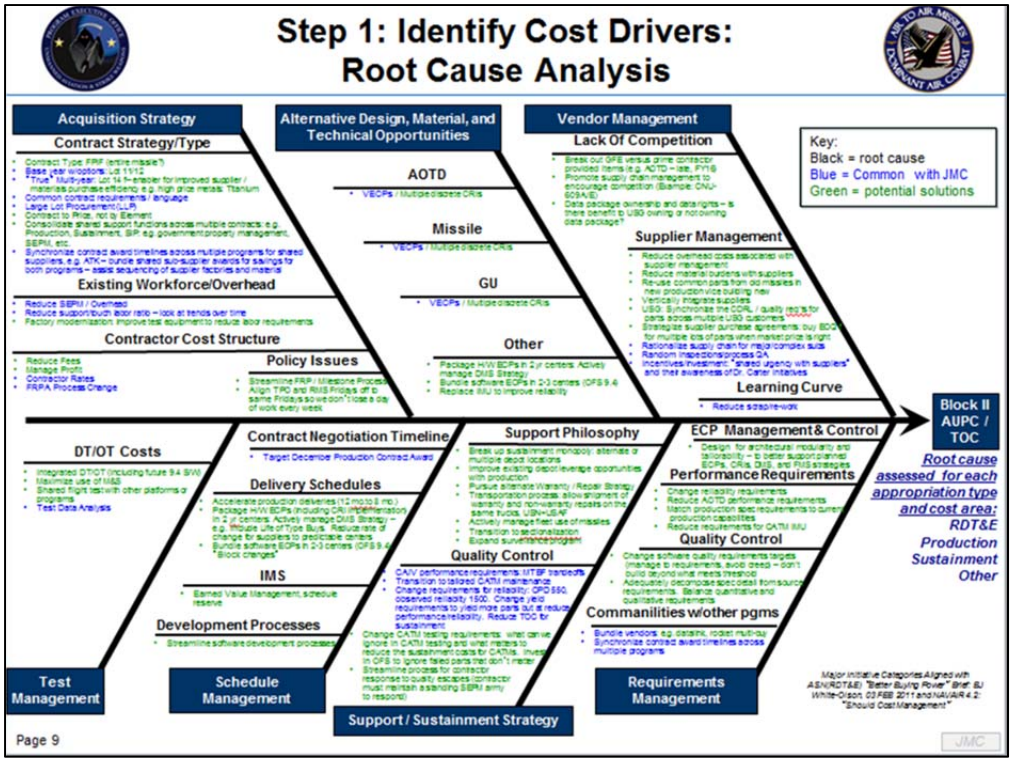


Figure 8. AIM-9X Block II Step 1: Root Cause Analysis
(Husband, 2013, p. 15)

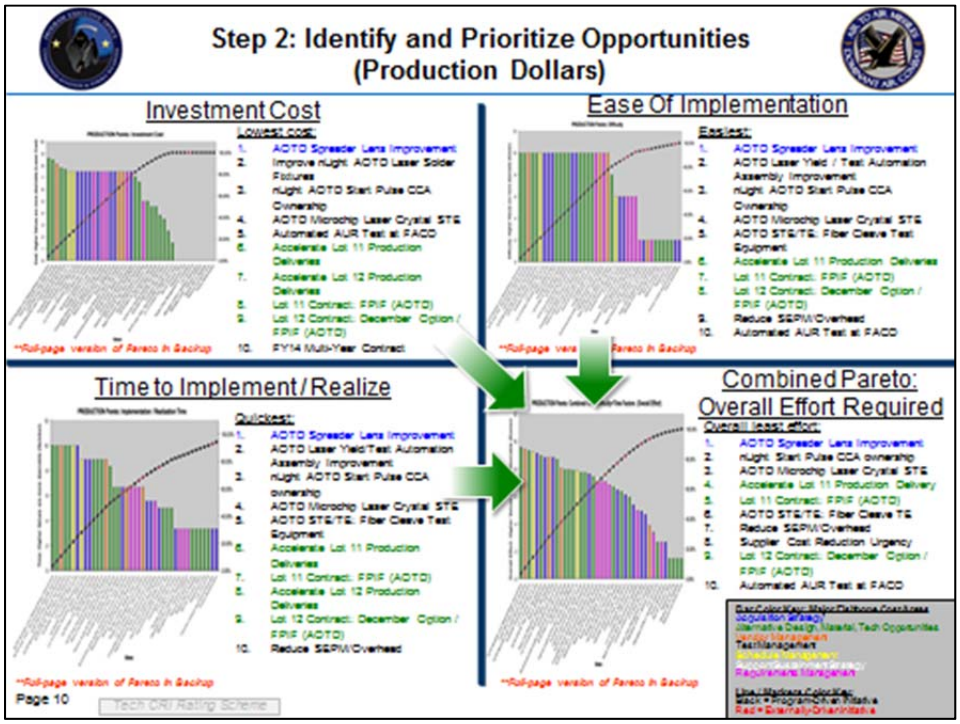


Figure 9. AIM-9X Block II Step 2: Identify and Prioritize Opportunities
(Husband, 2013, p. 16)

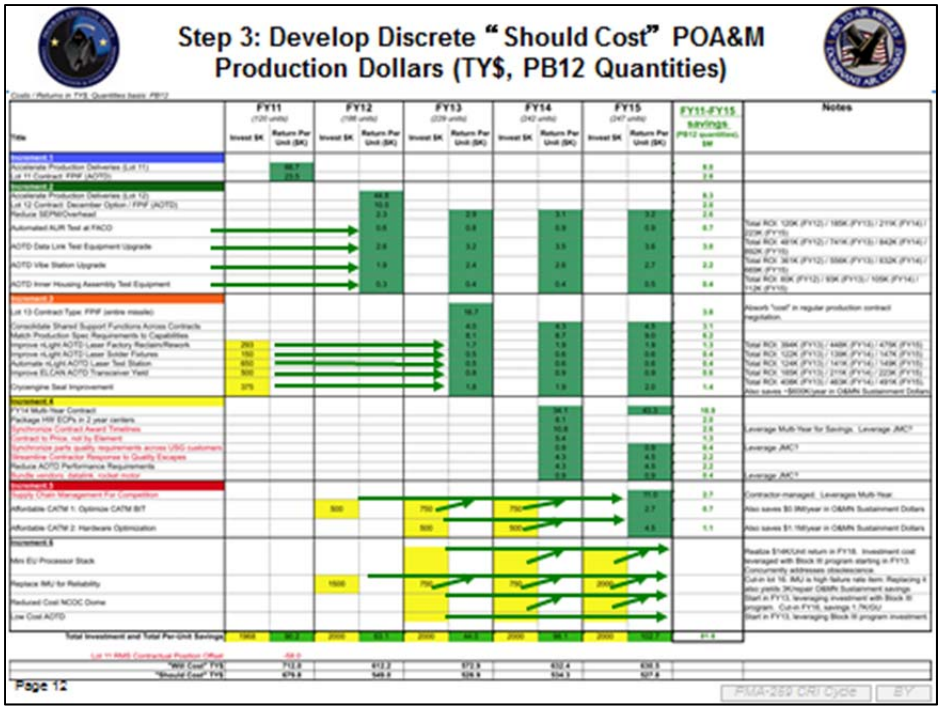


Figure 10. AIM-9X Block II Step 3: Develop Discrete "Should Cost" POA&M
(Husband, 2013, p. 17)

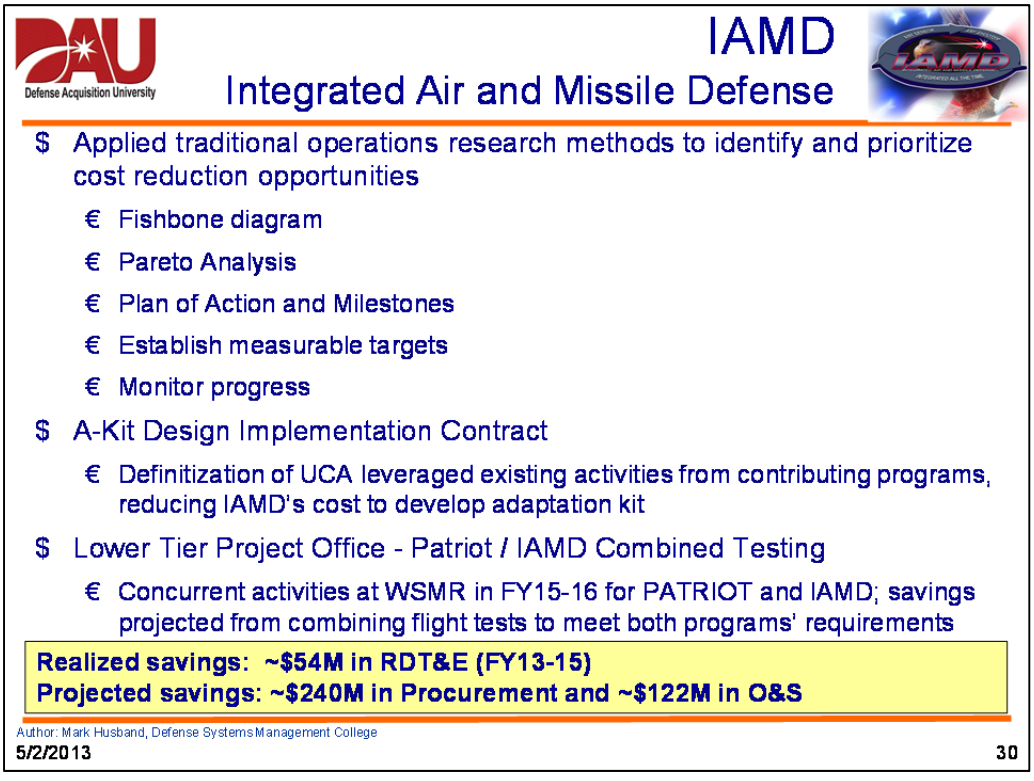


Figure 11. Integrated Air and Missile Defense (IAMD) Program
(Husband, 2013, p. 30)

Figure 11 illustrates the A-Kit contract savings that were realized through negotiation and definitization contracting action with the lead vendor for the IAMD A-Kit. Additionally, by integrating testing with the Lower Tier Project Office (LTPO)–PATRIOT, PM IAMD is projecting savings in the FY2015–2016 timeframe that are within target costs. Overall, projected savings for research, development, test, and evaluation (RDT&E) is $77 million, with $54 million realized to date through FY2015 (Husband, 2013).

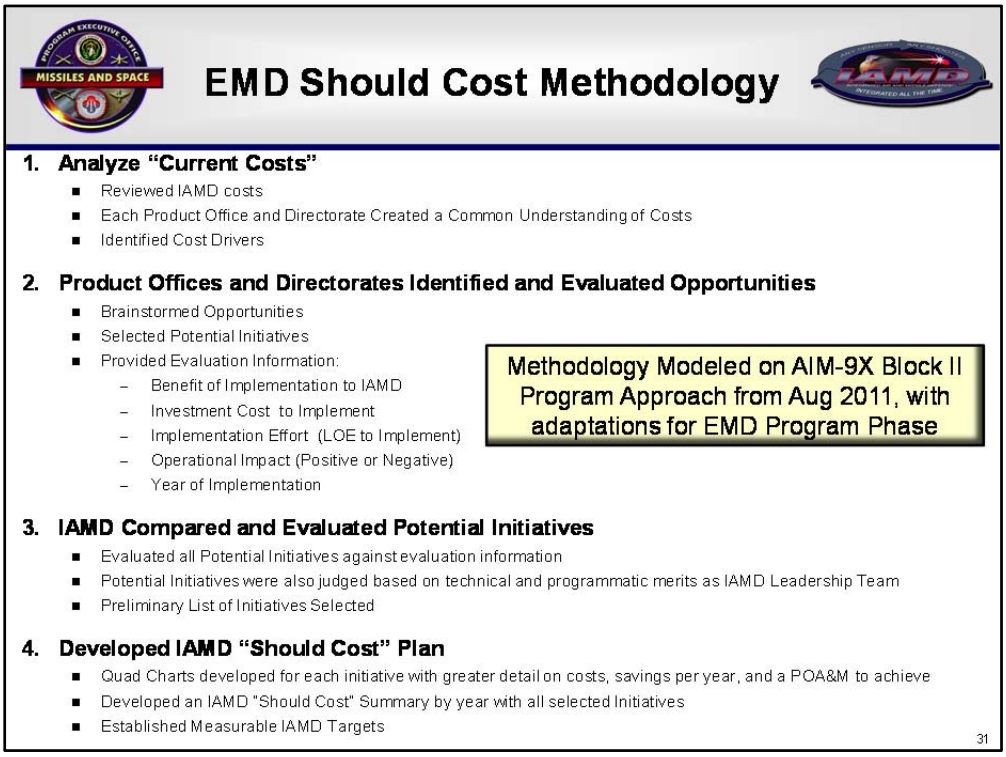


Figure 12. EMD Should-Cost Methodology
(Husband, 2013, p. 31)

Figure 12 illustrates how other PMs are modeling their should-cost methodology after the AIM-9X Block II approach with adaptations for the Engineering and Manufacturing Development (EMD) program phase. Figure 13 is a list of lessons learned reported by the CAEs and consolidated by the DAU.

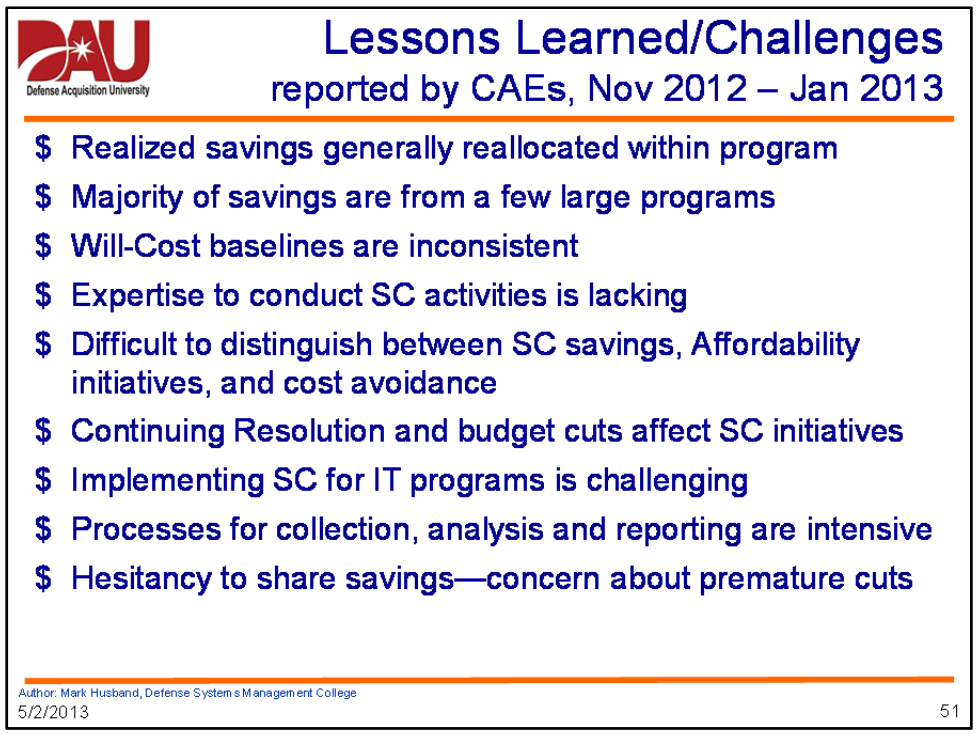


Figure 13. Lessons Learned/Challenges Reported by CAEs, Nov 2012–Jan 2013
(Husband, 2013, p. 51)

c. Defense Contract Management Agency

The DCMA is the DoD component that works with suppliers to ensure that all supplies and services are delivered on time, at cost, and according to performance specifications to all DoD, federal, and allied government agencies (Defense Contract Management Agency [DCMA], n.d.). The DCMA professionals serve as brokers and in-plant representatives for all federal and allied government purchasing agencies throughout the life of the contract. Prior to contract award, the DCMA provides advice and information to help develop solicitations, identify risks, select contractors, and write contracts. After contract award, the DCMA helps monitor contractors' performance and management systems to ensure that cost, performance, and schedules are in compliance with the terms of the contract(s) (DCMA, n.d.).

In 2013, Kendall directed the DCMA to implement an annual planning process to maximize the use of the DCMA Cost and Pricing Center capability to assist program offices with should-cost activities by June 1, 2013 (Kendall, 2013b). Yoder (2012) stated that

> in order to effectively implement should cost, program offices must include all relevant stakeholders into integrated cost analysis teams (ICAT), and the teams must be established early

> in a program, preferably during definition. … Within the Navy, ICATs are being accomplished by establishing integration in engineering, program management, and pricing teams—specifically, an integration that includes a DCMA partnership with Navy Price Fighters. (p. 55)

The DCMA coordinates with the Naval Supply System Command's Price Fighters to conduct price, cost, and engineering analyses for government customers. Formed in 1983, Price Fighters perform should-cost analyses on spare parts and weapon systems and provide Navy, DoD, and other federal agency buyers with quick and accurate data (https://www.navsup.navy.mil/navsup). During our site visit to PM Cargo, we learned that the DCMA worked with the Navy Price Fighters on behalf of PM Cargo to obtain accurate cost and pricing data to help the PM evaluate a proposal submitted by Robinson Helicopter Company prior to their fuel tank contract. Since Robinson did not sell helicopters or helicopter parts to other government agencies, there was no historical cost and pricing data available, other than its commercial catalog, for PM Cargo to evaluate the fairness and reasonableness of Robinson's proposal. Navy Price Fighters went into the Robinson manufacturing facility, with Robinson's consent, and simulated the manufacturing process to determine labor cost information and enabled PM Cargo to figure out what the fuel tanks should cost.

2. Assistant Secretary of the Army, Acquisition, Logistics, and Technology (ASA[ALT])

The ASA(ALT) office is responsible for many areas, and acquisition oversight is one of them. In this section we provide an overview of the two main offices we found to contribute to the Army's SCM implementation, the Army's Acquisition Executive (AAE) and the Army's Performance Assessment and Root Cause Analysis (PARCA) office.

a. Army Acquisition Executive (AAE)

According to Army Regulation 70-1 (Department of the Army [DA], 2011), when directed by the Secretary of the Army, the ASA(ALT) will also execute the duties of the AAE. "The Army acquisition executive is solely responsible for acquisition matters within the Department of the Army (DA) and is the single decision authority for all Army acquisition matters" (DA, 2011). The AAE is the first critical element in the Personnel pillar of integrative success. How the Army has implemented the SCM initiative begins with the duties and responsibilities of the AAE in the initiative.

During our literature review, we analyzed eight published memorandums from USD(AT&L) that discuss, direct, and clarify issues with the

implementation of the BBP and SCM initiatives. Should-cost implementation directives and guidance were published for the Component Acquisition Executives (CAEs), PEOs, PMs, and some OSD level agencies such as the DCMA and the DAU. All directives for the AAE were naturally focused around the expected duties and responsibilities of the top executive: establish SCM in Army acquisition programs, approve should-cost targets, monitor and oversee progress, report should-cost progress, and collect should-cost lessons learned. Table 2 is a consolidated list of all guidance found in the various policy implementation memos to the AAE on implementing SCM.

Table 2. Army Acquisition Executive Should-Cost Duties and Responsibilities

Should-cost Guidance or Tasking	Document Source
- Effective November 15, 2010, establish Should-cost targets as management tools for all ACAT I programs as they are considered for major Milestone Decisions - By January 1, 2011, establish Should-cost estimates for ACAT II and III programs as they are considered for MS decisions.	Carter, 2010c (directed implementation); Carter, 2011a (reinforced implementation)
Send an annual report of Should-cost progress beginning in November 2011.	Carter, 2011a
Develop inventive plans for PMs to reinforce and reward commitment to the Will-Cost and Should-cost management process.	Carter, 2011a
Should-cost targets for ACAT I programs and ACAT II programs that the AAE is the MDA for will be approved by the AAE.	Shyu, 2011
ACAT I through III programs should have Should-cost targets in place by August 1, 2013, or the next milestone decision, whichever comes first.	Kendall, 2013b
An acquisition manager's performance evaluation should consider effective cost control, including implementation of Should-cost management.	Kendall, 2013b
DAU will work with component acquisition executives (CAEs) to collect successful Should-cost studies and lessons learned.	Kendall, 2013b
Regardless of lifecycle phase, implement Should-cost management into all ACAT I, IA, II and III programs.	Kendall, 2013c
CAEs and PEOs will: 1) review and approve Should-cost targets, 2)monitor progress, and 3) direct or recommend allocation of realized cost savings as appropriate.	Kendall, 2013c
Determine own reporting requirements for effective Should-cost management oversight	Kendall, 2013c

During our site visit, we learned that the Deputy Assistant Secretary of the Army for Plans, Programs, and Resources (DASA[PPR]) and its subordinate office, Performance Assessment and Root Cause Analysis (PARCA), were delegated duties and responsibilities to assist the AAE with management and oversight of the SCM initiative.

b. Performance Assessment and Root Cause Analysis (PARCA)

Every major process or operation requires a staff to manage the implementation and track compliance. The establishment of the PARCA office was

first directed in public law. The WSARA (2009) directed the use of applicable personnel and resources towards conduct of performance assessments and root cause analysis. The performance assessments are defined in the WSARA (2009) as an evaluation of

> (1) The cost, schedule, and performance of the program, relative to current metrics, including performance requirements and baseline descriptions; (2) The extent to which the level of program cost, schedule, and performance predicted relative to such metrics is likely to result in the timely delivery of a level of capability to the warfighter that is consistent with the level of resources to be expended and provides superior value to alternative approaches that may be available to meet the same military requirement. (§ 103c)

Additionally, WSARA (2009) defines root cause analysis as

> an assessment of the underlying cause or causes of shortcomings in cost, schedule, or performance of the program, including the role, if any, of—
>
> (1) unrealistic performance expectations;
>
> (2 unrealistic baseline estimates for cost or schedule;
>
> (3) immature technologies or excessive manufacturing or integration risk;
>
> (4) unanticipated design, engineering, manufacturing, or technology integration issues arising during program performance;
>
> (5) changes in procurement quantities;
>
> (6) inadequate program funding or funding instability;
>
> (7) poor performance by government or contractor personnel responsible for program management; or
>
> (8) any other matters. (§ 103d)

Should-cost analysis is a process that the OSD and Army leadership expect to be incorporated into every program, regardless of where that program is in the lifecycle. Should-cost initiatives are to be instituted in order to achieve current year savings below the budgeted base line. This management process is effectively becoming a significant element in managing a program. Who better to manage the day-to-day activities of the should-cost management initiative than the office responsible for program process and root cause analysis?

