

**Defense Acquisition Program Manager as Program Leader:
Improving Program Outcomes Through Key Competencies and
Relationship Management**

by

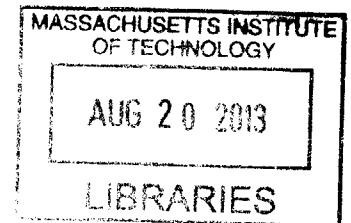
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Submitted to the System Design and Management Program
In Partial Fulfillment of the Requirements for the Degree of

Master of Science in Engineering and Management
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ARCHIVES



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ABSTRACT

The US defense acquisition system is a massive enterprise charged with developing and acquiring state-of-the-art military technology and systems. For the past 65 years, many broad-reaching studies and commissions have endeavored to refine and overhaul the acquisition process to improve its value delivery in the form of increased capability, in less time, and for lower costs. But processes don't make things, people do; which reframes this research to focus on people over process. Acquisition people are knowledge workers, who must creatively execute defense programs within the system and processes they are given.

The Government Program Manager (PM) is the primary focus of the thesis. The research explores how the PM is able to achieve improved program outcomes through a combination of leadership competencies and management of key stakeholder relationships. The examination of relevant acquisition literature provides opportunities for the application of systems, stakeholder, and negotiation theory to enable PMs to achieve value delivery on defense programs. Additional theories on organizational routines and activity systems provide insight on how effective PMs can build acquisition dynamic capabilities in the small and in the large to benefit US national security.

The research gathers interview data from PM experts and leadership of several large acquisition case study programs. Unique to this research is the multi-dimensional perspective obtained from the Government PM, the lead User representative, and the prime contractor PM on the case programs. This approach enables an examination of the influence of dyadic and triadic relationships and program priorities alignment, with particular focus on the Government PM's role in establishing and managing those stakeholder relationships. The research concludes that strong dialectic leadership, with sufficient managerial and technical competence is paramount for an exceptional PM to succeed in delivering improved program outcomes. Recommendations are provided for the PM, those responsible for PM development, and the DoD to increase efficiency and effectiveness of the defense acquisition enterprise.

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I'm grateful for all of those who were willing to support this effort by allowing me to interview them. The only thing more valuable than their precious time is their tremendous insight based on their collective experience.

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Finally, I owe a debt of gratitude to the Air Force, and its leaders who endorsed my time away to pursue broader perspectives and understanding. I also wish to thank all of the many colleagues over the years who participated in discussions and influenced me in the best way possible, by simply sharing the ideas. I especially thank Mike Meyer, with whom I most shared my MIT journey and valuable conversations too numerous to count.

DEDICATION

I dedicate this thesis, and the many sequestered hours that went into its formation, to those who matter most. My beautiful wife and lifelong friend, Carley, and my four wonderful children, Alec, Carter, Brock, and Kaylin... Yes, daddy can play with you now.

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LIST OF ABBREVIATIONS

ACAT – Acquisition Category

APMC – Advanced Program Managers Course

BBP – Better Buying Power

CNA – Center for Naval Analysis

CSP – Cost, Schedule, Performance

DAE – Defense Acquisition Executive, who is also the USD (AT&L)

DAPA – Defense Acquisition Performance Assessment

DAS – Defense Acquisition System – describes the acquisition system defined by the DoD 5000 series documents

DBB – Defense Business Board

DAU – Defense Acquisition University

DoD – Department of Defense

DT – Developmental Test

FY – Fiscal Year

FYDP – Future Years Defense Program

GAO – Government Accountability Office

GDP – Gross Domestic Product

JCIDS – Joint Capabilities Integration and Development System

KTR – abbreviation used for the lead defense contractor

LAI – Lead Advancement Initiative

LCMS – Life Cycle Management System – describes the acquisition system defined by the DoD 5000 series documents, integrated with the JCIDS and PPBE decision support systems

LPTA – Low Price Technically Acceptable

MAJCOM – Major Command

MDA – Milestone Decision Authority

MDAP – Major Defense Acquisition Program

NPS – Naval Postgraduate School

OPM – Office of Personnel Management

OSD – Office of the Secretary of Defense

OT – Operational Test

PIO – Pilot Induced Oscillation

PM – Program Manager

PMI – Program Management Institute

PPBE – Planning, Programming, Budgeting, and Execution

RAA – Responsibility, Authority, and Accountability

USD (AT&L) – Undersecretary of Defense for Acquisition, Technology, and Logistics

USD (C) – Undersecretary of Defense (Comptroller)

Chapter 1 – Problem & Motivation

“Dear Sir: Regarding your article 'What's Wrong with the World?' I am. Yours truly,”

— G.K. Chesterton¹

Many posit, what is wrong with the Acquisition world? Yes, it is large, complex, and often troubled. Everyone involved must examine, question, and seek to understand the role they play in its success or failure. I for one choose to begin with myself, an 18-year US Air Force Acquisition Officer, and **Program Manager**.

1.1 Introduction & Research Question

Frustration is an attribute shared by many who want the military industrial complex to deliver greater capabilities, more rapidly, and at lower cost. More often than not, there is news of technical failures, schedule delays, and cost overruns. Some say the defense acquisition system is fundamentally broken, while others say the procurement process is failing us. Perhaps Norman R. Augustine captured it best when he, “described the defense acquisition process as the epoxy that greases the wheels of progress.” (Kadish 2005, p. iii)

Indeed, many believe the system is broken and needs to be fixed. This perspective is the basis for dozens of studies, like the Packard Commission (1986) and DAPA (2006), that open with a summary of the problem and how this new study is charged to find and recommend the solution. Nearly all of these studies then go on to identify and describe the immense complexity of processes, variables, and considerations within the defense acquisition system (DAS). It is the contention of this author that a unitary big-bang fix is not possible, but what is possible is continuous improvement. In fact, real incremental improvements in the form of better procurement tools and processes have resulted from many of the very studies referenced above. These types of studies should continue and with careful implementation, they will likely lead to continuous improvements to the DAS.

But one area of improvement is seldom given sufficient attention. Perhaps improving the acquisition personnel is just as, if not more important than striving to improve the process. After all, processes and tools do not make things, people do. The acquisition system can be viewed as

¹ Accessed 20 Dec 12 from: http://www.goodreads.com/author/quotes/27973.G_K_Chesterton

a rather mechanistic process. But the process is mostly a guide to what is predominantly knowledge work involving strategy, technology, business challenges, and complex problem solving. The people in the acquisition workforce, led by program managers, dare to navigate the bureaucratic maze of the DAS with the intent of emerging on the other side with much-needed and superior military capability. So this research focuses on people within the DAS.

Research Question: *Given that the DAS is a large and bureaucratic enterprise, what can Government Program Managers (PMs) do within the system they are given, to be more productive with the resources provided, in order to deliver greater value to our national defense?*

To provide greater clarity to the research question, the following four ideas are briefly amplified.

Enterprise – Defined as “a complex, integrated, and interdependent system of people, processes, and technology, that creates value as determined by its key stakeholders.” (Nightingale and Srinivasan 2011, p. 2)

Government Program Managers – While the question is relevant to PMs of all levels, the primary focus for this research is the Government PM who is typically at, or near, the military Officer Grade 6 (O-6) or civilian General Schedule 15 (GS-15) level, and has primary responsibility for the weapon system program within the acquisition reporting chain.

Value – Defined as “Benefit at Cost” (Crawley & Cameron 2012, p.9). The primary benefit from the DAS is timely warfighting capability. So ‘delivering greater value’ includes, either; a) providing increased military capability for the same or lower cost, or b) providing needed military capability earlier, than would have otherwise happened had a PM not taken prudent action.

Resources Provided – This refers to all elements at the disposal of the Government PM, to include, but not limited to personnel, budget, processes, individual intellect, and training.

Because the challenge of finding ways for the Defense Acquisition Enterprise to deliver greater value is so great, sufficient attention is given up front to framing the problem in this research. This chapter provides a description of defense acquisition and the challenges that so often draw the attention and angst of the media, Congress, and the operational community within

the DoD who rely on the capabilities the acquisition system develops. Highlighted are key stakeholders and their relationships and why this is relevant to understanding acquisition improvements. The chapter proposes three hypotheses as to how the acquisition enterprise can deliver greater value in both the near, and the long term with a focus on the “iron-triangle” of roles and relationships of the Government PM, the operational user representative, and the prime contractor PM. Lastly, the chapter ends with a summary of the remaining chapters in the research.