The Army PARCA office has been delegated the management responsibility of collecting, tracking, analyzing, and reporting all elements of the SCM initiative. PARCA is essentially the main point of entry of SCM data between

the AAE and the PEOs and PMs. Table 3 is a complete list of all published PARCA duties and responsibilities with regard to the SCM initiative.

Table 3. Army PARCA Should-Cost Duties and Responsibilities

PARCA Function	Should-cost Guidance or Tasking	Document Source
Collect / Track	Initial and updated Will-cost estimates and Should-cost estimates must be provided to the Army DASA (PPR) PARCA office…	Shyu 2011; Shyu 2013
Collect / Track	Receive notification letters from PEOs when updates to approved Should-cost estimates are made to ACAT II and III programs where the PEO is the MDA.	Shyu 2011
Collect / Track	Collect and process Should-cost estimate requirement waiver requests	Shyu 2011
Collect / Track	Receive monthly reports from PEOs on any release of delta dollars (margin withholds)	Shyu 2011
Collect / Track	Track the execution of margin release	Shyu 2013
Collect / Track	PEOs are required to use the PARCA developed Should-cost database to capture information on their initiatives, exemptions, and margin releases.	Shyu 2013
Collect / Track	Collect should-cost case studies from PEOs and identify based on best practices, which should be included in the DAU repository.	Shyu 2013
Analyze	Delegated review authority for all initiatives, exemptions, and margin release. PARCA will report updates to the Principle Deputy on a monthly basis.	Shyu 2013
Report	Present Should-cost management waiver requests to the Principal Deputy for approval during the monthly reviews.	Shyu 2013
Report	Send a consolidated report to the ASA(ALT) showing programs using dollars within the delta between the Will-cost and Should-cost estimates.	Shyu 2011
Report	Prepare reports that will be presented based on inputs into the Should-cost database.	Shyu 2013
Report	Beginning 01 August 2013, report total active ACAT I, II and III programs, programs with and without should-cost initiatives, and the number of requirement waivers: 1) monthly to the Principal Deputy and 2) quarterly to OSD	Shyu 2013

In FY2012, the Army PARCA office was instrumental in the continued implementation of SCM. One of the key functions that PARCA executed was to help educate the PEO and PM staff on SCM. PARCA conducted on-site visits and workshops at each PEO to assist with their implementation (Shyu, 2012). On site, face-to-face education of the SCM initiative is an effective way to show the AAE's emphasis on the new initiative and that it is taken seriously and executed properly. In addition to the workshops, there were two forums created to assist with education of the should-cost initiative, tracking implementation, and sharing of lessons learned.

The Army PARCA established two habitual meeting forums in which to track and share lessons learned from SCM initiatives: monthly IPTs with the PEO's business managers and quarterly status reviews (Shyu, 2012). The monthly IPTs are utilized to discuss each PEO's should-cost implementation plan, issues, challenges, and successful strategies and initiatives (Shyu, 2012). PARCA's IPT is a forum used to assist with educating the acquisition community on SCM, continually assisting with implementation of SCM, and providing a forum for PEOs' staff to continue improvement in their own should-cost by hearing lessons learned from

other offices. PARCA's quarterly reviews provide a forum to track the continued improvement and execution of should-cost initiatives.

PARCA's implementation actions led it to develop a Microsoft Access database in FY2012 (Shyu, 2012). This database provides the complete chain from PARCA to the PMs to collect, track, analyze, and report should-cost initiatives. During our site visit, we had the opportunity to view the database. This database is the key platform that provides a critical should-cost data link between the AAE's PARCA office and the PEOs. We provide a review of this database later in this chapter.

PARCA's implementation efforts provided the critical link between the AAE and the PEOs. According to Shyu (2012), senior Army leadership support and reinforce SCM from the AAE down to the lowest level. Our analysis shows that PARCA's activities directly show the AAE's SCM support and the continued reinforcement that SCM will be implemented and utilized indefinitely.

3. Program Executive Officer (PEO) Aviation

The PEO's mission is to

> provide executive level management of all assigned acquisition programs. In that capacity, the PEO provides overall direction and integration of assigned weapon system programs and assures effective interface with Headquarters, Department of the Army, as well as other services, combat system developers, and supporting commands and activities. He optimizes the weapon systems interoperability and standardization and exercises executive level authority and responsibility for program management, technical and quality management, logistics support and readiness management activities of assigned weapon systems. (PEO Aviation, n.d.)

In regard to SCM, Kendall, in his BBP 2.0 (2013b), directed PEOs and PMs to report should-cost targets for all ACAT I programs and progress in achieving them at all Defense Acquisition Executive Summaries (DAES) and Defense Acquisition Board (DAB) program reviews.

PEO Aviation has been meticulously tracking the BBP initiatives and reporting on status of all ACAT I programs at DAES and DAB reviews as directed. Included in the reports to DAES and DAB are metrics addressing how SCM has been implemented, incentives and recognition mechanisms, and lessons learned in accordance with the BBP directives (Shyu, 2013). ACAT II programs are reported to the Deputy for Acquisition and Systems Management (DASM) and ACAT III programs are reported to the PEO.

PEO Aviation, under the leadership of Major General (MG) Crosby, has fully embraced and implemented the guidance and directives in the BBP and SCM. During our site visit, we learned that the PEO holds monthly reviews with all O-5PMs of ACAT II and III programs within the portfolio. PEO Aviation consists of eight PM offices: PM Apache Attack Helicopter, PM Armed Scout Helicopter, PM Aviation Systems, PM Cargo Helicopter, PM Fixed Wing Aircraft, PM Non-Standard Rotary Wing Aircraft, PM Unmanned Aircraft Systems, and PM Utility Helicopters. Shyu (2013) has directed that all PEOs utilize the PARCA-developed Should-Cost Database to capture their should-cost initiatives, exemptions, and margin releases by October of each fiscal year (FY) and conduct updates quarterly or when there are changes to the program (Shyu, 2013).

PEOs are required to report on their cost target and progress against those targets, plans of action, milestones for their major should-cost initiatives, and the projected and realized savings (Shyu, 2013). PEO Aviation is in compliance with this directive. Figure 14, from PEO Aviation's DAES brief in February 2013, illustrates some of its BBP and should-cost initiatives. PEO Aviation is tracking the BBP 2.0 initiatives and conducting monthly reviews of all of its ACAT I-III programs with almost 70% of its initiatives completed.

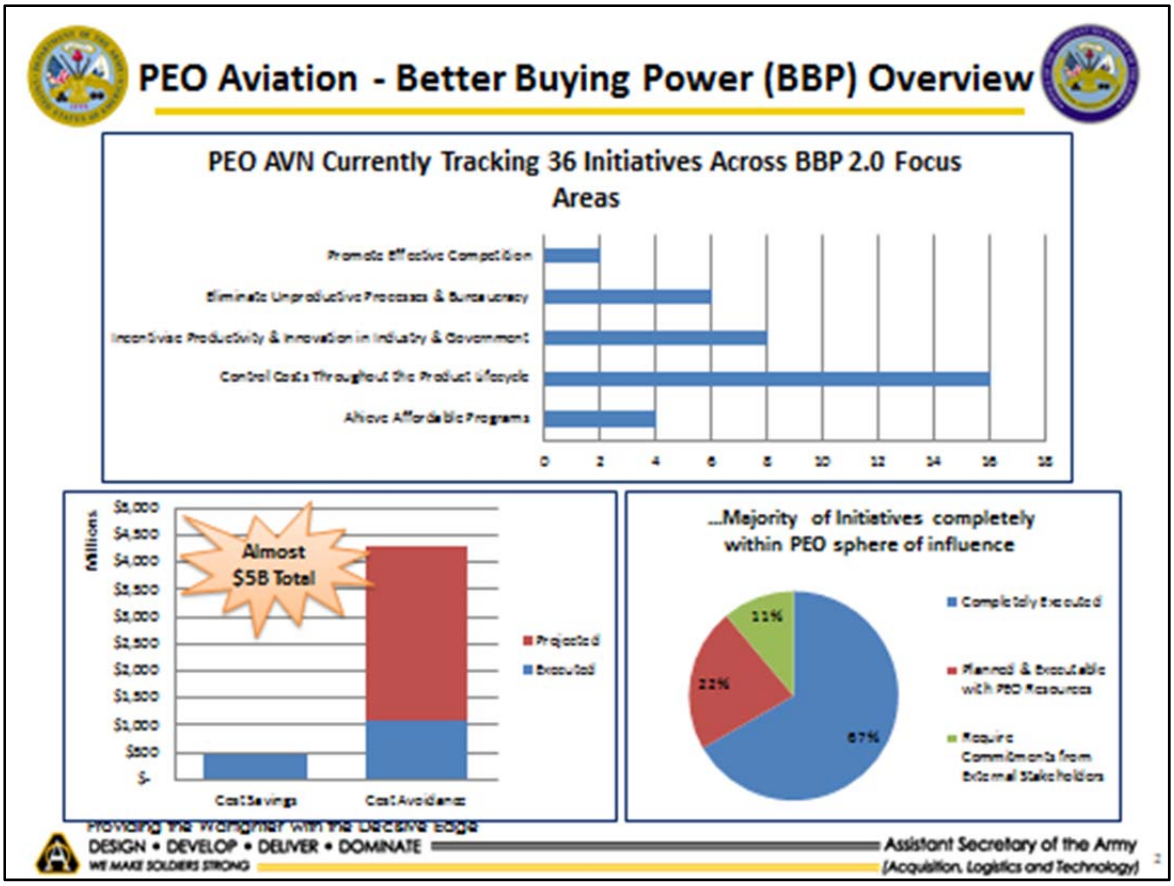


Figure 14. PEO Aviation BBP Overview
(PEO Aviation, 2013)

PEOs are required to submit an exemption for programs that are not able to obtain an initiative. In accordance with the *Implementation of Should-Cost Management* memo (Shyu, 2013), there are two categories that qualify for an exemption: a program has less than $3 million remaining per year, or it is a joint program with another service as the executive agent (Shyu, 2013). If exemption information changes, the PEO will notify PARCA within 30 days and must submit either a new exemption or initiative, if needed, within 90 days (Shyu, 2013). PEO Aviation has delegated responsibility for data entry into the Army Should-Cost Database to the PEO Aviation business manager, which is in compliance with Shyu's memo (2013). Table 4 is a complete list of all published PEO duties and responsibilities with regard to the SCM initiative.

Table 4. PEO Aviation Should-Cost Duties and Responsibilities

Should-cost Guidance or Tasking	Document Source
PEOs will ensure PMs implement Should-cost management by identifying opportunities for savings and developing Should-cost estimates for their ACAT I, II, and III programs. Beginning in FY 2014, Should-cost management objectives will be included in Acquisition Managers employee contribution planning and Officer's major performance objectives	Shyu, 2013
PEO managed ACAT II and III programs will continue to develop and have independent verification of Will-cost estimates prior to milestone decision	Shyu, 2013
PEOs are required to use the PARCA developed Should-cost database to capture information on their initiatives, exemptions, and margin release. Initiatives and exemptions are to be entered into the database by October of each FY and updated on a quarterly basis or when program changes occur. Margin releases are expected to be entered once the initiative has been successful and the PEOs are requesting the withhold	Shyu, 2013
PEOs and PMs are required to report on their cost target and progress against those targets, plans of action, milestones for major Should-cost initiatives, and their savings projected and realized	Shyu, 2013
PEOs will include in their DAES briefings, metrics addressing how Should-cost has been implemented within their portfolios, incentive and recognition mechanisms in place, and lessons learned	Shyu, 2013
PEOs are required to submit an exemption for programs that are not able to obtain an initiative. There are two categories that qualify a program for an exemption: program has less than $3M remaining per year or it is a joint program with another Service as the executive agent	Shyu, 2013
PEOs will withhold the difference between the funds distributed and the program budget baseline for programs for which they are the MDA; margin releases will be allocated to fulfill unfunded requirements, to accelerate acquisition, and to fund cost reduction. PEOs are required to complete margin release forms that will identify the distribution of funds and will require approval based on the MDA authority. The PEOs will be the decision authority for the programs where they are the MDA.	Shyu, 2013
PEOs will delegate responsibility for data entry into the Army Will-cost/Should-cost database	Shyu, 2013 - Business Rule 1
PEOs will be responsible for "verifying" data entered into the Will-cost/Should-cost database	Shyu, 2013 - Business Rule 4
PEOs will upload files to AKO folder by the 15th of every month so PARCA can review and upload to AKO by the 30th of every month. This process will enable the Affordability IPT held at the PARCA to review most current will cost/should cost data floated up from the PMs/PEOs	Shyu, 2013 - Business Rule 9
PEOs have approval authority for ACAT Is and below and review and verification authority for ACAT I programs. Ms. Shyu has approval authority for ACAT Is, and override authority for ACAT Is and below. PARCA will review all initiatives, exemptions, and margin release to concur	Shyu, 2013 - Business Rule 10
Ensure the database has a hierarchy of all programs to effectively roll up initiative and exemption funding values to the PEO level.	Shyu, 2013 - Business Rule 20
PEOs will recertify exemption status quarterly. If any exemption information changes, the PEO/PM must notify PARCA within 30 days and must submit either a new exemption or initiative within 90 days if necessary	Shyu, 2013 - Business Rule 21
If any exemption information changes, the PEO/PM must notify PARCA within 30 days and must submit either a new exemption or initiative if necessary within 90 days. PARCA will inform Ms. Shyu of their status and provide any necessary instructions for moving forward. The 90 day clock for submitting changes for an exemption will begin once the PEO/PM identifies the change in the system.	Shyu, 2013 - Business Rule 22
For exemption and margin release approval (ACAT IIs and below), the approval authority (PEO) must print and sign the database generated form. The document must then be scanned and attached to the initiative in the database and the approver must update the status manually	Shyu, 2013 - Business Rule 27
PEO shall validate a monthly report in the should cost database showing the amount of funds that have been released and the purpose of the release. A consolidated monthly report will be sent to the Principle Deputy and the AAE showing all programs margin with-hold and release	Shyu, 2013 - Attachment 3
All ACAT II and III programs are required to develop and have independent verification of will cost estimates prior to milestone decisions. As with ACAT Is, the will cost estimate will be used as the basis for all budgeting and programming decision. All metrics and reporting external to the Department will be based on the will cost estimate.	Shyu, 2011
All ACAT II and III programs will have MDA approved should cost execution targets. PEOs will have approval authority for the ACAT II programs delegated to them and ACAT III programs and will report annually on their progress to ASA(ALT).	Shyu, 2011
PEOs and PMs of major defense acquisition programs (MDAPs)and major automated information system programs will report should cost targets and progress in achieving them at Defense Acquisition Executive Summary (DAES) and DAB reviews. PEOs will provide, via the DAES briefings, quantitative metrics addressing how should cost has been implemented within their portfolios, incentive and recognition mechanisms in place, and lessons learned. PEOs will also provide case studies of should cost initiatives to the Defense Acquisition University for use in its training materials and BBP repository established to collect and share best practices.	Kendall, 2013 - *Should Cost Management in Defense Acquisition,* memo - DRAFT

a. PEO Business Management Office (BMO)

The BMO is responsible for facilitating operations and providing oversight of the PEO's financial resources to ensure transparency and accountability. The BMO's primary focus areas consist of program analysis, budget

execution, cost analysis, and special programs oversight (Program Executive Office [PEO] Ground Combat Systems [GCS], n.d.). In regard to should-cost, the BMO is the central point of contact and the collection point for all should-cost and BBPi data. The BMO collects and consolidates all should-cost data from the PMs and populates the information into a centralized database created by the PARCA Office of ASA(ALT). The information is collected from the PMs and reported to ASA(ALT) bi-annually or as required.

4. Program Manager

a. PM Should-Cost Duties and Responsibilities

PMs are critical to the implementation of SCM. Acquisition program management positions (PMs at the O-6/GS-15 or broadband/pay equivalent and product managers at the O-5/GS-14 level) are centrally selected from a CSL-key billet list (DA, 2011). PMs are assigned to programs at Milestone A or prior to program initiation at Milestone B. PMs must execute a tenure and program management agreement and receive formal charter from the AAE. The charter is the PMs' authority to command the Program Management Office (PMO) that they are assigned to. Having charter, the PMs have a clear line of authority extending to the AAE, thus making the PMs responsible for all actions that happen within a program to include implementation of should-cost management.

The PM level is where SCM is planned and executed. PMs are responsible for leading, planning, and executing all aspects of SCM on all ACAT I, II, and III programs. Should-cost management is a holistic way for PMs to reduce costs across the lifecycle of their programs. Should-cost targets are developed by PMs using the program's will-cost estimate as the budgeted base, applying specific and measurable initiatives for savings measured against that base. PM UAS accomplished its should-cost planning and execution using a variety of personnel that included the PM and staff, cross-functional program management IPTs, and a wide variety of Army and DoD organizations and assets.

Table 5, Should-Cost Guidance or Tasking, lays out the specific tasks required of Army PMs to implement SCM in their programs. The tasks were developed based on Carter's initial guidance found in BBP 1.0 and later refined and updated in Kendall's BBP 2.0. The AAE further refined and promulgated her guidance to Army PMs in the memo *Implementation of Should-Cost Management* (Shyu, 2013).

Table 5. Program Manager Should-Cost Task List

Should-cost Guidance or Tasking	Document Source
PMs implement Should-cost management by identifying opportunities for savings and developing should-cost estimates for their ACAT I, II, and III programs, NLT 1 Aug 2013. Should-cost targets will be broken out by appropriation type. Cost savings that span multiple years, when it is reported at the end of the year, it should be reported as still in progress.	Shyu, 2013
Will-cost and Should-cost estimates are required for all ACAT I, II, and III milestone reviews. All reviews must be vetted by a cross functional team to include cost, financial management and budget, contracting, engineering, logistics, and programming representatives.	Shyu, 2013 - attachment #3
PMs with multiple active subprograms under one program, should have a baseline for each program	Shyu, 2013 - Business Rules
Beginning in 2014, should-cost management objectives will be included in acquisition managers employee contribution planning and the officer's major performance objectives.	Shyu, 2013
Assist the development of Will-cost estimates through CAPE, Independent Cost Estimates, Department of the Army Service Cost Position (ACP), or Program Office Estimates (POE).	Shyu, 2013
Develop and have independent verification of will-cost estimates prior to milestone decisions for ACAT II and III programs.	Shyu, 2013
Input should-cost initiatives, exemptions, and margin release into the PARCA should-cost database by October each year and updated on a quarterly basis or when changes occur. PEO responsible for verifying the data entered.	Shyu, 2013
PMs shall input should-cost initiatives, exemptions, and margin release into the PARCA should-cost database by October each year and updated on a quarterly basis or when changes occur. If initiatives are captured as part of another effort such as Better Buying Power (BBP), value engineering change proposal (VECP) or Lean Six Sigma (LSS) then the user should indicated this where necessary. The PEO is responsible for verifying the data entered.	Shyu, 2013
Request margin release from the PEO through PARCA for withhold funding once initiatives have been successful and realized savings have occurred. Margin release will be allocated to fulfill unfunded requirements, to accelerate acquisition, and to fund cost reduction.	Shyu, 2013
PM are required to report on their should-cost targets and progress against those targets at Defense Acquisition Executive Summary (DAES) and Defense Acquisition Boards for MDAP programs. PMs will include in the plans of action and milestones for major Should-cost initiatives and their annual savings projected and realized.	Shyu, 2013
Provide Should-cost case studies to the PEO for submission to PARCA for review. PARCA will identify based on best practice, which case studies should be included in the Defense Acquisition University (DAU) repository.	Shyu, 2013
Submit exemption requests to the PEO for programs that are not able to obtain Should-cost initiatives. There will be two categories that qualify a program for an exemption: If a program has less than 43M remaining per year or it is a joint program with another service as the executive agent.	Shyu, 2013
PMs will recertify exemption status quarterly. If any exemption changes, the PEO/PM must notify PARCA within 30 days and must submit new exemption or initiative within 90 days if necessary.	Shyu, 2013 - Business Rules
Develop inventive plans for PMs to reinforce and reward commitment to the Will-Cost and Should-Cost management process.	Carter, 2011a

The task list is not all-inclusive but includes the framework and guidance from the AAE to PMs to successfully implement SCM. We discovered that all should-cost tasks are not all consolidated into any single document for ease of reference. The tasks are found in multiple memorandums for record, business rules, and other forms of correspondence. This is for two reasons: 1) SCM is an evolving practice and has required additional guidance, and 2) the guidance is intentionally vague at the executive level so PMs can interpret the guidance to fit their specific programs within their current lifecycles. According to Kendall (2013b), “BBP 2.0, like BBP 1, is not rigid dogma—it is guidance subject to professional judgment” (p. 1). The guidance and tasks are important for successful implementation but do not motivate the workforce to achieve the “stretch” goals that are required of should-cost. That is where PM leadership comes in.