1.2 Defense Acquisition System – The Importance and Challenge

“We must wring every possible cent of value for the Warfighters we support from the dollars with which we are entrusted by the American taxpayer.”²

Mr. Frank Kendall, USD (AT&L)

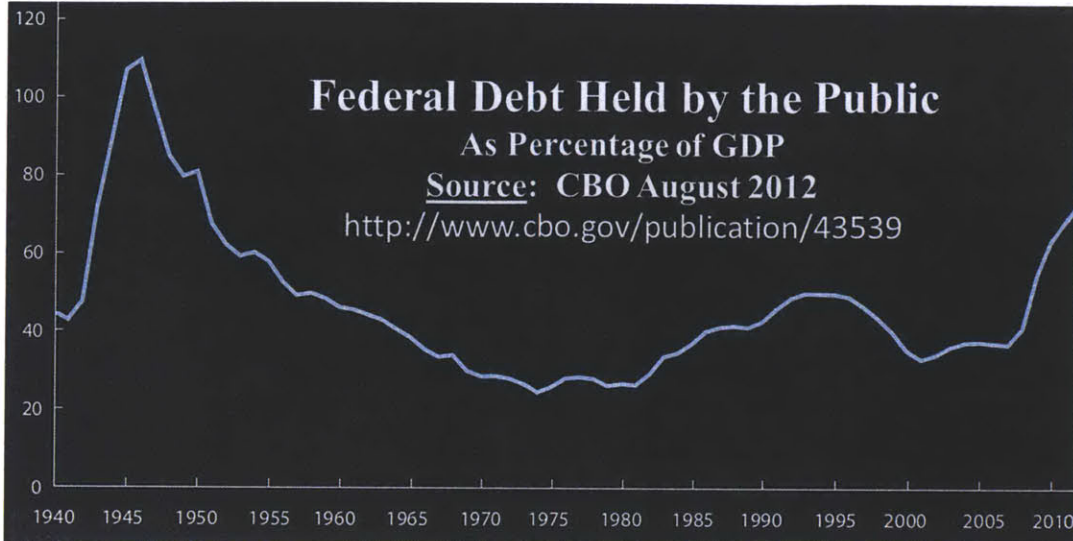
1.2.1 Importance of Task

As the mechanism and process by which military capability is developed and procured, the DAS is a critical dynamic capability for our nation. Any country’s national security is in large part defined by the strength of its military. The weapon systems being developed today by the defense acquisition enterprise are both providing that edge now, while also working to ensure continued advantage in the future. The nation also receives benefits from this endeavor beyond just military capability. Defense acquisition programs help grow our national technological and industrial base. Numerous advances in science, technology, and manufacturing have their roots in Department of Defense programs. Collectively, these defense and national technology benefits do not come at a small price.

Every federal tax dollar is a precious asset and is in high demand from competing federal priorities such as Medicare & Medicaid, Social Security, Defense, and hundreds of other lower profile priorities. The US is experiencing its highest deficits, as a percentage of gross domestic product (GDP), since World War II. (See Figure 1)

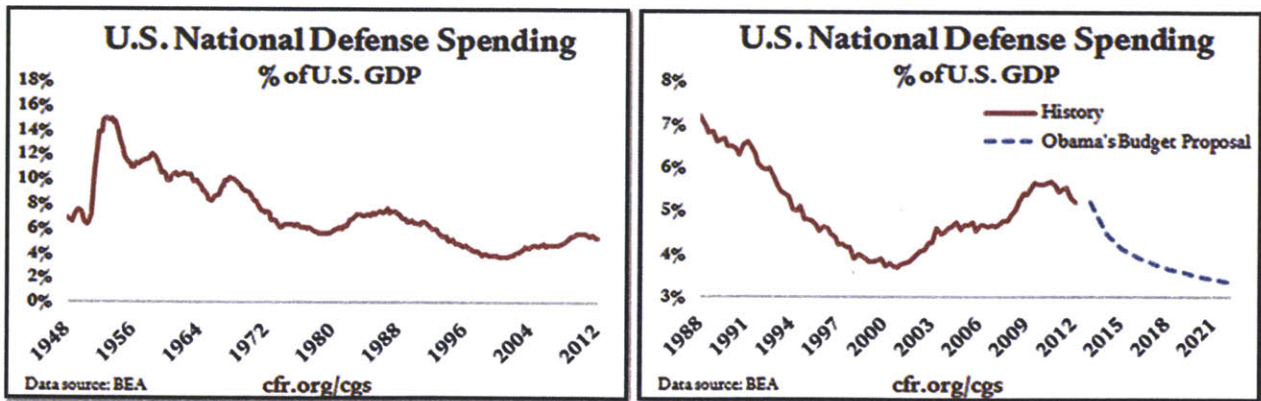
² Memorandum to the Acquisition Workforce, Better Buying Power 2.0, (Kendall 2012a, p.1)