Leadership is the key element for implementing should-cost initiatives. Leadership and priority-setting are critical for PMs to implement should-cost

practices into their programs. Leaders set the purpose and direction through a vision to their organizations. Leaders must set the tone and motivate their employees, as with our PM UAS example. Colonel Tim Baxter, PM UAS, said,

> I have challenged the Unmanned Aircraft Systems (UAS) leadership team to become experts in BBP and to continually to look for opportunities to improve program efficiencies. From our analysis, the Project Office has embraced the Office of the Secretary of Defense guidance on BBP across our programs. (Program Office Unmanned Aircraft Systems [PM UAS], 2012, p. 2)

In the same article, COL Baxter further stated, "We have worked hard over the last year and half to instill a ***cost culture*** across the Project Office and have focused on controlling and reducing cost while providing best value to the warfighter" (p. 2). COL Baxter's emphasis and personal leadership has been instrumental in his organization's implementation of SCM. Leadership is the key to any organizational change and is critical to adding SCM and cost consciousness into the organizational culture. Our analysis of the Army's implementation of SCM leads us to the conclusion that leadership and culture will determine the future of SCM.

b. Integrated Project Teams

Program Management Integrated Project Teams (IPTs) form the nucleus of the personnel pillar of should-cost. Implementation of SCM takes trained professional personnel who are empowered to apply their skills effectively. The trained personnel are organized as members of IPTs. IPTs are diverse groups of people formed to accomplish any number of tasks. IPTs consist of cross-functional team members from engineering, program management, contracting, and other disciplines involved in a program. IPTs have been in use with the government since the 1980s. IPTs were originally created to prevent "stovepiping" of organizational efforts and to create synergy in programs. In describing IPTs, the GAO (2001) stated,

> The essence of the IPT approach is to concentrate in a single organization the different areas of expertise needed to develop a product, together with the authority and responsibility to design, develop, test, and manufacture the product. ... Under the IPT approach, each team possesses the knowledge to collaboratively identify problems and propose solutions, minimizing the amount of rework that has to be done. When this knowledge is accompanied by the authority to make key product decisions, IPTs can make trade-offs between competing demands and more quickly make design changes, if necessary. (p. 11)

IPTs evolved as a more holistic way of doing business that brought all representatives of the various stovepipes together. DoD defines three basic levels of IPTs for use in weapon system acquisitions: an overarching, working, and program level. The amount and type of IPTs depend on the complexity and scope of a given program. The more complex the program, the more IPTs it will typically have. Figure 15 shows the three levels of IPTs and their relationship.

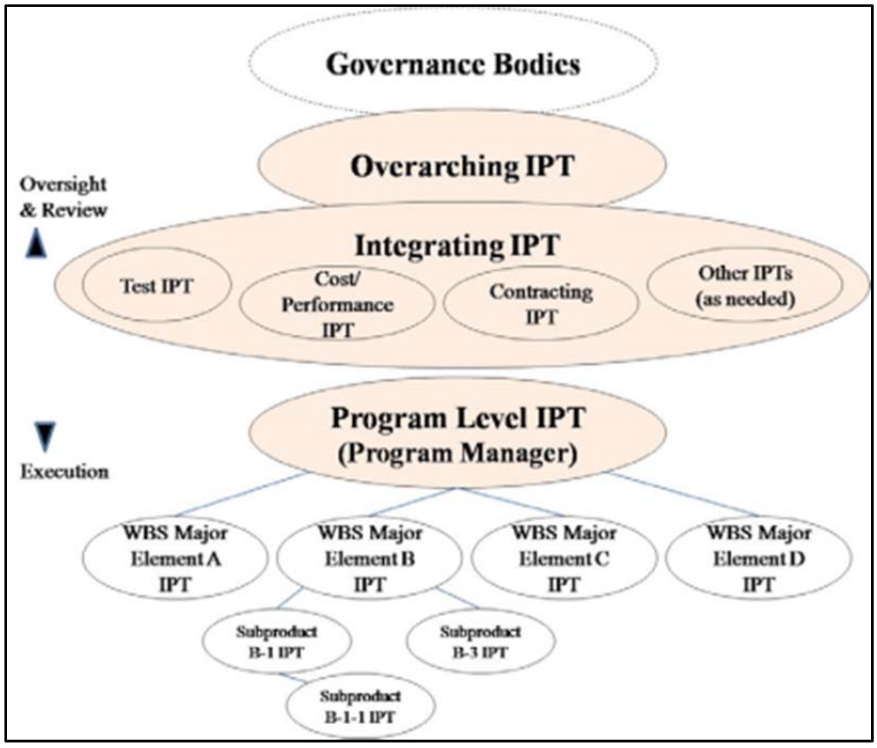


Figure 15. DoD IPT Levels
(MITRE, 2008, p. 9)

IPTs are the ideal personnel organizations to implement SCM into a program. IPTs have the requisite knowledge and structure to perform the necessary planning and execution of should-cost initiatives. PM UAS and its multiple programs did not establish specific should-cost IPTs to implement the new business practice due to the scope of the challenge. It was determined that no single IPT could have the vision and oversight to manage all SCM initiatives. Instead, they tasked all of their collective IPTs, at all three levels, to conduct should-cost analysis and come up with initiatives to drive down costs. The PM UAS was responsible for coordinating across the IPTs to plan and execute initiatives that were determined to have a chance at success.

PM UAS utilizes IPTs at the overarching, working, and program level. IPTs identified during our site visit were overarching level integration IPTs, Lean Six Sigma IPTs, performance-based logistics (PBL) IPTs, program management IPTs,

and Test and Evaluation IPTs. The IPTs were chartered and led by SMEs and PM leadership. Should-cost manufacturing was implemented by the IPTs across the board in all PM UAS IPTs.

No additional IPTs were created for should-cost implementation, but rather were taken on as an additional tasking by established IPTs. For example, we identified the use of a manufacturing IPT at the working level to negotiate the cost of recurring manufacturing costs on the Grey Eagle program. The manufacturing IPT consisted of Grey Eagle Product Office technical and logistic representatives as well as PM UAS Business Management, Defense Contract Audit Agency (DCAA), and Army Aviation and Missile Command representatives. The team collectively used its expertise to systematically scrutinize every element of program cost to remove unnecessary overhead and reoccurring manufacturing costs. The team's strength was its ability to leverage its education and professional expertise to seek out non–value-added steps in the manufacturing process. Good SCM depends on the coordination and synchronization of the entire IPT to develop and execute initiatives.

B. PROTOCOLS: THE SECOND PILLAR OF INTEGRATIVE SUCCESS

The protocols pillar is defined by Yoder (2012) as "the statutes, regulations, policies, and business processes that allow acquisition to occur while adhering to standardized business rules with discretionary freedoms" (p. 60). Each of the protocols must provide a necessary function without hindrance to the others to allow SCM to be successful. During our research, we found many protocols that allow the Army SCM process to be successful. Will-cost and should-cost estimates begin the SCM process. The estimates are subject to many reviews in the DoD and ASA(ALT) forums and require specific reporting requirements. Additionally, PEO Aviation and each of the programs within the portfolio have established protocols to support their SCM initiative development and management. Each of the protocols this research has found work together towards the success of the Army's SCM process.

1. Will-Cost Estimate

According to Shyu (2013), the should-cost estimate is an internal management tool for incentivizing performance to meet should-cost targets; therefore, should-cost estimates will not be used for budgeting, programming, or reporting outside of the DoD. Will-cost estimates are the official DoD program position for budgeting, programming, and reporting (Shyu, 2013). The DoD will continue to utilize the will-cost estimates to set budget baselines based on Cost Assessment and Program Evaluations (CAPEs), Independent Cost Estimates (ICEs), Department of the Army Service Cost Positions (ACPs), or Program Office Estimates (POEs) to support ACAT I and II milestone decisions (Shyu, 2013). An ICE is an analysis, assessment, and quantification of all costs and risks associated

with a program, based on programmatic and technical specifications, provided by the Director, Cost Assessment and Program Evaluations (CAPE), to ensure that cost estimates for major programs are fair, reliable, and unbiased (WSARA, 2009).

As part of the larger cost estimation process set into motion by Carter and later adopted by his successor, Kendall, the will-cost and SCM process is a "transparent, two tier cost, funding, and management approach using two separate cost estimates: a will cost for budgeting and a program should cost for program execution" (Shyu, 2013, Attachment 3, p. 1). The budget baseline is set by the will-cost estimate (i.e., CAPE, ICE, ACP, or POE) to execute the program. The will-cost estimate is selected by the MDA to essentially baseline the program and typically reflects the ACP or PEO-supported POE. According to Shyu (2013), "this results in the establishment of the approved will-cost baseline once the MDA approves the program budgeted cost at the Milestone" (p. 4).

For delegated ACAT II and III programs, the PM will obtain an independent verification through either an ICE or validation/verification of the POE. This will then be presented to the MDA for approval, thereby establishing the will-cost baseline. When a program modification or event occurs that significantly impacts the approved program baseline and the associated will-cost baseline (e.g., a JROC Tripwire process that results in a 5% before-unit cost breach), the PM will be expected to update his or her program office estimate (POE) and re-verify through the appropriate independent reviewer. Upon completion of these tasks, the PM will submit the updated documents to the MDA, who will approve the revised will-cost baseline. According to Shyu (2013), "the PM is encouraged to track interim changes to ensure that the underlying assumptions used in the will-cost baseline still exist when addressing potential savings in should-cost initiatives" (p. 5).

DoDI 5000.02 requires Service Cost Positions at all milestones and full rate production (FRP) decision reviews (Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics [OUSD(AT&L)], 2008). The Army's process for developing Cost Positions is referred to as the Army Cost Position (ACP). At each milestone, documentation to support the analysis is required as part of the milestone decision. As programs progress, certain required documents are developed and become available to the analyst. These documents can be used to produce cost estimates using conventional cost estimating methodologies. To properly cost out a program, detailed information and life-cycle cost data must be provided. The detailed information provided in the Cost Analysis Requirements Description (CARD) provides a complete description of system costs.

The current cost estimation process has program offices developing an estimate or POE internally and service cost centers also developing cost estimates separately. These estimates are built from the information provided in the CARD.

Multiple estimates are useful in that the delta discovered through the process can provide decision-makers with information about program risks and uncertainties. The closer the estimates are to one another, the more confident one can be with the estimate. Estimates that are far apart usually equate to greater program risks (WSARA, 2009). PMs are recommended to provide draft copies of the CARD to the Deputy Assistant Secretary of the Army for Cost and Economics (DASA-CE) and ASA(ALT) as soon as possible, but not later than the established timeline to ensure an ACP to support the milestone decision (WSARA, 2009).

2. Should-Cost Reviews and Reports

The various reviews and reports in the SCM process give the Army acquisition leadership the necessary tools to oversee the execution of SCM initiatives. SCM reviews and reports are required at the USD(AT&L) and ASA(ALT) levels. Leadership prioritization for SCM reviews and reports emphasizes the importance of the PMs establishing and executing SCM initiatives.

a. OSD-Level Reviews

OSD-level reviews are not a product of Army implementation of the SCM initiative. They are, however, a major element of the should-cost process for PMs of ACAT I programs where the USD(AT&L) is the MDA. After initiation of the SCM initiative, Carter (2011a) directed that all PEOs and PMs report should-cost targets at DABs and Defense Acquisition Executive Summary (DAES) reviews. According to the *Defense Acquisition Guidebook* (2013), the DAB is the senior level review forum used to assist the USD(AT&L) with his Title 10 responsibilities in oversight of ACAT ID and IAM programs. Most notably, the DAB conducts the review of the program at each of the program's major milestones.

Alternatively, the DAES is a monthly program review that allows the USD(AT&L) to review programs of his designation to identify issues in the program as early as possible (DoD, 2011). After a thorough review of all USD(AT&L) SCM policy letters, it is clear that failure to implement or execute SCM to satisfaction could spur a PEO or a PM to receive an invitation to present at a DAES review.

In 2011, the Defense Advisory Board (DAB) Executive Secretary published a presentation template and guidance for use in the DAB and DAES. It was also recommended in this document for PMs of ACAT II and III programs to use this template to track and report their should-cost estimates (Spruill, 2011). The template provides a comprehensive look at the program over the current program objective memorandum (POM) years, where potential program should-cost initiatives are in each program phase, and a detailed slide on each of the should-cost initiatives complete with an estimate of expected cost savings.

b. ASA(ALT) Reviews

The AAE's support of and dedication to the should-cost initiative is evident with the amount of leadership involvement in continual review of each program's should-cost initiatives. Beginning with the Army's initial should-cost implementation memo in 2011, the AAE added should-cost reviews at all milestone decisions and program reviews to programs of which she was the MDA (Shyu, 2011). Milestone decision reviews are processes mandated by law to be conducted for every program, and program reviews at the AAE level are similar to the DAES for the USD(AT&L). These two Army program review forums provide a consistent review of should-cost initiatives; however, the length of time between reviews is different for each program. Because of this issue, the AAE has incorporated some additional, more frequent reviews to ensure continual compliance for the should-cost initiative.

In the draft ASA(ALT) should-cost implementation memo, the AAE's principal deputy is designated to conduct some should-cost reviews. According to the memo, the principal deputy will review updates to all should-cost initiatives, margin releases, and exempted programs on a monthly basis (Shyu, 2013). Any program that has requested a change to its approved should-cost targets, requested exemption from establishing should-cost targets, or requested utilization of the should-cost savings between the program's will-cost and should-cost estimate will be reviewed. All of the information used in the monthly review will be taken from PARCA's should-cost database that is populated by the PEO's staff and the PMs.

Additionally, ASA(ALT) will be required to report the same information from its monthly reviews to USD(AT&L) on a quarterly basis (Shyu, 2013). The principal deputy's monthly review will allow the ASA(ALT) leadership a chance to review the data three times before sending the report to USD(AT&L), ensuring all programs are in compliance. Additionally, this review provides additional leadership emphasis at the Army level necessary to give the SCM initiative the ability to become part of the Army culture.

c. Annual Reports

As part of the USD(AT&L) implementation of SCM, Carter (2011a) directed CAEs to submit yearly progress reports on should-cost initiatives, with the first report submitted by November 1, 2011. This research did not uncover if any reports had been submitted by any of the services for FY2011. During our site visit to the Acquisition, Resource, and Analysis (ARA) office, a division under the USD(AT&L), our team did receive a copy of the Army's 2012 should-cost progress report submission. Analysis of this document has helped lead us to the conclusion

that the Army has done a thorough job of implementing the SCM initiative into its program management processes.

The Army's 2012 report consists of three parts: actions taken by the Army to implement the SCM initiative; the Army's should-cost lessons learned; and a thorough review of should-cost initiative results, successful and unsuccessful initiatives (Shyu, 2012). The elements chosen as part of the progress report provide a clear picture of the Army's SCM implementation efforts from the perspective of should-cost process implementation, execution, and results.

The process implementation slide in the FY2012 report illustrates key actions that the Army PARCA office has completed to help ensure SCM success at the PEO and PM levels. Of note is the should-cost database creation, which is discussed later in this chapter, and the different forums created to assist with SCM education, implementation, and execution. Each action highlighted significantly contributes to the success of the SCM process.

Lessons learned are a key asset to educating a group on actions taken that did not work in order to keep others from making the same mistakes. Alternatively, lessons learned should also be used to highlight successful activities in order to replicate best practices. The lessons learned slide in the FY2012 Progress Report of Should-Cost Management (Shyu, 2012) lists both types of lessons learned. Provided that this report was presented in a forum with the other CAEs in attendance, capturing of these lessons learned would achieve a high level of usefulness by providing ideas across the DoD to assist with its own service's should-cost implementation.

As part of the outcome of this research, we wish to promulgate best practices but also lessons learned to assist others with implementation of SCM. Some of the key lessons learned by the Army in FY2012 were

- Will Cost estimates are based on best baseline at time of identification (e.g., APB, POM Lock, Presidential Budget) and must remain constant during reporting
- Should Cost estimates directly relate to Will Cost baselines
- PMs must participate in and support Should Cost analysis for O&S funding with their respective AMC/LCMC partners
- CRAs and Withholds affect Should Cost initiatives.
- Key to success = Leadership involvement and cross integration with the PEOs. (Shyu, 2012, p. 4)

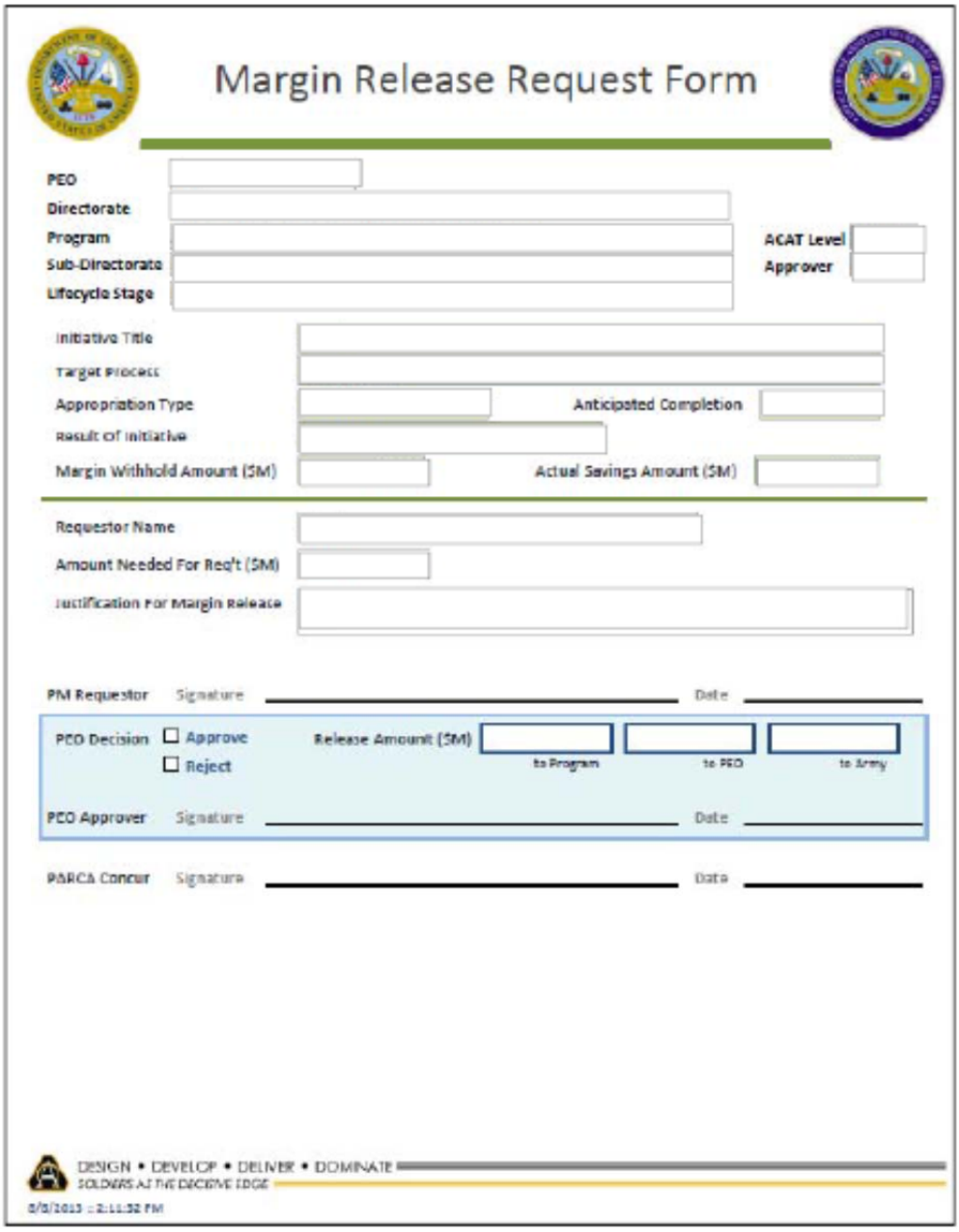
The last portion of the FY2012 annual report is the review of initiative results. The results overview slide shows projected savings from SCM initiatives from the start of the year compared to the actual savings realized at the end of the year and categorizes the initiatives into four areas: no savings, partial savings, total expected savings, and achieved more than expected savings (Shyu, 2012). The information that populates the overview comes from separate ACAT slides. Under each ACAT, the PEOs are listed along with the total number of programs from the PEO in that ACAT, and how many have waivers from conducting SCM. The results section overall provides a good picture of successful and unsuccessful should-cost programs and how the Army has done with executing should-cost over the previous year.