Figure 1 -- Historic US Deficits



Also, as shown in the two graphics below, defense spending as a percentage of GDP, has continued to trend downward since WWII (Figure 2A), with even steeper future declines forecasted (Figure 2B). The Budget Control Act of 2011 is the most recent example of the reality of federal fiscal constraints. This law established automatic cuts in federal spending if congress cannot agree on some combination of targeted spending cuts and additional sources of federal revenues.

Figure 2A & 2B -- Defense Spending as a Percentage of GDP³



The importance of the defense acquisition task is underscored by the need for weapon systems to be reliable and safe. There is a moral obligation to the brave men and women who risk their lives for the nation, to ensure their risk of harm is not increased by using the equipment

³ Accessed October 14, 2012 from: <http://www.cfr.org/geoeconomics/trends-us-military-spending/p28855>

they are given to conduct combat operations. Finally, if US national security is to remain strong for future generations, one must consider more than the products being procured today. Rather, having the dynamic capability to continue to generate superior military capability decade after decade is paramount.

1.2.2 Acquisition Challenges

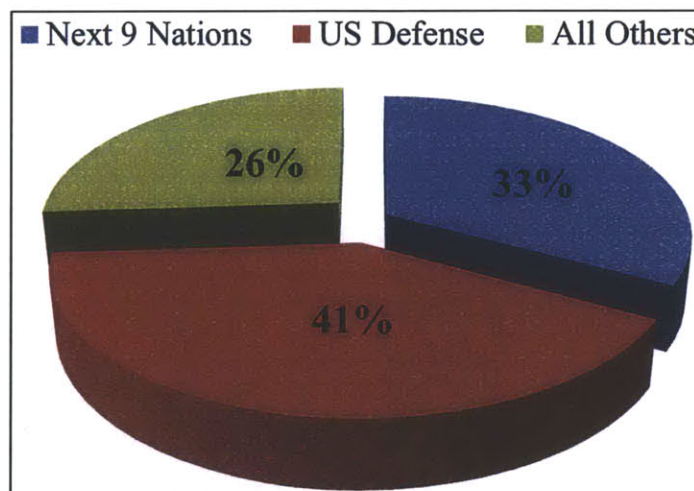
Given the gravity of the task, it is necessary to examine several of the key challenges associated with the acquisition system. The DAS is the mechanism used to acquire the weapon systems that ensure a technologically advanced, cost effective, safe, and superior military. Three of the biggest DAS challenges are:

1. Scale – Cost, Size, and Scope
2. Complexity
3. Inherent Risk

1.2.2.1 Challenge 1: Scale (Cost, Size, and Scope)

The United States dominates world defense spending with 41% of the global total for 2011 (SIPRI 2012). According to the SIPRI factsheet, and shown in Figure 3, the next nine nations combined total 33% of global military spending, with the remaining 26% spent by all other nations combined.

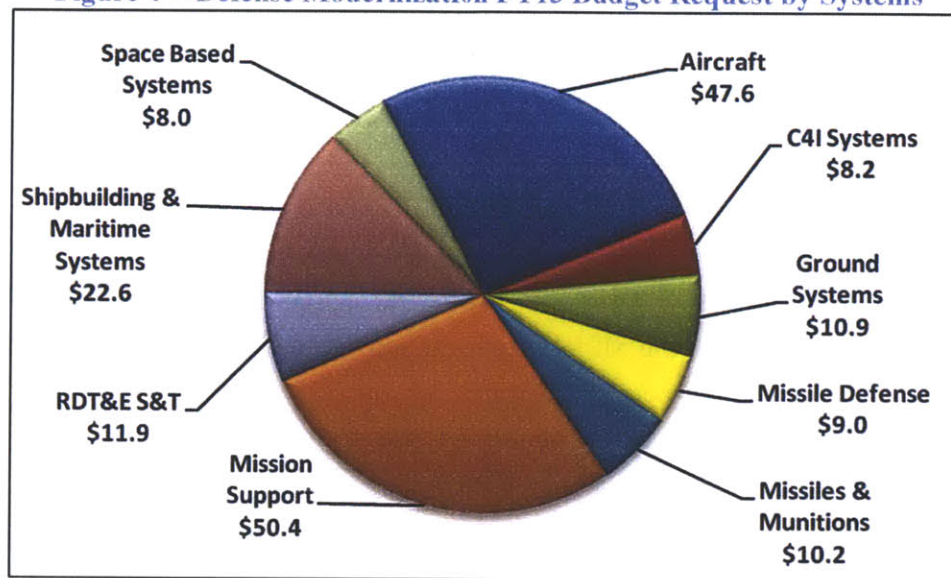
Figure 3 -- Global Defense Spending in 2011