3. Margin Withholds

The definition of a margin in the Army's implementation of SCM is the difference in the amount of money between the will-cost estimate and the should-cost estimate (Mullins, 2011). The margin withhold is the actual process of holding the margin at the MDA authority level and not distributing it down to the PM, helping to enforce the management of the program to the should-cost level. Shyu (2013) directed that ACAT I programs and any program where the AAE is the MDA will have their margin withheld at the service level, whereas ACAT II and III programs will be withheld at the PEO level when they are the MDA.

During our site visit to ASA(ALT), we observed the Should-Cost Database in use. Inside the Should-Cost Database is the Margin Release Request Form (Figure 16). The margin release form is to be filled out and submitted any time that margins withheld are being requested to be utilized. Policy established by Shyu (2013) allows margins to be released and utilized to "fulfill unfunded requirements, accelerate acquisition, and to fund cost reduction" (p. 2). This Army policy supports Kendall's (2013c) should-cost guidance where components have the latitude to apply should-cost savings to priority unfunded requirements or reinvest the savings within the same program.

The PARCA office is charged with oversight of the margin releases and submits a consolidated monthly report to the principal deputy and the AAE showing margin releases (Shyu, 2013). Figure 16 is a sample of the Margin Release Request Form in the Army's Should-Cost Database.



Margin Release Request Form

PEO
Directorate
Program
Sub-Directorate
Lifecycle Stage
ACAT Level
Approver

Initiative Title
Target Process
Appropriation Type
Anticipated Completion
Result of Initiative
Margin Withhold Amount ($M)
Actual Savings Amount ($M)

Requestor Name
Amount Needed For Req't ($M)
Justification For Margin Release

PM Requestor Signature Date

PEO Decision ☐ Approve ☐ Reject
Release Amount ($M) to Program to PEO to Army

PEO Approver Signature Date

PARCA Concur Signature Date

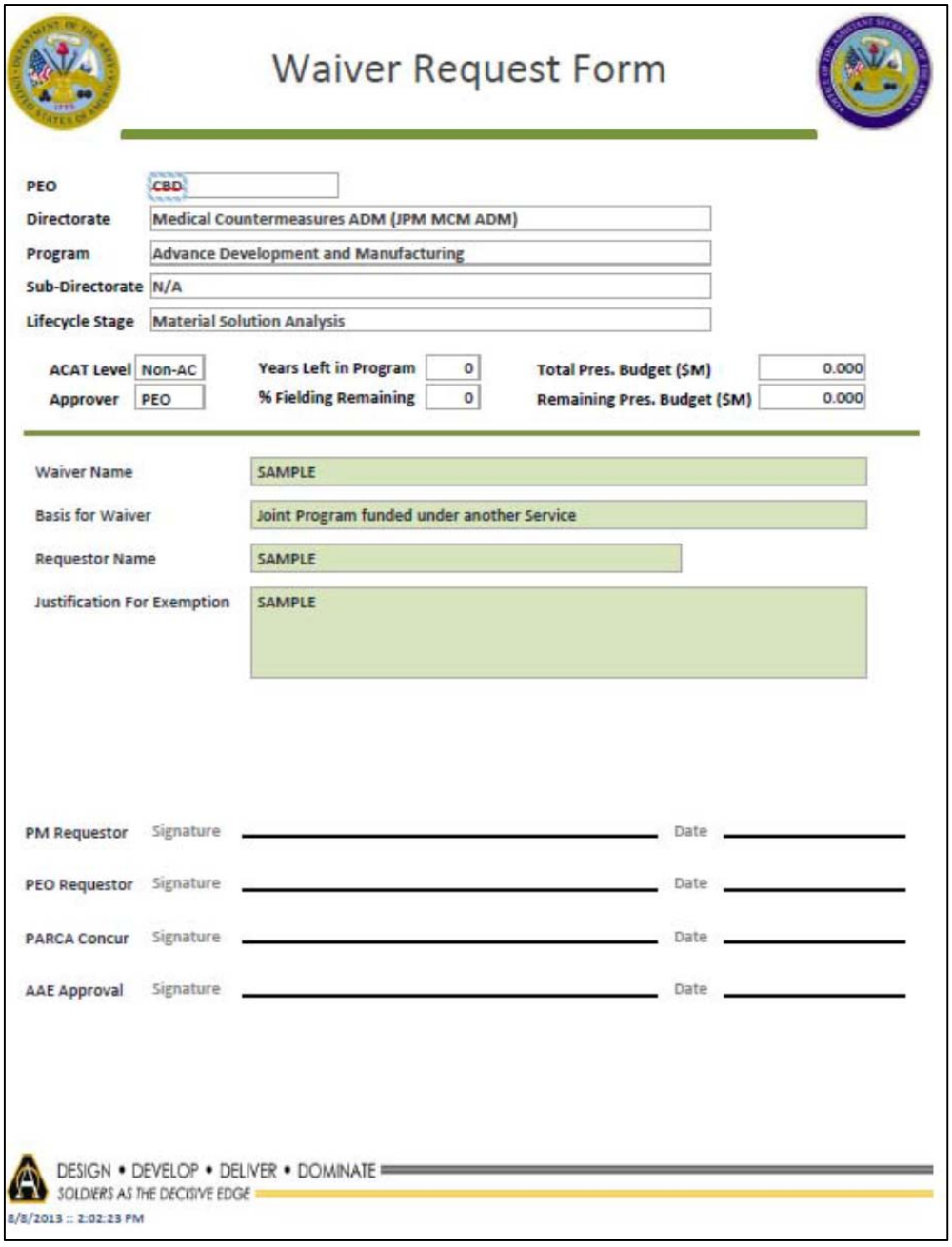
DESIGN • DEVELOP • DELIVER • DOMINATE
SOLDIERS AT THE DECISIVE EDGE

Figure 16. Army Margin Release Request Form
(ASA[ALT], 2013)

As part of the Army's implementation of SCM, a waiver process was developed to exempt certain PMs from the requirement to report SCM to the AAE. The program must meet certain stringent criteria to be considered for a waiver. The current AAE's policy has two categories for waivers: (1) a program has less than $3 million per year remaining in its budget, or (2) the program is a joint program with another service as the executive agent (Shyu, 2013). It is worth noting that programs

that fall into the second category will report their should-cost initiatives in accordance with that CAE's policy.

The process of requesting a waiver begins with the PM office filling out a waiver request form from the Army's Should-Cost Database (Figure 17). The waiver request requires the concurrence of the PEO, the PARCA office, and final approval of the AAE to be established as a waiver program. According to the Army's should-cost implementation guidance, supporting documentation to justify the waiver request should be submitted with the waiver request (Shyu, 2013). The waiver will be reviewed by the principal deputy at the monthly review sessions to receive approval. Figure 17 is a sample of the Waiver Request Form in the Army's Should-Cost Database.



Waiver Request Form

PEO CBD
Directorate Medical Countermeasures ADM (JPM MCM ADM)
Program Advance Development and Manufacturing
Sub-Directorate N/A
Lifecycle Stage Material Solution Analysis

ACAT Level Non-AC | Years Left in Program 0 | Total Pres. Budget ($M) 0.000
Approver PEO | % Fielding Remaining 0 | Remaining Pres. Budget ($M) 0.000

Waiver Name SAMPLE
Basis for Waiver Joint Program funded under another Service
Requestor Name SAMPLE
Justification For Exemption SAMPLE

PM Requestor Signature _____ Date _____
PEO Requestor Signature _____ Date _____
PARCA Concur Signature _____ Date _____
AAE Approval Signature _____ Date _____

DESIGN • DEVELOP • DELIVER • DOMINATE
SOLDIERS AS THE DECISIVE EDGE
8/8/2013 :: 2:02:23 PM

Figure 17. Army Waiver Request Form
(ASA[ALT], 2013)

4. Should-Cost Performance Incentives

According to Kendall, “The key to should cost management is to seek out and eliminate, through discrete actions, low-value added ingredients of program cost and to appropriately reward those who succeed in doing this, both in government and in industry” (2013b, Attachment 2, p. 2). For the PM, the reward could be professional recognition or an additional resource that becomes available due to SCM that

enhances the PM's program by freeing up funds to buy more equipment for the warfighters. For the Army, the reward for SCM could be available funding to apply towards other pressing concerns. For industry, the reward could be in the form of greater profit sharing for overall cost reductions (Kendall, 2013b).

As part of BBP 2.0 (Kendall, 2013b), incentivizing productivity and innovation in industry and government is a big factor in the overall should-cost implementation theme. As such, Kendall detailed in his implementation directive for BBP 2.0 some general guidelines and also specific actions he wanted taken by various organizations under his direct supervision (Kendall, 2013b). Kendall (2013b) stated,

> Profit is the key lever in motivating contractors to perform in alignment with DoD goals. The defense industrial base must be profitable or there will not be a defense industrial base, but the profits DoD provides should be consistent with the risks industry takes and the return needed to attract the required capital to defense companies. (p. 7)

This is a very powerful statement that shows the delicate balancing act the DoD must undertake in order to ensure not only that the Army get the most "bang for our buck" in terms of taxpayer dollars, but also that our defense industry makes enough profit to stay viable.

Kendall also emphasized that current profit levels, in the aggregate, are reasonable but they are not linked enough to successful performance in meeting the goals of the DoD (Kendall, 2013b). He further stated,

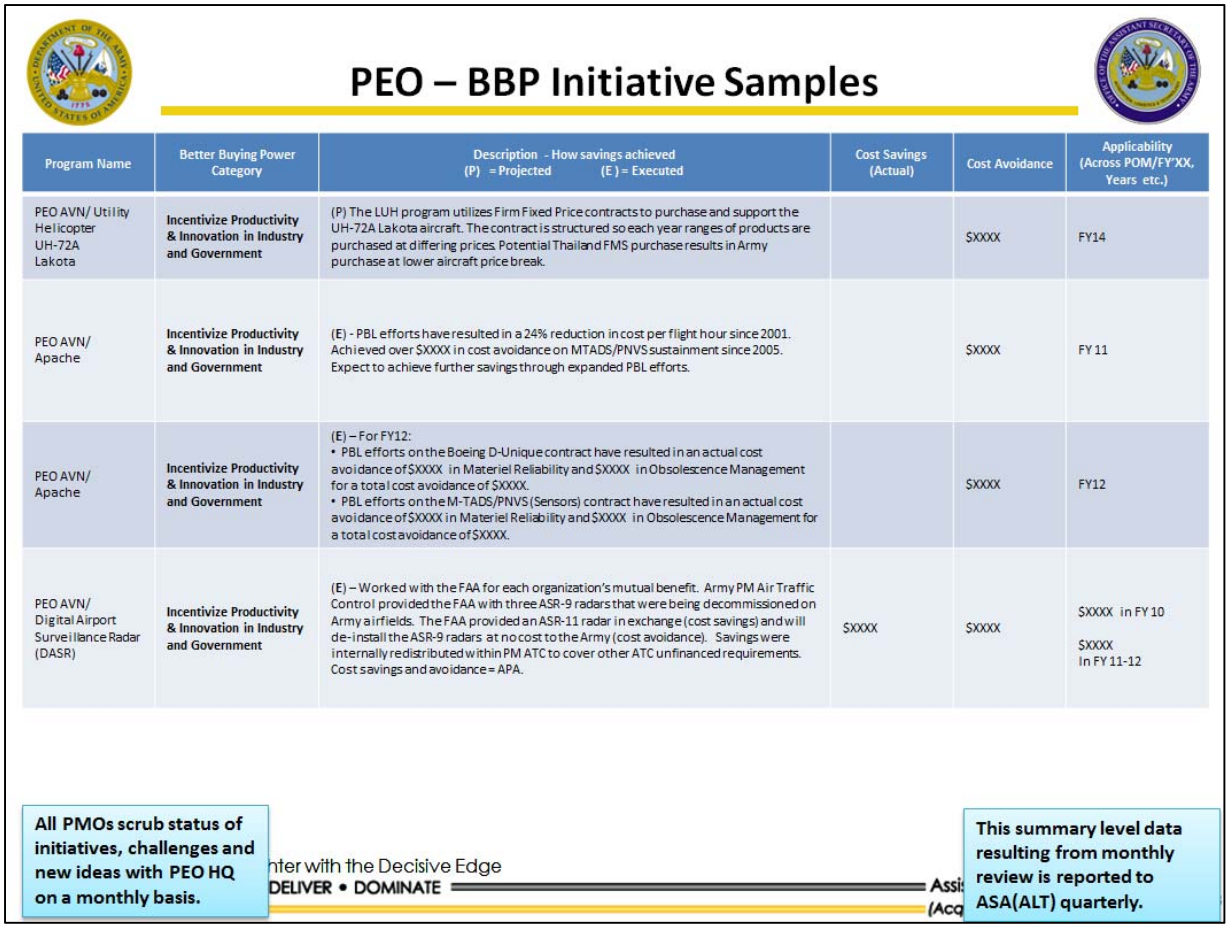
> DoD profit policy and our acquisition strategies should provide effective incentives to industry to deliver cost-effective solutions in which realized profitability is aligned and consistent with contract outcomes. … Incentive structures will provide opportunities for companies to realize profits above or below the levels defined in the weighted guidelines based on their performance at achieving specific goals of importance to the Department" (Kendall, 2013b, pp. 7–8).

Another key aspect to incentivizing the contractor is to institute a DoD-wide superior supplier incentive program (SSIP). This initiative was first introduced in BBP 1.0 but was not completed. According to Kendall (2013b), the intent of the SSIP is to publicly recognize and reward top performing defense contractors. The Navy was developing a pilot program at the start of 2013, and if successful, will be expanded to a DoD-wide program in 2014. The SSIP will grant a Superior Supplier Status (SSS) rating to businesses that have demonstrated outstanding performance at the unit level in the areas of quality, business relations, cost, schedule, and performance. The SSS rating will give contractors more favorable contract terms and conditions in their defense contracts (Kendall, 2013b).

In addition, corporations with several business units achieving SSS ratings may receive recognition at the corporate level (Kendall, 2013b). The Navy's SSIP will use the Contractor Performance Assessment Reporting System (CPARS) as the medium for data collection and assess contractors in the following areas: (1) technical; (2) schedule; (3) cost control; (4) management responsiveness; (5) management of key personnel; (6) utilization of small business; and other CPARS factors as deemed appropriate (Kendall, 2013b, Attachment 2). The Assistant Secretary of Defense for Acquisition (ASD[A]) will work with the SAEs and DPAP to assess the implementation of the pilot program and make recommendations to the Business Senior Integration Group (BSIG) by January 1, 2014 (Kendall, 2013b).

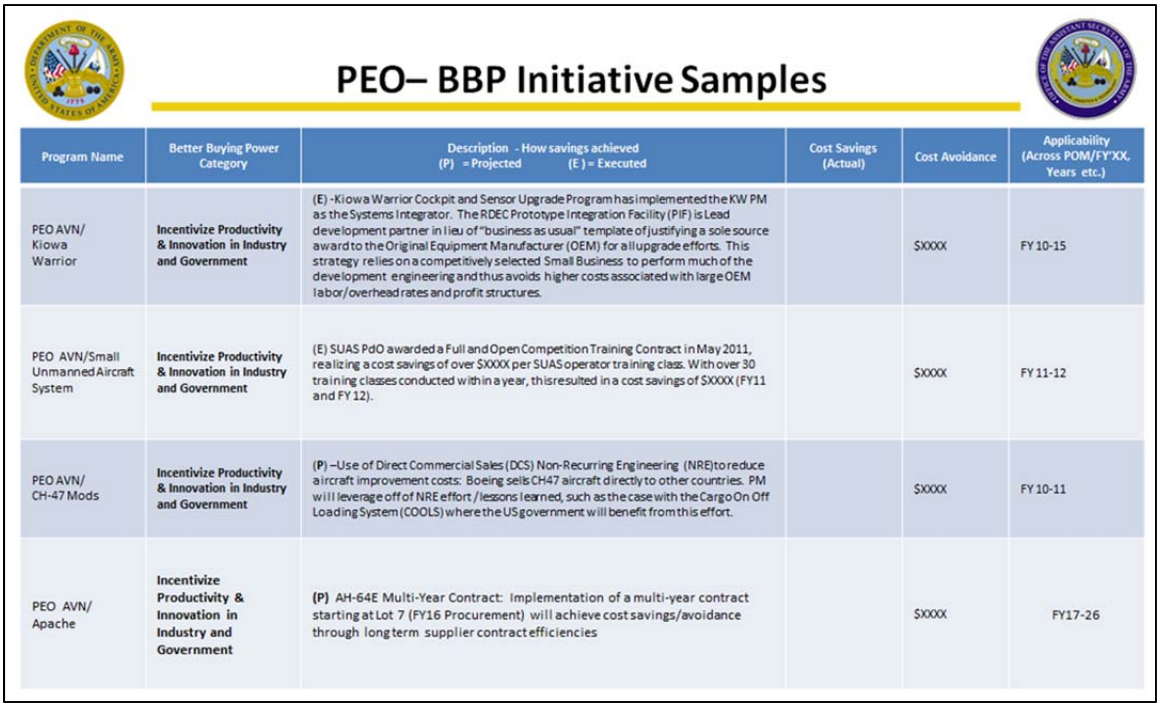
According to Kendall (2013b), the DoD will also implement PBL strategies that provide financial incentives to industry to deliver reliability and availability to the DoD at a reduced total cost by rewarding innovative cost reduction initiatives. However, PBL's success hinges on ensuring that the workforce has the expertise and support to properly develop and execute the PBL arrangements. To this end, the Assistant Secretary of Defense for Logistics and Materiel Readiness (ASD[L&MR]) will develop a comprehensive "PBL Best Practices Guidebook" that should be used as the source for PBL starting on December 1, 2013. The DAU will also incorporate PBL into the Life Cycle Logistics, PM, Contracting, and Systems Engineering curricula by December 1, 2013.

At PEO Aviation, numerous efficiency initiatives that are specifically designed to incentivize productivity and innovation in industry and government alike have been executed. Figures 18 and 19 are examples of some PEO Aviation initiatives that were briefed at the DAES in February 2013. Cost savings projected or achieved have been removed for public release.