Source: SIPRI 2012 Factsheet

All US defense spending can be placed into four major categories; personnel, military construction, operations and maintenance, and modernization. This last category includes research, development, and procurement and it is the primary funding category for defense acquisition programs. The President’s Fiscal Year (FY) 2013 budget request for the DoD was \$613.9B. The modernization piece of this budget request was \$178.8B, which is spread across many different types of systems as shown in Figure 4. This means almost 28% of the total defense budget request directly supports acquisition related activities. This aggregate *cost* constitutes a significant sum of national resources spent annually on defense acquisition program activity.

Figure 4 -- Defense Modernization FY13 Budget Request by Systems



Source: OSD Comptroller 2012, p. 2

The *size* of the defense acquisition enterprise is immense when considering all the programs currently in development, procurement, and sustainment. If one were to compare the total annual acquisition budget with Fortune 500 company revenues⁴, the DoD’s acquisition enterprise would be 5th on the list. The largest programs in the DoD are referred to as Major Defense Acquisition Programs (MDAPs) or Acquisition Category 1 (ACAT I) programs. In FY 2011 there were 96 MDAPs (Sullivan 2012). The thresholds for a defense program being designated an ACAT I are established in Title 10 US Code Sec. 2430 as any program estimated to cost more than \$365 million in development, or over \$2.190 billion in procurement funding in FY 2000 constant dollars. This may be the only organization in history simultaneously

⁴ Accessed January 18, 2013 from: http://money.cnn.com/magazines/fortune/fortune500/2012/full_list/

executing nearly one hundred multi-billion dollar programs. In addition there are many smaller ACAT II & III programs, which are defined by dollar thresholds below those associated with the ACAT I designation. The size and expense of the ACAT I programs warrant significant oversight by the Congress and substantial attention from the media. Both of these stakeholder communities, if not managed and attended to properly, can add significant challenges to an already difficult task of successfully executing a large defense program.

Aside, from total budget dollars and number of programs, the *scope* of the defense acquisition enterprise is large. Programs must satisfy requirements of four separate military Service branches; Army, Navy, Air Force, and Marine Corps. As such, DoD programs span numerous activities and environments, such as aviation, space, naval assets, ground vehicles, cyberspace, nuclear deterrence, and all the technology development that underpins and enables each program. Given the magnitude of the endeavor and the diversity of technologies, industries, and missions served, how does a development and procurement system efficiently execute processes and programs to deliver the next generation of military capability? The short answer is – through the use of a bureaucracy.

Theory on bureaucracy is well established in literature (Selznick 1943, Weber 1978) as naturally occurring phenomenon of large organizations. Despite their stigma, bureaucracies are considered the most efficient means for regular operations of extremely large enterprises. But organizations like the DoD that are bureaucratic by nature are often slow in decision making. This is driven by an attempt to ensure any decision of significant consequence is not dramatically out of sync with one of the many other department objectives. In contrast, for any developmental activity to be efficient in execution, decisions have to be made as quickly as possible to prevent costly program delays. This tension within the decision-making process is just one of many that complicates the defense acquisition activity.

1.2.2.2 Challenge 2: Complexity

Weapon System Complexity: The weapon systems desired by our military have grown increasingly complex. The goal of achieving never before realized capabilities in speed, duration, lightweight strength, payload and many other attributes, drives complex integration of materials, technologies, manufacturing techniques, and software. The modern battlefield demands systems with attributes such as global reach, stealth, precision, information superiority, survivability, and rapid response. To achieve this, the complexity of our military systems has

increased not only in the number of parts in a system, but also in the interoperability requirements, which are critical for enabling modern systems to interact during joint operations. Nearly all of the systems we procure today have very tight time-critical requirements as well as safety constraints that drive complexity into the design in order to achieve desired performance characteristics.

Process Complexity: Similar to the complexity in the systems we develop, the acquisition process used by the DoD to envision, specify, contract for, and develop these highly integrated systems has grown to be every bit as complex as the systems themselves. With wishful fondness, acquisition professionals today can examine the Wright Brothers' single page contract for a heavier-than-air flying machine⁵ from the War Department's Office of the Chief Signal Officer, dated February 10, 1908. Perhaps more remarkable than the brevity of the contract, is that the letter refers to proposal No. 203, which was opened just 9 days prior to the award on February 1st, 1908. Things are rarely this streamlined or simple for today's acquisition workforce.

Our defense enterprise mostly operates as large monopsony, where it is the sole buyer amidst multiple defense system sellers. There are numerous laws, regulations, and policies to satisfy in order to achieve competition and fairness while also sustaining a healthy defense industrial base. The Federal Acquisition Regulation (FAR) exceeds 2000 pages, and there are countless pages of DoD regulations and standards, as well as constantly changing policy directives. The Defense Acquisition University (DAU) publishes a Glossary of Terms to help the acquisition community communicate in a common language. From its first release in 2003 as an appendix in the PM Body of Knowledge book (Bahnmaier) it has grown 692% from 50 pages to a 346 page stand-alone document in 2011 (Hagan). By comparison, the US Tax code, which is universally referenced for its complexity, grew just 21% in a similar period of 2004-2011 from 60,044 to 72,536 pages.⁶

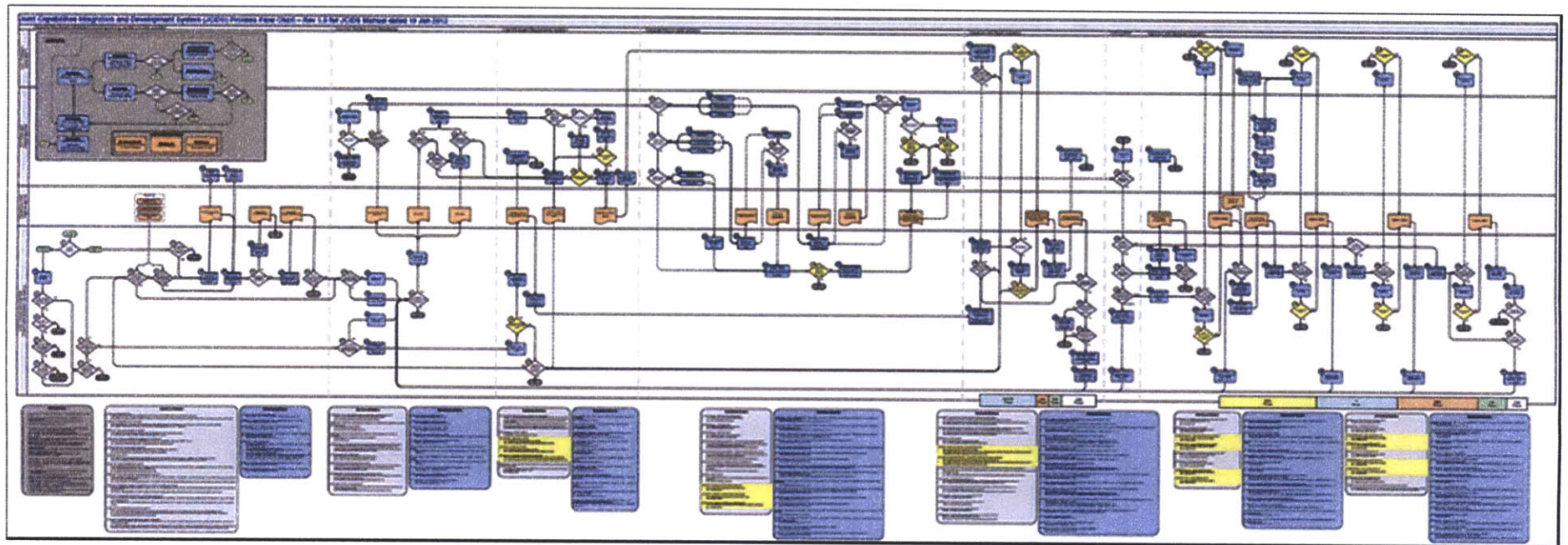
Enterprise Complexity: The defense acquisition enterprise includes three separate and interdependent decision-support systems known as the Joint Capabilities Integration and Development System (JCIDS), Planning, Programming, Budgeting, and Execution (PPBE) process, and the Defense Acquisition System (DAS) (Brown 2010). Respectively, these three