Program Name	Better Buying Power Category	Description - How savings achieved (P) = Projected (E) = Executed	Cost Savings (Actual)	Cost Avoidance	Applicability (Across POM/FY'XX, Years etc.)
PEO AVN/ Utility Helicopter UH-72A Lakota	**Incentivize Productivity & Innovation in Industry and Government**	(P) The LUH program utilizes Firm Fixed Price contracts to purchase and support the UH-72A Lakota aircraft. The contract is structured so each year ranges of products are purchased at differing prices. Potential Thailand FMS purchase results in Army purchase at lower aircraft price break.		$XXXX	FY14
PEO AVN/ Apache	**Incentivize Productivity & Innovation in Industry and Government**	(E) - PBL efforts have resulted in a 24% reduction in cost per flight hour since 2001. Achieved over $XXXX in cost avoidance on MTADS/PNVS sustainment since 2005. Expect to achieve further savings through expanded PBL efforts.		$XXXX	FY 11
PEO AVN/ Apache	**Incentivize Productivity & Innovation in Industry and Government**	(E) – For FY12: • PBL efforts on the Boeing D-Unique contract have resulted in an actual cost avoidance of $XXXX in Materiel Reliability and $XXXX in Obsolescence Management for a total cost avoidance of $XXXX. • PBL efforts on the M-TADS/PNVS (Sensors) contract have resulted in an actual cost avoidance of $XXXX in Materiel Reliability and $XXXX in Obsolescence Management for a total cost avoidance of $XXXX.		$XXXX	FY12
PEO AVN/ Digital Airport Surveillance Radar (DASR)	**Incentivize Productivity & Innovation in Industry and Government**	(E) – Worked with the FAA for each organization's mutual benefit. Army PM Air Traffic Control provided the FAA with three ASR-9 radars that were being decommissioned on Army airfields. The FAA provided an ASR-11 radar in exchange (cost savings) and will de-install the ASR-9 radars at no cost to the Army (cost avoidance). Savings were internally redistributed within PM ATC to cover other ATC unfinanced requirements. Cost savings and avoidance = APA.	$XXXX	$XXXX	$XXXX in FY 10 $XXXX In FY 11-12

Figure 18. PEO Aviation Incentive Initiatives 1 of 2
(PEO Aviation, 2013)



PEO– BBP Initiative Samples

Program Name	Better Buying Power Category	Description - How savings achieved (P) = Projected (E) = Executed	Cost Savings (Actual)	Cost Avoidance	Applicability (Across POM/FY'XX, Years etc.)
PEO AVN/ Kiowa Warrior	**Incentivize Productivity & Innovation in Industry and Government**	**(E)** -Kiowa Warrior Cockpit and Sensor Upgrade Program has implemented the KW PM as the Systems Integrator. The RDEC Prototype Integration Facility (PIF) is Lead development partner in lieu of "business as usual" template of justifying a sole source award to the Original Equipment Manufacturer (OEM) for all upgrade efforts. This strategy relies on a competitively selected Small Business to perform much of the development engineering and thus avoids higher costs associated with large OEM labor/overhead rates and profit structures.		$XXXX	FY 10-15
PEO AVN/Small Unmanned Aircraft System	**Incentivize Productivity & Innovation in Industry and Government**	(E) SUAS PdO awarded a Full and Open Competition Training Contract in May 2011, realizing a cost savings of over $XXXX per SUAS operator training class. With over 30 training classes conducted within a year, this resulted in a cost savings of $XXXX (FY11 and FY 12).		$XXXX	FY 11-12
PEO AVN/ CH-47 Mods	**Incentivize Productivity & Innovation in Industry and Government**	**(P)** –Use of Direct Commercial Sales (DCS) Non-Recurring Engineering (NRE) to reduce aircraft improvement costs: Boeing sells CH47 aircraft directly to other countries. PM will leverage off of NRE effort / lessons learned, such as the case with the Cargo On Off Loading System (COOLS) where the US government will benefit from this effort.		$XXXX	FY 10-11
PEO AVN/ Apache	**Incentivize Productivity & Innovation in Industry and Government**	**(P)** AH-64E Multi-Year Contract: Implementation of a multi-year contract starting at Lot 7 (FY16 Procurement) will achieve cost savings/avoidance through long term supplier contract efficiencies		$XXXX	FY17-26

Figure 19. PEO Aviation Incentive Initiatives 2 of 2
(PEO Aviation, 2013)

5. PM UAS Should-Cost Management Process

Should-cost target development begins with leadership and the establishment of a will-cost baseline. As discussed previously, the will-cost baseline can be either the ICE, ACP, POE, or an estimate determined by the Milestone Decision Authority (MDA). The will-cost estimate will continue to be used for budgeting in the president's budget. However, our research has shown that realized should-cost savings could eventually become the adjusted will-cost estimate as seen in the MQ-1C Grey Eagle program. In the Grey Eagle, the Army Cost Position eventually became the new will-cost as the program matured.

PM UAS implemented should-cost based on the guidance from the AAE and leadership direction from the PEO. No further guidance was given by the PEO outside of the AAE's guidance. Specific actions taken by PM UAS for implementation were (1) emphasize leadership and set goals, (2) establish affordability goals and a will-cost estimate, (3) use program IPTs to develop should-cost initiatives using acquisition best practices based on the product and life cycle (this must be determined through careful analysis of underlying cost drivers and professional judgment), (4) execute the program through specific actions to the should-cost targets; track and report initiatives to the should-cost database and higher HQ as required, and (5) track performance and conduct After Action Reviews (AARs) of what worked and did not work. The overarching goal of the should-cost

process is to reduce lifecycle costs by “beating the ICE.” Figure 20 depicts PM UAS five-step should-cost methodology.

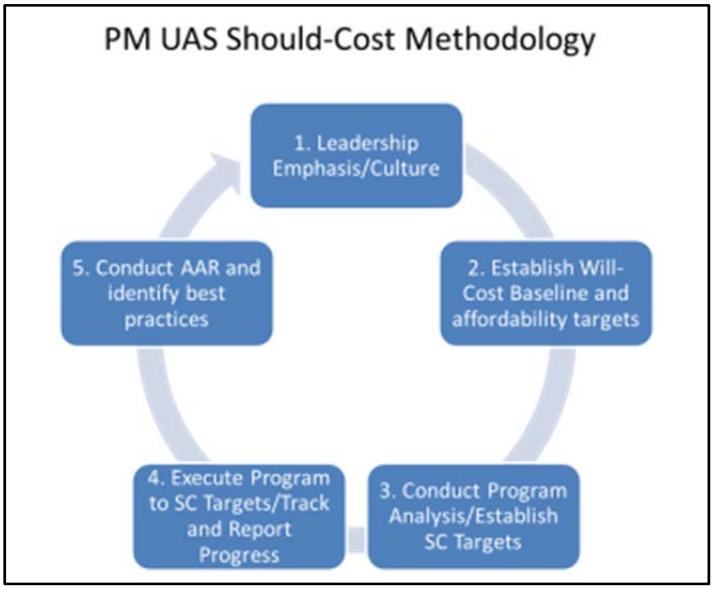


Figure 20. PM UAS Should-Cost Methodology

6. Should-Cost Management Initiative Best Practices

This section provides an overview of selected SCM initiative best practice examples from PEO Aviation that were successful in realizing savings or cost avoidance. The programs portrayed below used multiple kinds of SCM initiatives based on the program’s acquisition life-cycle phase. Initiatives used in one phase of the life cycle might not work in another phase. For example, strategies like working to reduce engineering design costs used prior to Milestone A would not be applicable during the EMD phase and vice versa.

SCM best practices employ numerous business strategies that are targeted to each program. The should-cost business practices we found during our site visit were not new or revolutionary to the acquisition workforce. There were no “silver bullet” tricks to achieving should-cost savings, and each program must be analyzed and evaluated based on multiple factors. However, the should-cost initiatives applied across the life cycle represent a new, holistic way of reducing program costs. Cost-saving initiatives such as value engineering change proposal (VECP) and incentive-based contracting have long been part of the PM’s tool kit, but they were applied at the convenience of the PM. What makes should-cost initiatives different than past acquisition efforts is the whole–life-cycle approach to reducing non–value-added costs yet adding value to the warfighter. In essence, a PM’s should-cost targets are a promise to the warfighter and the taxpayer that their equipment will be affordable and meet their requirements.

PEO Aviation and PM UAS have planned and implemented many successful should-cost initiatives across their portfolio. Figure 21 provides an overview of PM UAS BBP 2.0 initiatives that include should-cost initiatives.

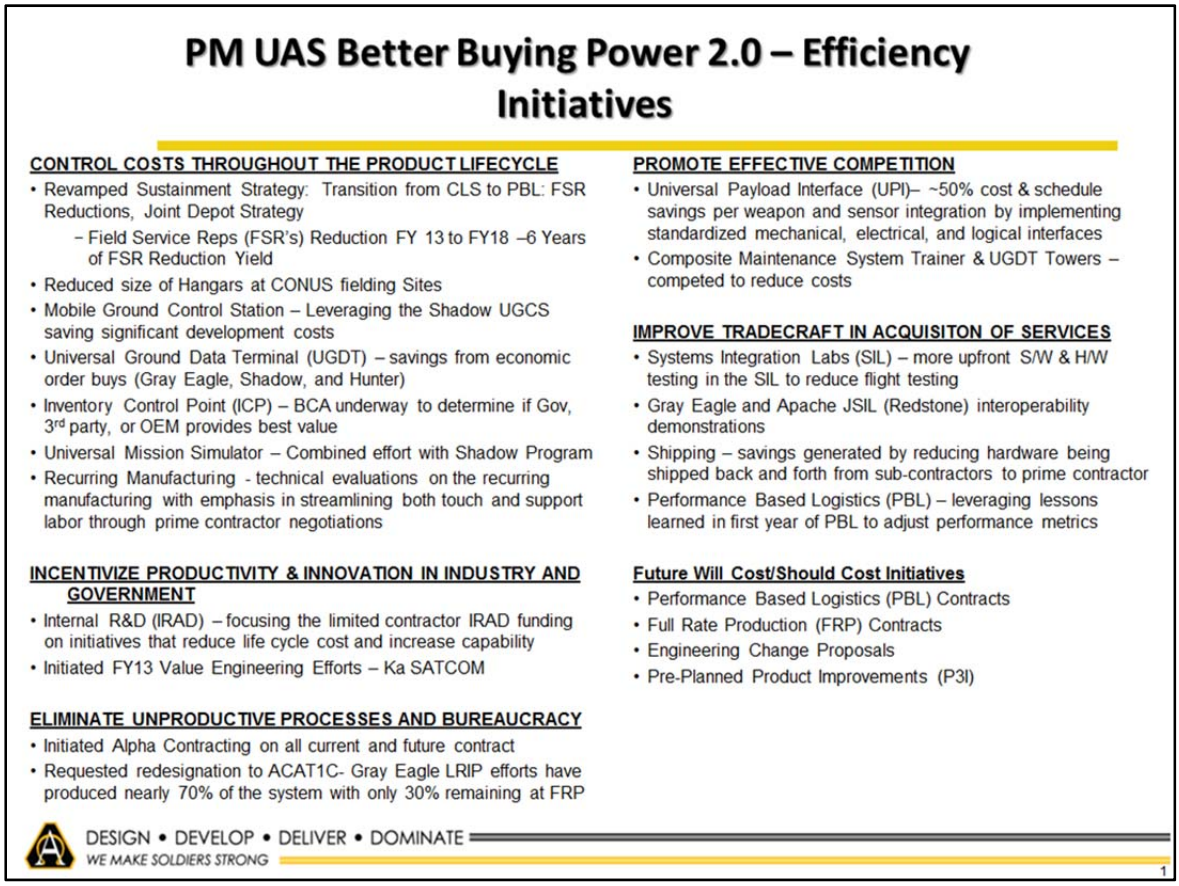


Figure 21. BBP 2.0 Initiatives
(PM UAS, 2013)

a. Recurring Manufacturing Cost

In FY2011, PM UAS–MQ-1C Grey Eagle Product Team developed a should-cost target to reduce recurring manufacturing costs. The manufacturing IPT consisted of the Grey Eagle Product Office technical and logistic representatives as well as PM UAS Business Management, Defense Contract Audit Agency (DCAA), and Army Aviation and Missile Command representatives. Recurring manufacturing costs are incurred in a repeating fashion over the life cycle of the product. The FAR defines recurring costs as "costs that vary with the quantity being produced, such as labor and materials" (FAR 17.103). The team's initial goal of the initiative was to reduce the cost by an average 2% per year in preparation of the FY2012 production buy. The initiatives were based on the assumptions that acquisition funding would remain stable, there would be no Continuing Resolution Agreement (CRA), and the schedule would be unchanged (PM UAS, 2012).

The manufacturing IPT of the Grey Eagle program developed its should-cost target based off of technical evaluations on the recurring manufacturing costs with an emphasis on learning curves of both touch and support labor. The manufacturing IPT and the prime contractor worked together to monitor and control manufacturing metrics. The work entailed significant face-to-face fact finding in the manufacturing facilities with the prime and major subcontractors. For example, the concept was also used during the LRIP II negotiations, resulting in a reduction of 15,832 hours. The team's efforts culminated in March 2012 with the awarding of the LRIP III contract. The team successfully negotiated a price that was 2%, or $13.08 million, in realized should-cost savings. In addition, the PM expects a cost avoidance of $9 million from FY2013–2015 (PM UAS, 2012).

b. Value Engineering Change Proposal

VECP is a cost reduction method that has been increasingly used across the DoD due to reduced defense budgets and sequestration. A VECP is a proposal that is submitted by the contractor under the Value Engineering provisions of the FAR Part 52.248-1 and codified in U.S.C. 432. VECP clauses are found in every contract, including services and performance-based. The program is intended to incentivize contractors and government program office personnel to reduce costs, increase quality, and improve mission capability. The following list from the DAU's *ACQuipedia* lists VECP suggestions by life-cycle phase:

> 1) Value Engineering (VE) in Materiel Solution Analysis
>
> VE can have a significant role in the systems engineering activities during Materiel Solution Analysis. The analysis of alternatives and associated cost-effectiveness studies can use VE to analytically evaluate functions and provide a mechanism to analyze the essential requirements and develop possible alternatives offering improved value.
>
> 2) Value Engineering (VE) in Technology Development
>
> In support of the process to transition technology from the technology base into program-specific, preliminary, design efforts, VE can be used to analyze the value of each requirement and the specifications derived from it by comparing function, cost, and worth.
>
> 3) Value Engineering (VE) in Engineering and Manufacturing Development
>
> As part of the development and refinement of the functional baseline, VE should be used for: 1) identifying the necessary top-level functions for each of the missions considered, 2) identifying technical approaches (i.e., design concept) to the missions, 3) identifying necessary lower level functions for each

technical approach (the value engineer should place emphasis on eliminating unnecessary design restrictive requirements), 4) evaluating each function in terms of technical feasibility, and 5) estimating the cost of various functions.

4) Value Engineering (VE) in Production and Deployment

VE contributes to the systems engineering activities during production and deployment by devising alternative means for achieving required functions and developing alternative designs to meet functional needs. VE has been extensively applied to evaluate and improve manufacturing processes, methods, and materials.

5) Value Engineering (VE) in Operations and Support

After fielding, opportunities for VE may exist for a long time. Product life cycles are being extended; for consumables, there is no sure way to determine the total quantity that will be purchased. Also, in the past, many items that entered the defense inventory were never subjected to a VE analysis. The potential for VE savings on these items is real. Advances in technology or changes in user requirements provide a basis for potential savings. ("Value Engineering Change Proposal," 2013)

A VECP can be applied very early in a program's life through sustainment. Figure 22 depicts the VECP flow from the contractor through life-cycle reductions and increased profits for the contractor.

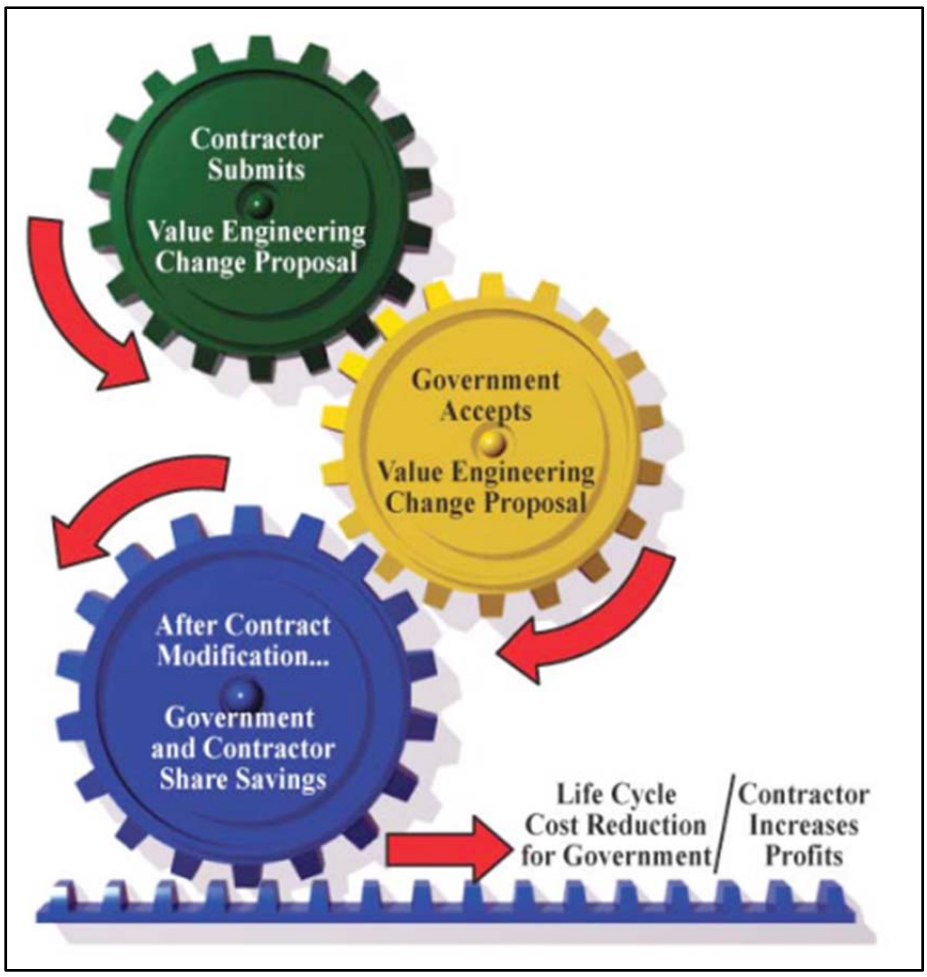


Figure 22. VECP Process Diagram
(PM UAS, 2012)

PM UAS, Technical Management Division (TMD), is applying the VECPs across the PM portfolio as should-cost initiatives. PM UAS recognized that VECPs have many benefits to both warfighters and the contractor. Contractors can receive a percentage of savings from 25% to 75% that result from their VECP for a period of three to five years. The government also benefits from the savings and improvement to the system process, and the PM can use the savings pending a successful marginal request waiver. TMD has found it beneficial to educate the PM shop as well as the prime contractors on the VECP process. Education and communication across the various IPTs generates VECP. For example, PM UAS (2012) received and processed two VECPs in FY2012. The two proposals equaled $2.5 million in realized savings and a potential of $10 million in cost avoidance. The two proposals were successful and contributed to the overall should-cost success. PM UAS is pushing for more VECPs across its portfolio as it refines and expands its should-cost initiatives. VECPs represent a win-win for the contractor and

government, and additional emphasis should be placed on the technique (PM UAS, 2012).

c. Government-Furnished Equipment

Providing government-furnished equipment (GFE) is another SCM strategy. The provision of GFE to prime vendors reduces non-productive processes and unnecessary overhead and promotes competition. Prime vendors are provided major end items that are procured from various sources to be integrated by the prime vendor. The items may even be the design of the prime vendor but competed in full and open competition given that the government has the data rights. PM UAS utilizes this strategy on most of its programs. The strategy has resulted in savings of 8% of its Fiscal Year 2009–2012 procurement funding of the One System Remote Video Terminal (OSRVT) Rover transceiver (PM UAS, 2012). The strategy promotes real competition within a program because multiple contracts for GFE means more opportunities for the industrial base. The expanded opportunities cut cost through competition and expand the supplier base. Programs must conduct CBAs to determine if buying the data rights and using GFE strategies are worth the cost.

d. Leveraging Similar Technological Efforts: Universal Ground Control Station

Leveraging technology across similar programs is another strategy used to reduce costs. PM UAS leveraged technology from its Shadow Universal Ground Control Station (UGCS) and applied it on the Grey Eagle system. The UGCS was developed by PM Shadow to control its air vehicle from a portable shelter. The Grey Eagle PM IPT coordinated with PM Shadow to share information and technology on the control station. PM Shadow even supplied the initial UGCS to accelerate testing and to prove out software on the Grey Eagle. The two UAV systems requirements for a ground control system were found to be compatible, and one control system could be used. The resulting savings was $20 million just from leveraging cross-product technology. The cross-product coordination resulted in should-cost savings, eliminated redundancy in control stations, and will reduce sustainment costs across the life cycle (PM UAS, 2012).

e. Multi-Year Contracts

PM Cargo executed a firm fixed price (FFP), multi-year sole source contract, funded for five years for up to 215 CH-47F aircrafts on May 15, 2013. The contract resulted in a cost savings of $534 million on the base contract and $181 million and $217 million on two option years. The overall cost savings was $932 million for FY2013–2019, with deliveries starting in FY2014 (U.S. Army Contracting Command, 2013).

7. Unsuccessful Initiatives

Unsuccessful initiatives are inevitable when implementing a new process. SCM implementation is no different and has had its share of initiatives that were not successful. SCM initiative success or failure is not documented well or distributed across the acquisition workforce. The DAU has been tasked to collect lessons learned and best practices from the field but has not complied its results as of writing this report. In addition to the DAU's work, the SCM database has data entry tabs for lessons learned in each documented SCM initiative. During our site visit with PARCA, we found no evidence that the SCM database lessons learned data was being used or distributed. No unsuccessful initiatives were discovered during our site visit to PEO Aviation. This is not saying there were not any, but none were reported or documented. However, we did discover two unsuccessful initiatives in the *Army Annual FY12 Progress Report of SCM Programs* (Shyu, 2012).

The first unsuccessful initiative came from the PEO Soldier–M2A1 QCB Kit initiative. The projected savings for the initiative was $2.3 million. The result was not achieved because of the lack of competition among suppliers. The M2 machine gun has been in service for over 50 years, and most sustainment is done at unit and depot level. The PMO should-cost savings initiative was dependent on a competitive solicitation. Furthermore, the PM also assumed no additional costs for implementation of a second source. Finally, the lack of qualified vendors degraded the PMO's ability to lower costs through competition (Shyu, 2012).

The second unsuccessful initiative came from PEO C3T–Advanced Field Artillery Tactical Defense System (AFATADS). The AFATDS is a battle command system to coordinate land and air indirect fire systems. The projected savings of the initiative was $2.52 million. The result of the initiative was a partial savings of $1.60 million. The PMO's strategy was based on competition of the software development efforts. Actual competition was less than expected, and only partial savings were realized (Shyu, 2012).