⁵ Image of original Wright-Brothers contract Accessed October 31, 2012 from: http://www.paperlessarchives.com/wright_brothers_papers.html

⁶ Compiled with data accessed December 12, 2012 from: <http://www.cch.com/TaxLawPileUp.pdf> ,

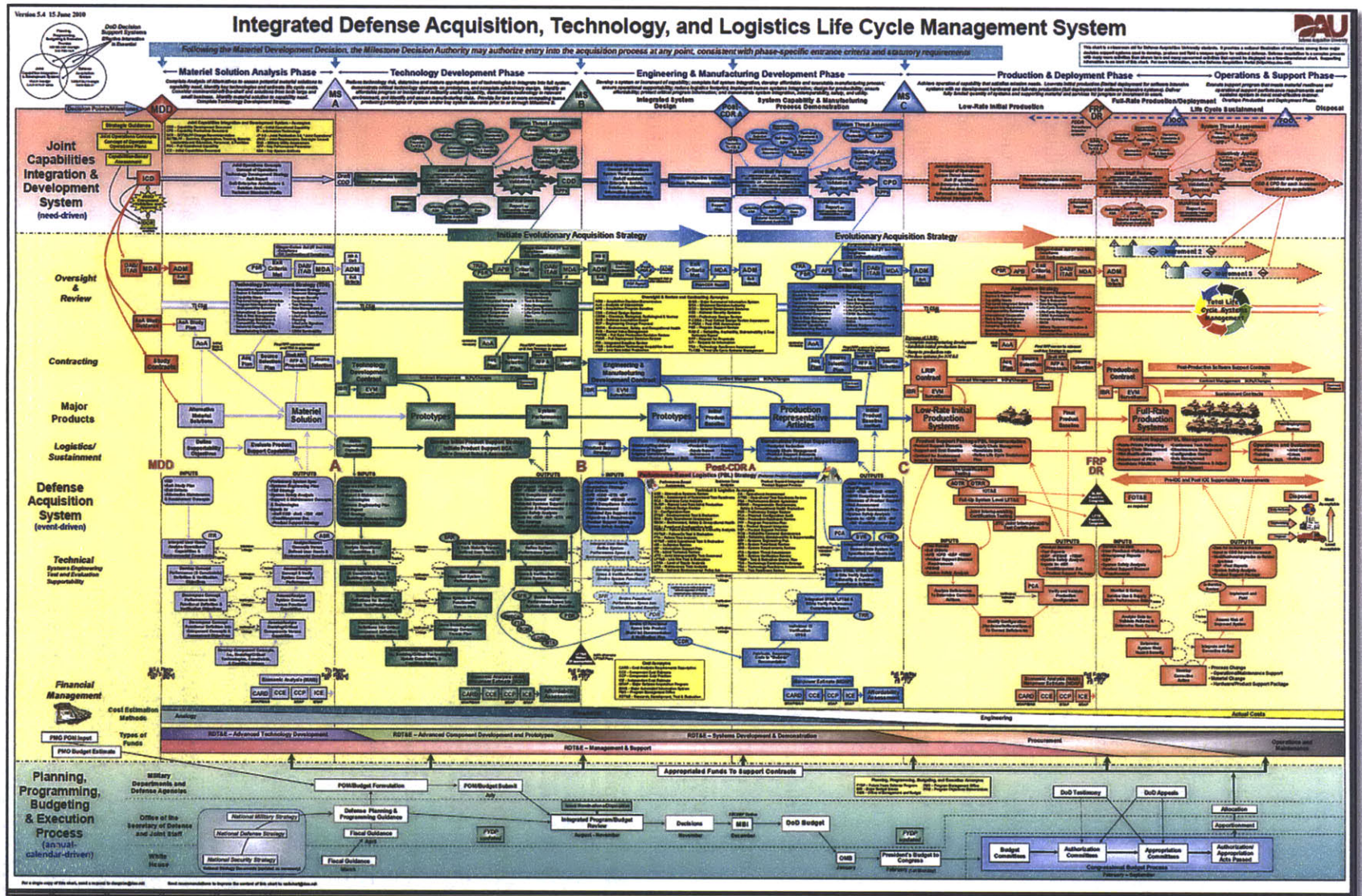
systems govern the management of requirements, budgets, and the acquisition process that transforms requirements and budget into military weapon systems. The process by which JCIDS operates is shown in the complex flow chart in Figure 5. True to its name, the PPBE process plans, programs, and budgets fiscal resources for all of DoD, to include acquisition program activities. PPBE supports the annual President's Budget submission to Congress and it also tracks the execution (or spending) of dollars appropriated by the Congress. Figure 6 is also a complex graphic showing the many steps, phases, and supporting elements in the DAS, as supported by the PPBE process at the bottom of the graphic and guided by the JCIDS process at the top of the graphic. Each one of these decision-support systems is complex in its own right. When considering all three systems and their interactions, suffice it to say, complexity abounds not only in the military weapon systems we develop, but also in the acquisition enterprise responsible for that development.