C. PLATFORMS: THE THIRD PILLAR OF INTEGRATIVE SUCCESS

Platforms are the Third Pillar of Integrative Success for the Army's SCM process. Platforms are defined by Yoder (2012) as "the hardware and software systems needed to efficiently capture, analyze, and disseminate information necessary to manage critical aspects of programs and contracts in support of acquisitions" (p. 57). This report does not review the many different platforms that are currently in use in the acquisition area. Instead, we limited our research in this pillar to new platforms introduced by the Army to assist with the execution of the SCM process. During our site visit to ASA(ALT), we uncovered a new database that the Army has built, called the Should-Cost Database. The database is a key

component in the Army's SCM process success. As the Army continues to enhance and upgrade the functionality of the fledgling Should-Cost Database, the Army's ability to manage the should-cost process will become easier.

The Army completes a thorough implementation of the SCM initiative by creating the Third Pillar of Integrative Success, Platforms, in the establishment of the Army Should-Cost Database. This database works in harmony with the Personnel and Protocol pillars and provides a critical SCM link between the PMs and the ASA(ALT) PARCA office. The database is a great asset in assisting the PARCA office with its responsibilities to collect, track, analyze, and report should-cost initiatives. The database is also the key in assisting PMs in the fulfillment of their USD(AT&L) directive to "develop, own, track, and report against Should-Cost estimates" (Carter, 2011a, p. 1). During our site visit to ASA(ALT), we were able to observe all aspects of the database being used, as well as gain access to a test database to acquire screenshots of the database for use in this report.

The current database is designed using Microsoft Access and has login and password protection. Once logged in to the database, the individual is able to see only the data which he or she has authority to see; the PM can only see his or her program information, while the PEO can see each program under his or her authority but not any other program. This feature is needed because of sensitive program information in the database. However, this makes information sharing for the purposes of exchanging lessons learned more difficult.

The initial screen takes the user to a dashboard. The dashboard is a summary of the PEO's or PM's should-cost initiatives presented by ACAT and can be printed or added to a slide for a quick presentation of the program's should-cost initiatives. Figure 23 is an example of a PM's dashboard. Along the left of the dashboard are the user interface buttons.

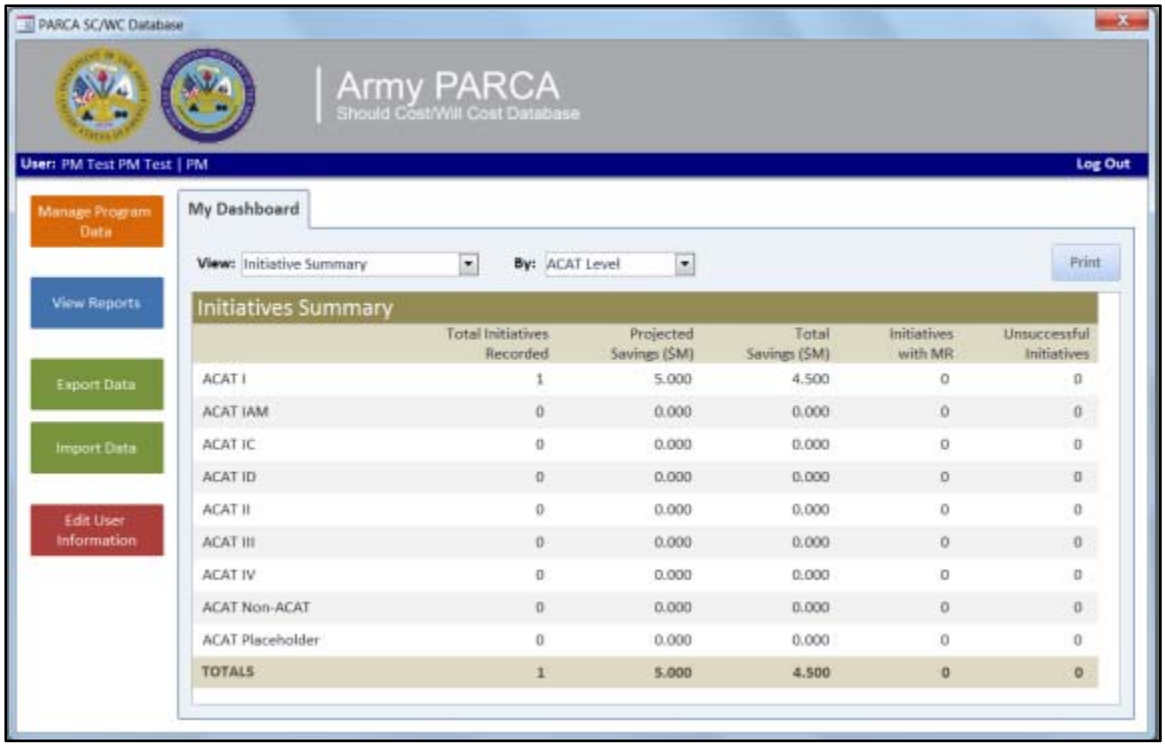


Figure 23. Army Should-Cost Database Dashboard
(ASA[ALT], 2013)

The Manage Program Data interface button allows the user to see all of his or her program data on one screen: program summary, Presidential Budget data, will-cost estimate data, and a summary of initiatives displaying should-cost projections. This interface allows a PM to easily develop and track the progress of his or her should-cost initiatives, which is one of the USD(AT&L) directives. Figure 24 is an example of the Program Information interface in the database.

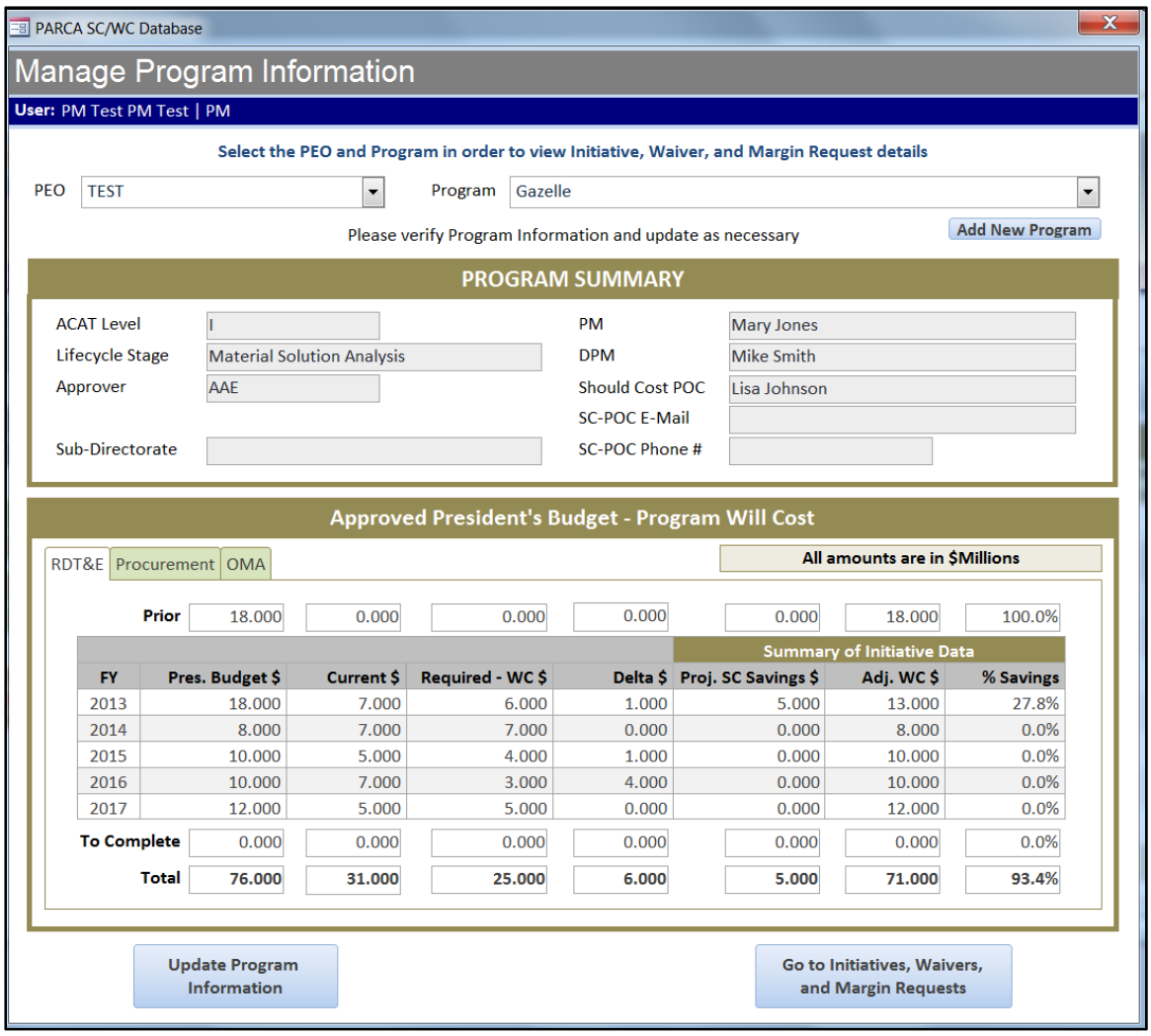


Figure 24. Army Should-Cost Database Manage Program Information (ASA[ALT], 2013)

From the Manage Program Information screen, the PM can manipulate the database to add all information relevant to the program and its should-cost management initiatives. One thing of note about the initiatives data, there is a dropdown to state whether the initiative was successful, partially successful, or not successful. If unsuccessful, there is an area to state why the initiative was not successful. Figure 25 is a screenshot of the Initiative Qualitative Information screen illustrating the various inputs for should-cost initiatives into the database.

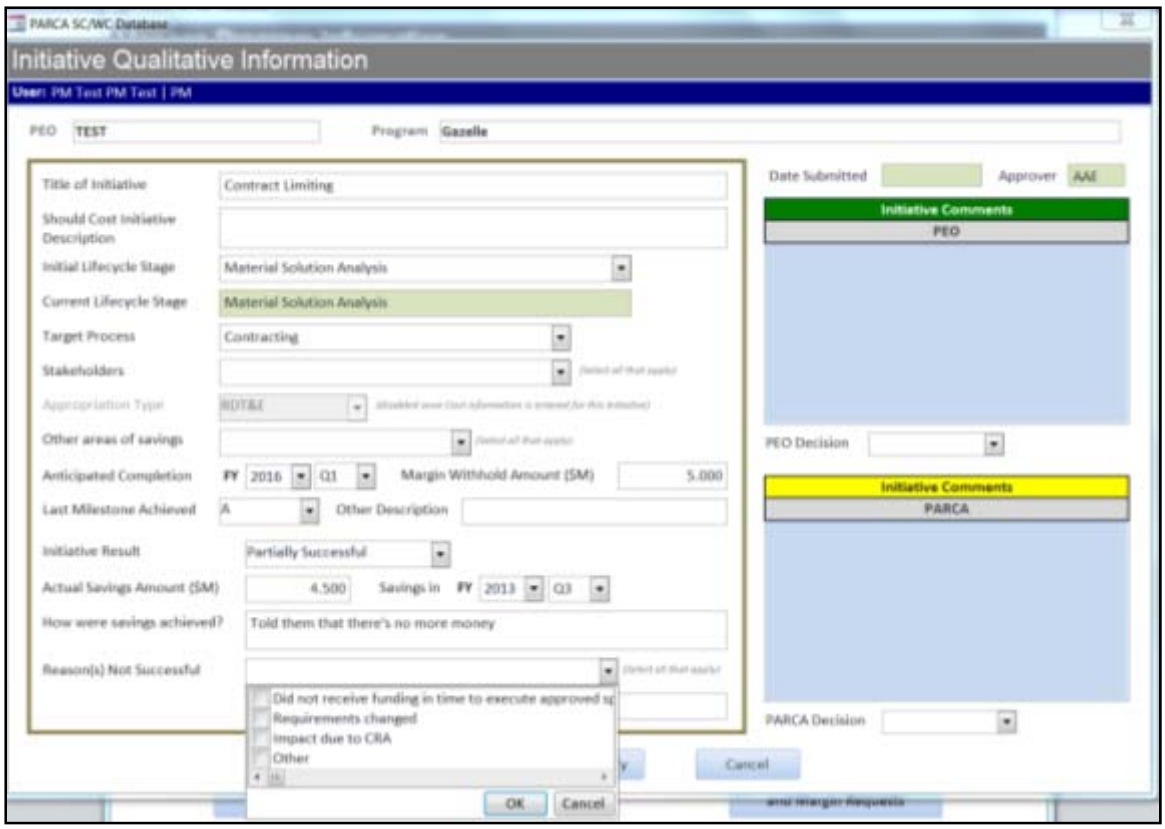


Figure 25. Army Should-Cost Database Initiative Qualitative Information (ASA[ALT], 2013)

The database has been designed to assist with the various reporting requirements of SCM to both the USD(AT&L) reviews and the AAE's reviews. All should-cost reporting requirements of the PEO, PM, and PARCA are easily completed from the Report Management dashboard. With the click of a mouse, an un-editable PDF version of a PowerPoint slide is generated from the data in the database in the format required by the review forum. Being unable to edit the product after it is produced forces a requirement to ensure the database is accurate and up to date. Figure 26 is an example of the Report Management dashboard in the database.

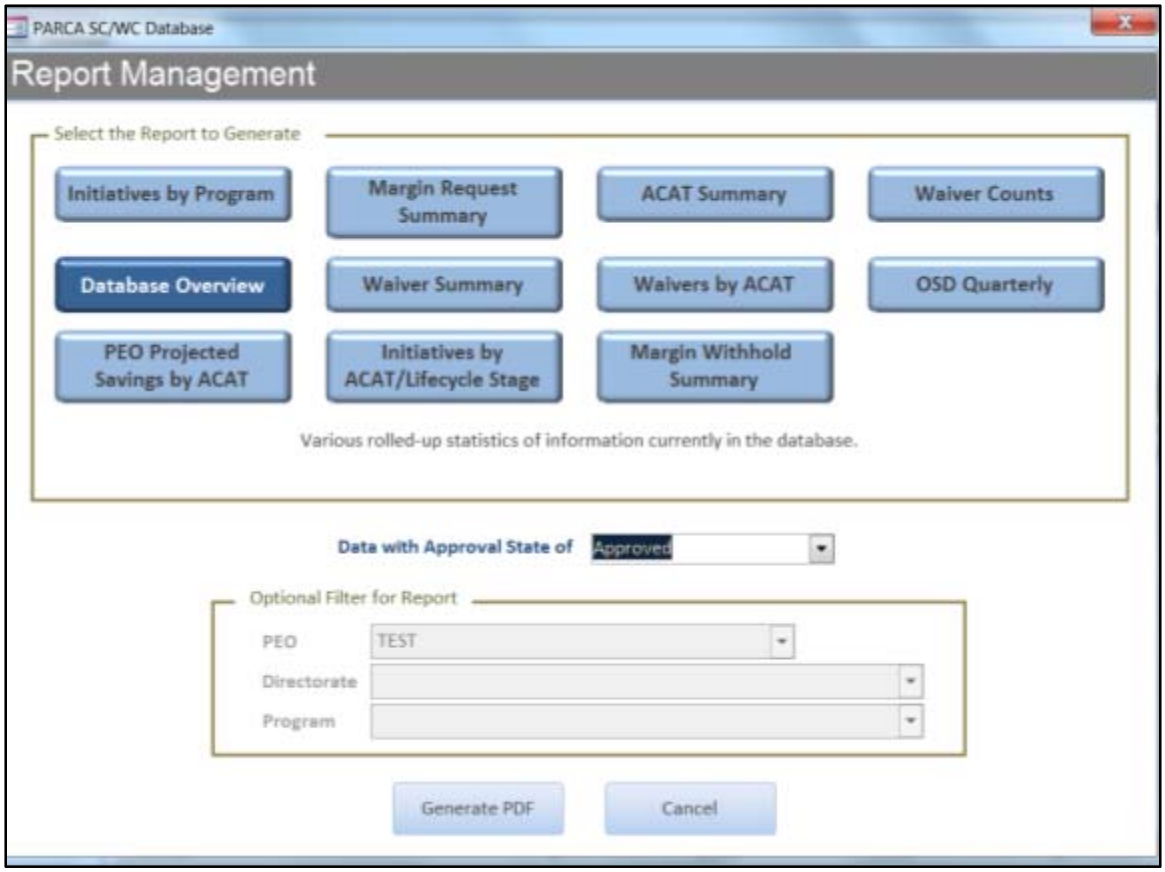


Figure 26. Army Should-Cost Database Report Management
(ASA[ALT], 2013)

The Army's Should-Cost Database is an invaluable asset in the Army's SCM process. The platform provides a critical link between the PM and PARCA office and provides assistance for each office to execute its duties and responsibilities in the should-cost process. With program information in the database containing sensitive information, a login and password are used to gain access to the PM's or PEO's individual information. However, sharing lessons learned across the Army on why program initiatives were or were not successful is made more difficult by this feature. Additionally, the database is a stand-alone database and does not interface with any other acquisition system.

V. SUMMARY/CONCLUSION/RECOMMENDATIONS

The formalization of the SCM process is an attempt to force implementation of cost-saving practices, enforce the execution of SCM initiatives throughout a program's life cycle, and ingrain into the minds of the acquisition workforce a culture that is always cost conscious. Our research uncovered nothing new or revolutionary about SCM and the business practices required to realize cost savings in an acquisition program. SCM is not a new concept; it is simply good old-fashioned frugality and being good stewards of the taxpayers' money.

Since the terrorist attacks on September 11, 2001, DoD spending increased drastically as the focus shifted to the GWOT and providing the necessary capabilities to the warfighter as quickly as possible. As a result, acquisition inefficiencies mounted and disciplined spending degraded. With the BBPi and more specifically, SCM, we are pivoting back towards being a cost-conscious workforce. In this final chapter, we address the research questions we set out to find answers to, summarize our findings, make recommendations for should-cost process improvement, identify areas ripe for further research, and conclude with our final thoughts.

A. SUMMARY OF QUESTIONS AND CONCISE RESEARCH

We address the following primary and secondary research questions:

Question 1: How has the Army implemented SCM as part of BBPi?

This question is our primary research question, and we present our findings and analysis to answer this question in great detail in Chapter IV. To present and analyze how the Army implemented SCM, we used Yoder's (2012) TIPS model. The model uses three integrated pillars that work in harmony towards the success of a system: Personnel, Protocols, and Platforms. Figure 27 is a complete illustration of the SCM TIPS model.

The SCM *personnel* pillar is made up of the personnel who have duties and responsibilities in the Army's SCM process. Beginning with the PM and proceeding up to the USD(AT&L), along with various DoD-level agencies and industry partners, the SCM process does not succeed without each individual executing his or her specific should-cost function. The PM has personnel who define should-cost targets, track their implementation, and report their progress. Additionally, the PEO has personnel to track and report all should-cost targets and their progress to the ASA(ALT) PARCA office. The PARCA office collects, tracks, analyzes, and reports all should-cost initiatives to the AAE and USD(AT&L), which oversee the successful completion of the SCM process.

The SCM *protocols* pillar is primarily made up of the business rules and processes necessary to execute SCM. The Army SCM process leadership has implemented many protocols to ensure the success of the SCM process. The *will-cost estimate* is the starting point from which a PM executes *should-cost target development*. The should-cost targets use *should-cost initiatives*, or business strategies, to achieve savings below the will-cost estimate. The dollar amount between the will-cost and should-cost estimate is known as the *margin withhold*, and is withheld by the program's MDA. If a program meets certain requirements, the PM can request the AAE to grant a *program waiver* and be exempt from the SCM process. All programs not exempt from executing SCM must conduct periodic *reviews and reports* of their SCM initiative progress.

The *platforms* pillar is all of the hardware and software tools necessary for the SCM process to be successful. This research did not examine the many different platforms already in use by the acquisition community. Instead, we focused our study on the new system developed by the Army to assist with SCM, the Army Should-Cost Database. This standalone Microsoft access database possesses the ability to perform all mandatory functions of SCM: develop, own, track, and report SCM initiatives. The SCM database is password protected to ensure that the person accessing the database has the authority to see the program data. A PEO may see all programs under his or her command, but a PM will only see his or her program. The database also has an import/export function to facilitate the transfer of updated program data to the database owners in the PARCA office. This database works in harmony with the other pillars of the SCM process. Upgrading the system to a web-based system capable of interacting with and receiving data from the other acquisitions platforms would help improve and simplify the SCM process.

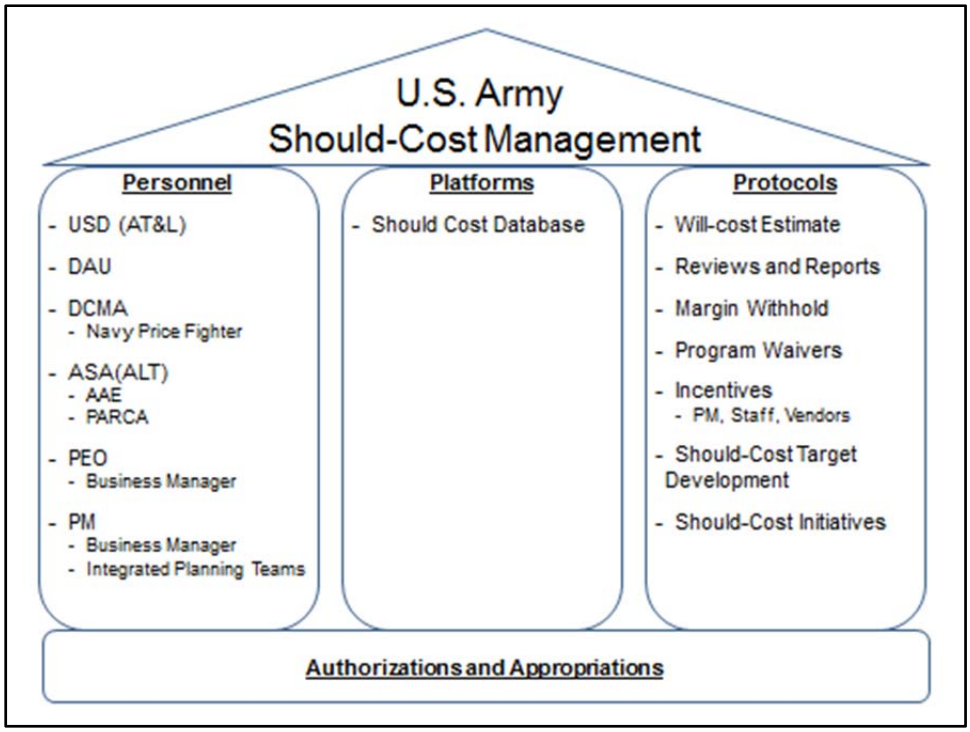


Figure 27. Army's Should-Cost Management Three Pillars of Integrative Success

Question 2: What are the directives related to SCM from the BBPi from the OSD, Army, and PEO?

To answer this question, we conducted an extensive literature review that involved reviewing all BBPi directives flowing down from the OSD to the Army, Army to PEOs, and PEOs to PMs, and extracting the directives that specifically addressed SCM. We presented our findings in Chapter II. Additionally, we conducted site visits of key organizations within the SCM chain to gather additional data to fill gaps in our understanding. Through our detailed literature review and site visits, we learned that BBPi and SCM are continually evolving as implementation is refined over time. Both initiatives have also grown substantially more important in the minds of all acquisition professionals from the OSD to PMs and other external organizations such as the DAU.

As a response to unsustainable cost growths in major DoD weapons programs, acquisitions, and contracts, Carter issued his *Better Buying Power: Guidance for Obtaining Greater Efficiency and Productivity in Defense Spending* memo on September 14, 2010. In this memo, Carter (2010b) directed the implementation of SCM as part of the greater BBPi to ensure PEOs and PMs were incorporating SCM initiatives in their programs (Carter, 2010b). In April 2011, Carter (2011a), published his *Implementation of Will-Cost and Should-Cost Management* memo that directed should-cost estimates for all ACAT programs and made it a

requirement for PEOs and PMs to brief SCM initiatives at all milestone reviews. Carter also directed PMs to develop, own, track, and report on should-cost estimates annually. In addition, SAEs were directed to track and report on their realized should-cost savings and to have the data validated by their respective Service's Assistant Secretary for Financial Management and Comptroller (FM&C).

In November 2012, Frank Kendall, Carter's successor, published his updated version of BBPi, which he titled, *Better Buying Power 2.0: Continuing the Pursuit for Greater Efficiency and Productivity in Defense Spending*. In this update, Kendall (2012) modified Carter's original 23 points into 36 initiatives broken down into seven key areas. These modifications were based on lessons learned over the two years of BBPi's existence. Kendall stressed that BBPi, as well as SCM, was to be viewed as a management philosophy and that the culture of the acquisition workforce had to change. The original goal of BBP 2.0 remained unchanged.

For the Army, Shyu (2011) directed that all should-cost targets for ACAT I–II programs for which the AAE is the MDA will be approved by the AAE. Shyu provided further directives and guidance on margin withholds, waiver requests, and reporting requirements to PEOs and PMs. Tables 6 through 8 are a compilation of all should-cost guidance and directives for the OSD, AAE, PEOs, and PMs.

Table 6. Official Should-Cost Guidance or Tasking for ASA(ALT)

Office of Responsibility	Should-cost Guidance or Tasking	Document Source
AAE	- Effective November 15, 2010, establish should-cost targets as management tools for all ACAT I programs as they are considered for major Milestone Decisions - By January 1, 2011, establish should-cost estimates for ACAT II and III programs as they are considered for MS decisions.	Carter, 2010c (directed implementation); Carter, 2011a (reinforced implementation)
AAE	Send an annual report of Should-cost progress beginning in November 2011.	Carter, 2011a
AAE	Develop inventive plans for PMs to reinforce and reward commitment to the Will-Cost and Should-cost management process.	Carter, 2011a
AAE	Should-cost targets for ACAT I programs and ACAT II programs that the AAE is the MDA for will be approved by the AAE.	Shyu, 2011
AAE/PEO/PM	ACAT I through III programs should have should-cost targets in place by August 1, 2013, or the next milestone decision, whichever comes first.	Kendall, 2013b
AAE/PEO	An acquisition manager's performance evaluation should consider effective cost control, including implementation of should-cost management.	Kendall, 2013b
AAE	DAU will work with component acquisition executives (CAEs) to collect successful should-cost studies and lessons learned.	Kendall, 2013b
AAE	Regardless of lifecycle phase, implement should-cost management into all ACAT I, IA, II and III programs.	Kendall, 2013c
AAE / PEO	CAEs and PEOs will: 1) review and approve Should-cost targets, 2)monitor progress, and 3) direct or recommend allocation of realized cost savings as appropriate.	Kendall, 2013c
AAE	Determine own reporting requirements for effective Should-cost management oversight	Kendall, 2013c
PARCA (Collect / Track)	Initial and updated Will-cost estimates and Should-cost estimates must be provided to the Army DASA (PPR) PARCA office…	Shyu 2011; Shyu 2013
PARCA (Collect / Track)	Receive notification letters from PEOs when updates to approved Should-cost estimates are made to ACAT II and III programs where the PEO is the MDA.	Shyu 2011
PARCA (Collect / Track)	Collect and process Should-cost estimate requirement waiver requests	Shyu 2011
PARCA (Collect / Track)	Receive monthly reports from PEOs on any release of delta dollars (margin withholds)	Shyu 2011
PARCA (Collect / Track)	Track the execution of margin release	Shyu 2013
PARCA (Collect / Track)	PEOs are required to use the PARCA developed Should-cost database to capture information on their initiatives, exemptions, and margin releases.	Shyu 2013
PARCA (Collect / Track)	Collect should-cost case studies from PEOs and identify based on best practices, which should be included in the DAU repository.	Shyu 2013
PARCA (Analyze)	Delegated review authority for all initiatives, exemptions, and margin release. PARCA will report updates to the Principle Deputy on a monthly basis.	Shyu 2013
PARCA (Report)	Present Should-cost management waiver requests to the Principal Deputy for approval during the monthly reviews.	Shyu 2013
PARCA (Report)	Send a consolidated report to the ASA(ALT) showing programs using dollars within the delta between the Will-cost and Should-cost estimates.	Shyu 2011
PARCA (Report)	Prepare reports that will be presented based on inputs into the Should-cost database.	Shyu 2013
PARCA (Report)	Beginning 01 August 2013, report total active ACAT I, II and III programs, programs with and without should-cost initiatives, and the number of requirement waivers: 1) monthly to the Principal Deputy and 2) quarterly to OSD	Shyu 2013

Table 7. Official Should-Cost Guidance and Taskings for PEOs

PEO Function	Should-cost Guidance or Tasking	Document Source
PEO	PEOs will ensure PMs implement Should-cost management by identifying opportunities for savings and developing Should-cost estimates for their ACAT I, II, and III programs. Beginning in FY 2014, Should-cost management objectives will be included in Acquisition Managers employee contribution planning and Officer's major performance objectives	Shyu, 2013
PEO	PEO managed ACAT II and III programs will continue to develop and have independent verification of Will-cost estimates prior to milestone decision	Shyu, 2013
PEO	PEOs are required to use the PARCA developed Should-cost database to capture information on their initiatives, exemptions, and margin release. Initiatives and exemptions are to be entered into the database by October of each FY and updated on a quarterly basis or when program changes occur. Margin releases are expected to be entered once the initiative has been successful and the PEOs are requesting the withhold	Shyu, 2013
PEO	PEOs and PMs are required to report on their cost target and progress against those targets, plans of action, milestones for major Should-cost initiatives, and their savings projected and realized	Shyu, 2013
PEO	PEOs will include in their DAES briefings, metrics addressing how Should-cost has been implemented within their portfolios, incentive and recognition mechanisms in place, and lessons learned	Shyu, 2013
PEO	PEOs are required to submit an exemption for programs that are not able to obtain an initiative. There are two categories that qualify a program for an exemption: program has less than $3M remaining per year or it is a joint program with another Service as the executive agent	Shyu, 2013
PEO	PEOs will withhold the difference between the funds distributed and the program budget baseline for programs for which they are the MDA; margin releases will be allocated to fulfill unfunded requirements, to accelerate acquisition, and to fund cost reduction. PEOs are required to complete margin release forms that will identify the distribution of funds and will require approval based on the MDA authority. The PEOs will be the decision authority for the programs where they are the MDA.	Shyu, 2013
PEO	PEOs will delegate responsibility for data entry into the Army Will-cost/Should-cost database	Shyu, 2013 - Business Rule 1
PEO	PEOs will be responsible for "verifying" data entered into the Will-cost/Should-cost database	Shyu, 2013 - Business Rule 4
PEO	PEOs will upload files to AKO folder by the 15th of every month so PARCA can review and upload to AKO by the 30th of every month. This process will enable the Affordability IPT held at the PARCA to review most current will cost/should cost data floated up from the PMs/PEOs	Shyu, 2013 - Business Rule 9
PEO	PEOs have approval authority for ACAT Is and below and review and verification authority for ACAT I programs. Ms. Shyu has approval authority for ACAT Is, and override authority for ACAT Is and below. PARCA will review all initiatives, exemptions, and margin release to concur	Shyu, 2013 - Business Rule 10
PEO	Ensure the database has a hierarchy of all programs to effectively roll up initiative and exemption funding values to the PEO level.	Shyu, 2013 - Business Rule 20
PEO	PEOs will recertify exemption status quarterly. If any exemption information changes, the PEO/PM must notify PARCA within 30 days and must submit either a new exemption or initiative within 90 days if necessary	Shyu, 2013 - Business Rule 21
PEO	If any exemption information changes, the PEO/PM must notify PARCA within 30 days and must submit either a new exemption or initiative if necessary within 90 days. PARCA will inform Ms. Shyu of their status and provide any necessary instructions for moving forward. The 90 day clock for submitting changes for an exemption will begin once the PEO/PM identifies the change in the system.	Shyu, 2013 - Business Rule 22
PEO	For exemption and margin release approval (ACAT IIs and below), the approval authority (PEO) must print and sign the database generated form. The document must then be scanned and attached to the initiative in the database and the approver must update the status manually	Shyu, 2013 - Business Rule 27
PEO	PEO shall validate a monthly report in the should cost database showing the amount of funds that have been released and the purpose of the release. A consolidated monthly report will be sent to the Principle Deputy and the AAE showing all programs margin with-hold and release	Shyu, 2013 - Attachment 3
PEO	All ACAT II and III programs are required to develop and have independent verification of will cost estimates prior to milestone decisions. As with ACAT Is, the will cost estimate will be used as the basis for all budgeting and programming decision. All metrics and reporting external to the Department will be based on the will cost estimate.	Shyu, 2011
PEO	All ACAT II and III programs will have MDA approved should cost execution targets. PEOs will have approval authority for the ACAT II programs delegated to them and ACAT III programs and will report annually on their progress to ASA(ALT).	Shyu, 2011
PEO	PEOs and PMs of major defense acquisition programs (MDAPs)and major automated information system programs will report should cost targets and progress in achieving them at Defense Acquisition Executive Summary (DAES) and DAB reviews. PEOs will provide, via the DAES briefings, quantitative metrics addressing how should cost has been implemented within their portfolios, incentive and recognition mechanisms in place, and lessons learned. PEOs will also provide case studies of should cost initiatives to the Defense Acquisition University for use in its training materials and BBP repository established to collect and share best practices.	Kendall, 2013 - *Should Cost Management in Defense Acquisition*, memo - DRAFT

Table 8. Official Should-Cost Guidance and Taskings for PMs

Office of Responsibility	Should-cost Guidance or Tasking	Document Source
PM	PMs implement Should-cost management by identifying opportunities for savings and developing should-cost estimates for their ACAT I, II, and III programs, NLT 1 Aug 2013. Should-cost targets will be broken out by appropriation type. Cost savings that span multiple years, when it is reported at the end of the year, it should be reported as still in progress.	Shyu, 2013
PM	Will-cost and Should-cost estimates are required for all ACAT I, II, and III milestone reviews. All reviews must be vetted by a cross functional team to include cost, financial management and budget, contracting, engineering, logistics, and programming representatives.	Shyu, 2013 - attachment #3
PM	PMs with multiple active subprograms under one program, should have a baseline for each program	Shyu, 2013 - Business Rules
PM	Beginning in 2014, should-cost management objectives will be included in acquisition managers employee contribution planning and the officer's major performance objectives.	Shyu, 2013
PM	Assist the development of Will-cost estimates through CAPE, Independent Cost Estimates, Department of the Army Service Cost Position (ACP), or Program Office Estimates (POE).	Shyu, 2013
PM	Develop and have independent verification of will-cost estimates prior to milestone decisions for ACAT II and III programs.	Shyu, 2013
PM	Input should-cost initiatives, exemptions, and margin release into the PARCA should-cost database by October each year and updated on a quarterly basis or when changes occur. PEO responsible for verifying the data entered.	Shyu, 2013
PM	PMs shall input should-cost initiatives, exemptions, and margin release into the PARCA should-cost database by October each year and updated on a quarterly basis or when changes occur. If initiatives are captured as part of another effort such as Better Buying Power (BBP), value engineering change proposal (VECP) or Lean Six Sigma (LSS) then the user should indicated this where necessary. The PEO is responsible for verifying the data entered.	Shyu, 2013
PM	Request margin release from the PEO through PARCA for withhold funding once initiatives have been successful and realized savings have occurred. Margin release will be allocated to fulfill unfunded requirements, to accelerate acquisition, and to fund cost reduction.	Shyu, 2013
PM	PM are required to report on their should-cost targets and progress against those targets at Defense Acquisition Executive Summary (DAES) and Defense Acquisition Boards for MDAP programs. PMs will include in the plans of action and milestones for major Should-cost initiatives and their annual savings projected and realized.	Shyu, 2013
PM	Provide Should-cost case studies to the PEO for submission to PARCA for review. PARCA will identify based on best practice, which case studies should be included in the Defense Acquisition University (DAU) repository.	Shyu, 2013
PM	Submit exemption requests to the PEO for programs that are not able to obtain Should-cost initiatives. There will be two categories that qualify a program for an exemption: If a program has less than 43M remaining per year or it is a joint program with another service as the executive agent.	Shyu, 2013
PM	PMs will recertify exemption status quarterly. If any exemption changes, the PEO/PM must notify PARCA within 30 days and must submit new exemption or initiative within 90 days if necessary.	Shyu, 2013 - Business Rules
PM	Develop inventive plans for PMs to reinforce and reward commitment to the Will-Cost and Should-Cost management process.	Carter, 2011a

Question 3: What are the best practices to promulgate to the acquisition workforce?

A best practice is a method or process that produces superior results to those achieved with other means. Best practices are collected by observing and analyzing highly performing practices. The practices are then shared and used by the rest of the organization or business field. However, best practices applied to one product may not work on a similar product because of context, leadership, economic conditions, and so forth.

The following best practices were identified by our research and should be promulgated to the acquisition workforce:

Personnel Pillar:

- Best Practice 1: Integrated Product Team—PM UAS effectively implemented SCM into each one of their IPTs to develop their cost-saving initiatives.

Protocol Pillar:

- Best Practice 2: PM UAS should-cost methodology—PM UAS leadership developed and implemented a five-step process for SCM in their organization (Figure 28). This process has proven to be successful by providing a structure to their SCM program.

SCM Initiatives Best Practices:

- Best Practice 3: Reduce recurring manufacturing costs—The Grey Eagle program successfully reduced recurring manufacturing costs in their LRIP III contract to realize $13.09 million in SCM savings and an additional $9 million in cost avoidance.
- Best Practice 4: Value engineering change proposals (VECP)—PM UAS processed two VECPs which resulted in $2.3 million in SCM savings and an additional $10 million in cost avoidance.
- Best Practice 5: Government furnished equipment (GFE)—The strategy gave PM UAS 8% SCM savings of its Fiscal Year 2009–2012 procurement funding of the OSRVT Rover transceiver. The strategy promotes real competition within a program, creating opportunities to cut cost through competition and expansion of the supplier base. Encourage programs to conduct CBAs to determine if buying the data rights and using GFE strategies are worth the cost.
- Best Practice 6: Leverage cross-product/service technology—PM Grey Eagle and PM Shadow leveraged similar technology to achieve $20 million in SCM savings. The cross-product coordination also resulted in eliminating redundancy in control stations and will reduce sustainment costs across the life cycle
- Best Practice 7: Multi-year contracts—PM Cargo executed a firm fixed price (FFP), multi-year sole source contract to realize a cost savings of $932 million for FY2013–2019.

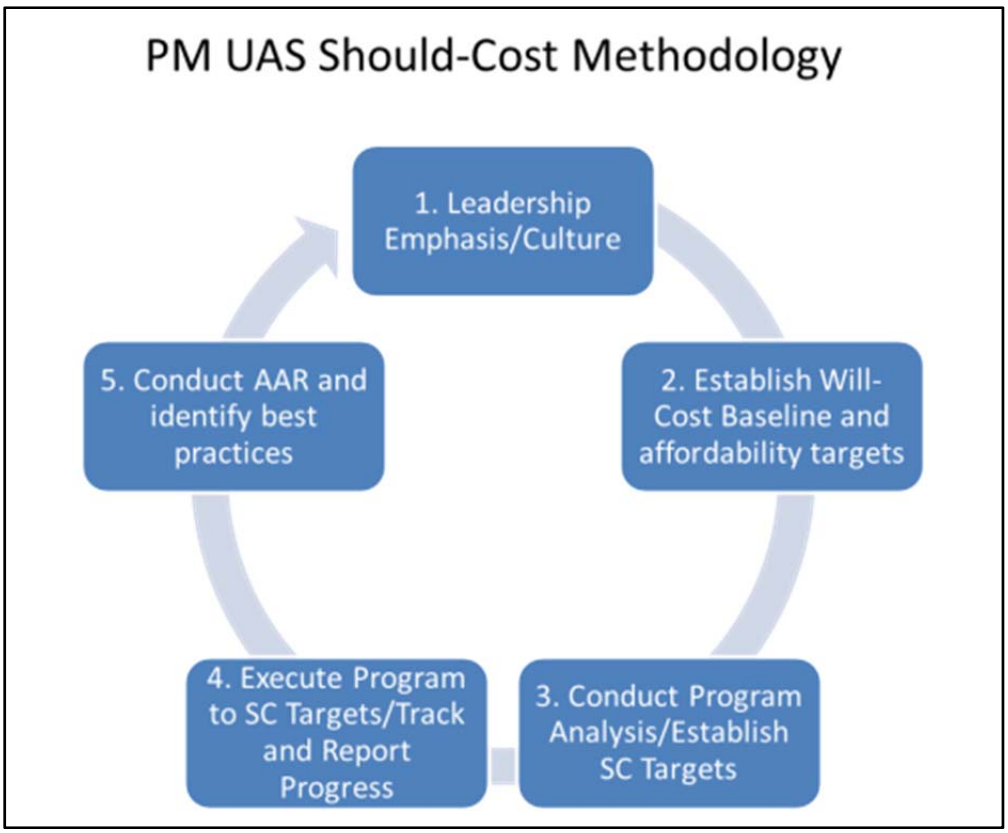


Figure 28. Best Practice #1—PM UAS Should-Cost Methodology

B. FINDINGS AND RECOMMENDATIONS

1. Recommendations for Should-Cost Process Improvement

We make the following recommendations pursuant to the results of this research:

- **Finding #1: Organizational Culture**

Organizational culture describes how members of an organization behave, their symbols, and other artifacts that are identifiable. According to Robbins and Judge (1998), "organizational culture refers to a system of shared meaning that distinguishes the organization from other organizations" (p. 219). SCM has been implemented for three years now and is making its way into organizational culture. All ACAT I, II, and III programs have implemented should-cost-based management into their programs or have requested an exemption. All the necessary policies have been written and promulgated, leaders' guidance and intent given, and the initial necessary training conducted. SCM has been successfully implemented as a process but remains outside the culture. The gains made are fragile and could be reversed without continuous leadership emphasis.

- **Recommendation #1: Organizational Culture**

We recommend that acquisition leaders further develop SCM into their organizations' culture. Organizational culture happens when a dominant perception takes hold and is adopted by a majority of the organization (Robbins & Judge, 1998, p. 219). SCM is a paradigm shift in how the acquisition workforce has been doing business since the start of the GWOT. SCM must be adopted into the dominant culture of the organization for it to be successful in the long term. Organizational culture can be created in three ways, according to Robbins and Judge (1998):

> First, leaders hire and keep only employees who think and feel the same way they do. Second, they indoctrinate and socialize these employees to their way of thinking and feeling. And finally, the leader's own behavior encourages employees to identify with them and internalize their beliefs, values, and assumptions. (p. 223)

Acquisition leaders must take the lead to embed SCM into their organizations. The process is going to require leaders to be a visible role model, communicate their intent across the force, visibly reward the workforce for its efforts, insert SCM into documented policy and doctrine, and provide protective mechanisms for employees who make mistakes. SCM management has been implemented as a standard process but has yet to become culture. The idea of "doing more without more" is a difficult proposition to execute and will take strong leadership to accomplish. Culture takes time and dedicated leadership effort to create and hold. Figure 29 shows a way SCM could be included into an organization's culture.

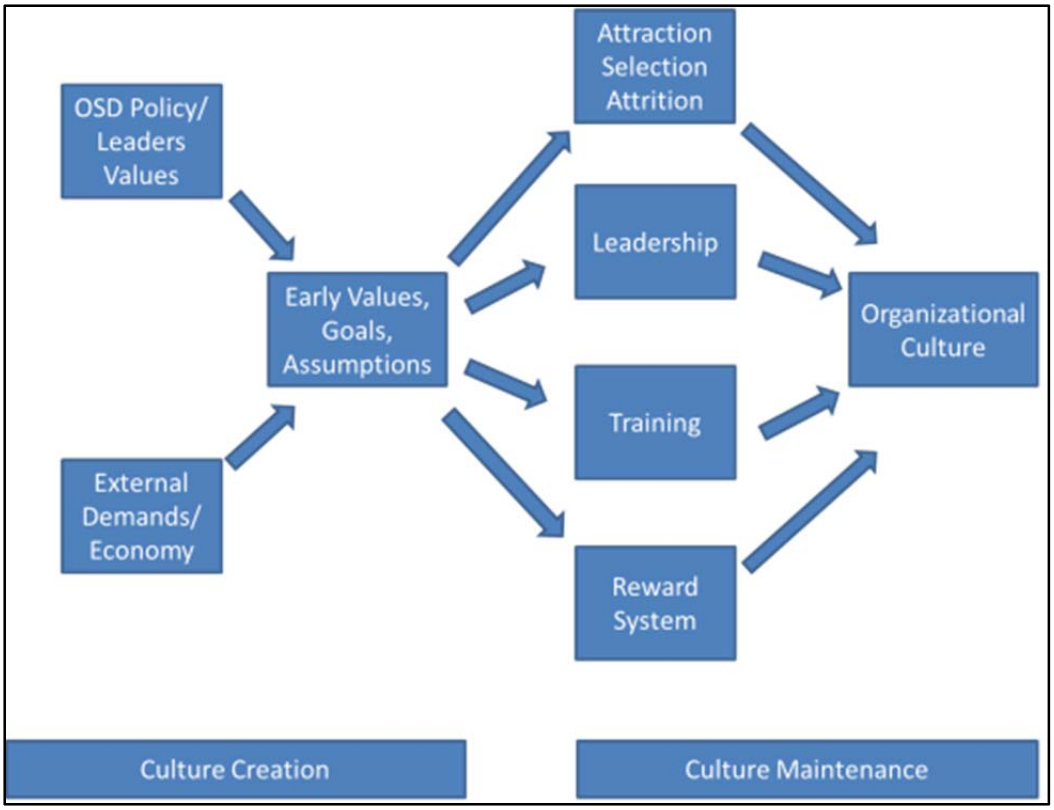


Figure 29. Culture Creation and Maintenance
(Bauer & Erdogan, 2009)

- **Finding #2: Should-Cost Management in Sustainment**

SCM currently only applies to all ACAT I, II, and III programs that are active. A program is considered active until it reaches 90% delivered or 90% expended, or, in the case of information systems, until it reaches full operational capacity (FOC).The AAE indicated that specific guidance for capturing will-cost/should-cost would be released in October 2013 for implementation in FY2014.

- **Recommendation #2: Should-Cost Management in Sustainment**

We recommend that all ACAT programs, regardless of life-cycle stage, implement SCM. Establishing sustainment SCM should be a priority going forward in FY2014. Operations and sustainment account for 60% or more of the total life-cycle cost of a program. Great efforts should be made to reduce costs in the phase given that the initiatives produce a positive net present value (NPV). Products in sustainment can yield should-cost savings through careful management and planning. For example, PM Soldier Protective Equipment (SPE) was able to save $30,000 in FY2011 and achieve a project savings of $1.9 million for FY2012–2016 through a VECP on the Advanced Combat Helmet (ACH) helmet cover. The helmet cover had been in sustainment for several years prior to the VECP. A small design initiated by the PMO made the cover less expensive to manufacture. The Defense

Logistics Agency (DLA) subsequently put the newly designed cover on contract to realize the savings. The success of the VECP was due in part to close coordination between the PMO engineers and DLA contracting.

- **Finding #3: Army Should-Cost Database**

The Army's Should-Cost Database is a standalone Microsoft Access database expertly designed to provide all functionality required for personnel to develop, own, track, and report SCM initiatives. Each SCM initiative is developed in the database and tracked over time. When needed, the reports and slide presentations for SCM reviews are created with the click of a button. This design does not currently interact with any other acquisition platform, such as DAMIR, CBAR, and so forth, which could potentially require input of the same data multiple times across multiple systems.

The Microsoft Access design allows updates to be made in the database at any location. The data is then exported as an XML file and sent via an email or SharePoint site to the managers of the main database at the Army's PARCA office. The design of the database also incorporates a login and password function that identifies the user and allows that user to only see the program data which he or she is authorized to see.

- **Recommendation #3: Army Should-Cost Database**

The current design of the database meets the immediate needs for the SCM process as the Army continues to iron out the requirements for SCM. The database shows the Army's desire for SCM to become a permanent fixture in the complete acquisition process. Upgrading the database to a web-based database that interacts with other acquisition platforms would reduce the redundancy of data input and help solidify SCM as a permanent process in Army program management.

Additionally, the current design of the database only allows an individual to see the data of a program which he is authorized to see, a characteristic of the database that is absolutely necessary. However, there could be a treasure trove of lessons learned that is being unintentionally hidden. The database allows a PM to input why a SCM initiative worked or did not work. These comments associated with the initiative are exactly the information that should be circulated across the entire PM and PEO community to assist with cost saving measures. Tucking this golden nugget of information in an area that only the originator can see slows down the acquisition community's ability to learn from each other's SCM initiative efforts.

- **Finding #4: Should-Cost Management Best Practice Sharing**

Currently, the DAU offers PMT 401 and PMT 402 courses to selected PEOs, DPEOs, PMs, and DPMs on Fort Belvoir, VA, prior to their assuming their posts.

During these courses, SCM best practices are shared and discussed in a classroom environment. These courses are largely reserved for senior level acquisition leaders (O-5/GS 14 and above), however; classes are available to military and civilian acquisition professionals in the rank of Major (O-4) and General Schedule (GS) 13s and below, on a case by case basis depending on availability of seats. Additionally, our research uncovered a DoD-managed website (DoD, n.d.) that contains a repository of SCM best practices and case studies that can be accessed via Common Access Card (CAC) and is currently restricted to personnel designated by the CAEs. According to the website (DoD, n.d.), AT&L Government personnel wishing to access this website may check back in the website in mid-November 2013 for an update on this access policy.

- **Recommendation #4: Should-Cost Management Best Practice Sharing**

Currently, some SCM best practices are shared among senior leaders (lieutenant colonel [O-5]/GS 14 and above) during their attendance at the DAU's PMT 401 and PMT 402 courses prior to taking PEO, DPEO, PM, or DPM positions. While we believe this to be an effective method and agree that it makes sense to target senior leaders who have been selected to lead programs to teach these courses, it would be beneficial to open up the aperture and provide SCM education to all ranks and experience levels within the acquisition workforce.

SCM should be emphasized at all levels of the acquisition workforce, from top level executives at OSD to the Assistant Product Manager (APM) and his or her product team working the program every single day. Personnel at different levels of the SCM chain have varying perspectives on how to gain efficiencies in a program. Successfully merging these perspectives will allow the acquisition workforce to gain continual improvement in the SCM process.

- **Finding #5: SCM Permanency**

Currently, SCM initiatives are being tracked, monitored, and reported at all levels from the PM to the USD(AT&L). Our research shows that SCM is continuing to gain traction and greater importance in an environment of shrinking defense budgets primarily due to leadership emphasis. There is a need to make SCM a permanent fixture to all acquisition processes and documents other than leadership strictly enforcing SCM into the programs.

- **Recommendation #5: SCM Permanency**

We recommend that the SCM process be incorporated into all key process documents, charts, and acquisition platforms, such as the Integrated Acquisition Lifecycle Chart, *Defense Acquisition Guidebook*, DoD 5000.02, AR 70-1, and the

DAMIR and CBAR platforms. Every effort should be made to make SCM an automatic process in managing a program and habitual in execution.

C. AREAS FOR ADDITIONAL RESEARCH

This case study is foundational and exploratory in nature and is intended to provide valuable feedback to DoD leaders and the acquisition workforce in regard to how the Army has implemented SCM. In order to leverage the work we have done with this case study, additional research based on our findings will provide more fidelity into the effectiveness of the SCM program. We recommend further research into the following areas:

- Conduct further research on the impact of Continuing Resolutions (CRs) on the Army's ability to manage programs to their should-cost targets. With the uncertain budgetary environment the Army has been operating in for the past five years—living CR to the next CR—there are vast implications for SCM execution in the years to come.
- Conduct additional case studies to identify and promulgate SCM best practices. Our case study is a small sampling of SCM practices. The SCM program is gaining traction, and there will be more opportunities to collect SCM best practices and share them with the workforce.
- Conduct further research to determine what impact(s) will-cost estimates have on the PM's ability to achieve the most amount of savings using SCM. According to Shyu, PMs are encouraged to track all interim changes to make sure the assumptions made to come up with the will-cost baseline are still valid when addressing potential SCM initiative savings. The accuracy of the will-cost estimate could be directly related to the amount of savings achieved in an SCM initiative.
- Determine how the DCMA and DCAA are supporting the SCM effort through a detailed case study. Our research showed that the DCMA coordinated with the Navy Price Fighters to help PM Cargo obtain accurate cost data. Additionally, Yoder (2012) wrote in his thesis about the support both organizations are providing to support the BBPi, but little has been written about their efforts in supporting SCM.

D. FINAL THOUGHTS/CONCLUSION

As the DoD continues into an age of shrinking budgets, the Army's acquisition workforce will have to figure out how to continually modernize the force with fewer resources. The SCM process is an exceptional tool that has been a part of the acquisition manager's kit bag, but not utilized as efficiently as it could have. While the country being engaged in two conflicts over a 10-year period contributed to

constant acquisition program overruns, Carter brought SCM to the forefront to correct what had become the historical norm. The SCM process forces managers to become cost conscious in acquisitions processes, something that is too easily dismissed when the primary mission is to get the needed materials into the warfighters' hands so they can be successful in their mission.

The SCM process is vital and necessary in today's Army to help provide the best equipment to the Soldier at the best price. The current implementation of SCM in the Army is heavily reliant on leadership to keep it alive, although there have been significant steps taken that signal a desire to make it a permanent fixture in the acquisition processes. Including the SCM process into all acquisition documents and process charts will help to solidify its permanence and allow many programs, which might have otherwise been canceled due to cost overruns, to end up in the warfighters' hands.

THIS PAGE INTENTIONALLY LEFT BLANK

REFERENCES

Acquisition of major weapons systems by the Department of Defense and S. 454, the Weapon Systems Acquisition Reform Act of 2009: Hearing before the Committee on Armed Services, Senate, 111th Cong. 1 (2009). Retrieved from http://www.gpo.gov/fdsys/pkg/CHRG-111shrg53267/pdf/CHRG-111shrg53267.pdf

Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASA[ALT]). (2013). Army Should-Cost Database v.3.7.17—Demo [Microsoft Access software]. Washington, DC: Author.

Bauer, T. N., & Erdogan, B. (2009). *Organizational behavior* (v. 1.0). Washington, DC: Flat World Knowledge.

Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal*, 9(2), 27–40.

Carter, A. (2010a, June 28). *Better Buying Power: Mandate for restoring affordability and productivity in defense spending* [Memorandum]. Washington, DC: Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics.

Carter, A. (2010b, September 14). *Better Buying Power: Guidance for obtaining greater efficiency and productivity in defense spending* [Memorandum]. Washington, DC: Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics.

Carter, A. (2010c, November 3). *Implementation directive for Better Buying Power—Obtaining greater efficiency and productivity in defense spending* [Memorandum]. Washington, DC: Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics.

Carter, A. (2011a, April 22). *Implementation of will-cost and should-cost management* [Memorandum]. Washington, DC: Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics.

Carter, A. (2011b, August 24). *Should-cost and affordability* [Memorandum]. Washington, DC: Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics.

Carter, A., & Mueller, J. (2011). Should-cost management: Why? How? *Defense AT&L, 40*(5), 14–18. Retrieved from http://www.dtic.mil/

Defense Acquisition University iCatalog. (2013, September 21). Retrieved from http://icatalog.dau.mil/onlinecatalog/courses.aspx?crs_id=85

Defense Acquisition Workforce Improvement Act, 10 U.S.C. Ch. 87 (1990).

Defense Contract Management Agency (DCMA). (n.d.). Our agency. Retrieved from http://www.dcma.mil/

Department of Defense (DoD). (n.d.). Better Buying Power: Should-cost. Retrieved from Acquisition Proven Practices and Lessons Learned website: https://dap.dau.mil/apl/Pages/Default.aspx

Department of Defense (DoD). (2013, May 7). *Defense acquisition guidebook*. Retrieved from https://dag.dau.mil/Pages/Default.aspx

Department of the Army (DA). (2011, July 22). Army acquisition policy (Army Regulation 70-1). Washington, DC: Headquarters, Department of the Army.

Federal Acquisition Regulation (FAR), 48 C.F.R. Part 15 (2013). Retrieved from https://acquisition.gov/far/current/html/Subpart%2015_4.html#wp1208705

Federal Acquisition Regulation (FAR), 48 C.F.R. 17.103 (2013).

Garber, R., & Willen, B. (2011). Should-cost review: A pragmatic approach to affordability. Retrieved from http://www.atkearney.com/aerospace-defense/featured-article/-/asset_publisher/S5UkO0zy0vnu/content/should-cost-review-to-improve-affordability/10192

Gates, R. (2010, May 8). Defense spending [Speech]. Retrieved from http://www.defense.gov/speeches/speech.aspx?speechid=1467

General Accounting Office (GAO). (2001, April). *Best practices: DOD teaming practices not achieving potential results* (GAO-01-510). Retrieved from http://www.gao.gov/new.items/d01510.pdf

Government Accountability Office (GAO). (2012, December 4). *Defense management: Opportunities exist to improve information used in monitoring status of efficiencies initiatives* (GAO-13-105R). Retrieved from http://www.gao.gov/products/GAO-13-105R

Husband, M. (2013, May 5). *Applications of should-cost to achieve cost reduction* [Presentation slides]. Retrieved from https://acc.dau.mil/adl/en-US/639809/file/72955/2013-04-04%20Applications%20of%20Should%20Cost%20to%20Achieve%20Cost%20Reduction,%20Mark%20Husband,%20DAU%20Hot%20Topics%20Forum%20handout%20version-EDITED.pdf

Kendall, F. (2012, November 13). *Better Buying Power 2.0: Continuing the pursuit for greater efficiency and productivity in defense spending* [Memorandum]. Washington, DC: Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics.

Kendall, F. (2013a, March 4). Letter to industry partners. Retrieved from http://www.acq.osd.mil/docs/Letter%20to%20Industry%20Partners%204%20March%202013.pdf

Kendall, F. (2013b, April 24). *Implementation directive for Better Buying Power 2.0: Achieving greater efficiency and productivity in defense spending* [Memorandum]. Washington, DC: Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics.

Kendall, F. (2013c, August 6). *Should cost management in defense acquisition* [Memorandum]. Washington, DC: Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics.

Layden, P. (2012, May). *Better Buying Power: An Army program manager's perspective* (SSCF Research Report, DAU). Retrieved from http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA563262&Location=U2&doc=GetTRDoc.pdf

MITRE. (2008, October). IPT startup guide. Retrieved from https://acc.dau.mil/CommunityBrowser.aspx?id=275211&lang=en-US

Mullins, T. (2011, November 14). *Management of should cost margins* [Memorandum]. Washington, DC: Assistant Secretary of the Army for Acquisitions, Logistics, and Technology (ASA[ALT]).

Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics (OUSD[AT&L]). (2008, December 8). *Operation of the defense acquisition system* (DoD Instruction 5000.02). Washington, DC: Author.

Program Executive Office (PEO) Aviation. (n.d.). Program executive officer. Retrieved from https://www.peoavn.army.mil/SitePages/Home2.aspx

Program Executive Office (PEO) Aviation. (2013). *Better Buying Power: Restoring affordability & productivity initiatives* [Presentation slides]. Huntsville, AL: Author.

Program Office Unmanned Aircraft Systems (PM UAS). (2012, December). *Eyes beyond the horizon: Searching for better buying power*. Huntsville, AL: Author.

Program Office Unmanned Aircraft Systems (PM UAS). (2013, February). *PM UAS Better Buying Power 2.0 efficiency initiatives* [Presentation slides]. Huntsville, AL: Author.

Robbins, S. P., & Judge, T. A. (1988). *Power and politics. Essentials of organizational behavior*. New York, NY: Prentice-Hall International.

Schoonover, J. (2012, January 25). Program Management Training (PMT) 401 & 402 plan of instruction (POI). Washington, DC: Defense Acquisition University.

Shyu, H. (2011, June 10). *Army implementation of Under Secretary of Defense (Acquisition, Technology, and Logistics) (USD(AT&L)) affordability initiatives* [Memorandum]. Washington, DC: Office of the Assistant Secretary of the Army for Acquisition, Logistics, and Technology.

Shyu, H. (2012, November 30). *Army annual FY12 progress report of should cost management* [Memorandum with enclosed slide presentation]. Washington, DC: Office of the Assistant Secretary of the Army for Acquisition, Logistics, and Technology.

Shyu, H. (2013). *Implementation of should-cost management* [Memorandum]. Washington, DC: Office of the Assistant Secretary of the Army for Acquisition, Logistics, and Technology. Manuscript in preparation.

Soloway, S. (2012, September 26). Letter to Under Secretary Kendall on Better Buying Power 2.0 initiative. Retrieved from http://www.pscouncil.org/PolicyIssues/AcquisitionPolicy/BetterBuying/Letter_to_Under_Secretary_Kendall_on_Better_Buying_Power_2_Initiative.aspx

Spruill, N. (2011, December 12). *Should-cost templates* [Memorandum]. Washington, DC: Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics.

United States Army Contracting Command. (2013, April 1). *CH-47F multi-year contract negotiations after action review (AAR)* [Presentation slides]. Huntsville, AL: Author.

United States Army Materiel Command. (1972). *Procurement: Should-cost analysis guide*. Retrieved from http://www.dtic.mil/dtic/tr/fulltext/u2/746253.pdf

Value engineering change proposal. (2013). In *ACQuipedia: Your online acquisition encyclopedia.* Retrieved from Defense Acquisition University website: https://dap.dau.mil/acquipedia/Pages/ArticleDetails.aspx?aid=172803b4-9cc5-4ae2-9862-cd7e8b09cdc7

Weapon Systems Acquisition Reform Act (WSARA) of 2009, Pub. L. No. 111-23, §§103c, 103d, 139c, 123 Stat. 1704 (2009). Retrieved from http://www.ndia.org/Advocacy/PolicyPublicationsResources/Documents/WSARA-Public-Law-111-23.pdf

Yin, R. K. (2009). *Case study research: Design and methods* (5th ed.). Los Angeles, CA: Sage.

Yoder, E. C. (2012). *An analysis of the potential impacts of Ashton Carter's should-cost memorandum on defense contracting* (NPS-CM-12-199). Retrieved from http://acquisitionresearch.net/files/FY2013/NPS-CE-13-C10P04R04-057.pdf

THIS PAGE INTENTIONALLY LEFT BLANK

ACQUISITION RESEARCH PROGRAM
GRADUATE SCHOOL OF BUSINESS & PUBLIC POLICY
NAVAL POSTGRADUATE SCHOOL
555 DYER ROAD, INGERSOLL HALL
MONTEREY, CA 93943

www.acquisitionresearch.net