Figure 5 -- JCIDS Process Flow Chart, Revision 1.0 dated January 19, 2012



Source: Accessed October 2, 2012 from: <https://acc.dau.mil/CommunityBrowser.aspx?id=499972>

Figure 6 -- Integrated Life Cycle Management System, Version 5.4, dated June 15, 2010



Source: Accessed October 8, 2012 from: https://ilc.dau.mil/pdf/ILC_hotspots_linked_pdf.pdf

1.2.2.3 Challenge 3: Inherent Risk

Acquisition development programs generally carry significant technical, cost, and schedule risk and therefore must undergo an incredible amount of scrutiny and validation of need before they are approved. Without this validation of need, there can be no substantive funding via congressional appropriation. In short, use of the acquisition process determines 1) a new system is needed because it is essential to our national security to have this military capability, and 2) there is nothing else currently in existence to perform the mission and thus a material solution is needed. This is fundamentally different from a traditional commercial procurement, such as when an excavation company decides to buy new earth moving equipment from the current product inventory of Caterpillar or Kubota. Defense programs frequently strive to do that which has never been done before. This has inherent risk which adds to the challenge of the program effort. Clearly it is not simply a matter of an Air Force acquisition officer walking into a Lockheed-Martin or Boeing showroom and asking to see fifth-generation stealth fighter jet options, with the intent of placing an order for 300 aircraft and all associated support equipment to be delivered over the next ten years. There is significant risk in the technology, the integration, the manufacturing techniques, and even in the acquisition strategy chosen to develop a major new weapon system.

1.2.2.4 Summary of Acquisition Challenges

Collectively, the challenges of *scale*, *complexity*, and *risk* capture much of the difficulty in executing an efficient and successful acquisition program. Any one of these challenges can contribute to final program costs and schedules exceeding their early estimates. Sometimes programs are even cancelled or vastly curtailed when they fall short of performance objectives. Often, as the unit cost of a weapon system increases during development, the authorized total procurement quantity is reduced. By reducing the total buy, budgeted procurement funds can be reprogrammed to pay for the higher development cost. Of course, as the total buy is reduced, the unit cost increases even more due to diminishing economies of scale. While some of these cost and schedule realities may be explainable, it is not acceptable. For this reason, the federal government has made significant investments, and undertaken many efforts, to improve the performance of the defense acquisition enterprise.

1.3 Defense Acquisition System Improvement – An “Imperative Constant”

There is no shortage of evidence to compel action to reform the acquisition enterprise to achieve better results for our taxpayer dollars. The Government Accountability Office (GAO) recently reported the total estimated cost for the DoD’s 2011 portfolio of 96 MDAPs was near \$1.6 trillion, with over \$74 billion in estimated program cost growth in just one year (Sullivan 2012). Reasons cited included the usual culprits of production inefficiencies; unit cost increases due to quantity changes; and higher research and development costs. A similar report from the GAO in 2009 indicated the average delay for initial capability delivery of major programs was approaching two years (Sullivan). These types of cost and schedule issues, along with performance problems, or more often, a confluence of all three, have led the DoD’s senior leadership to cancel many major defense programs over the years. Figure 7 shows \$46.1 billion of sunk cost for programs that ultimately were cancelled without fielding any systems. Cancelled programs such as these are not indicative of a highly efficient and effective defense acquisition system.

Figure 7 -- Major Programs Cancelled Since 2001

Program Name	Sunk Cost (in billions of then-year dollars)	Source
Future Combat Systems (FCS)	\$18.1 B	September 2008 SAR
Comanche	\$7.9 B	December 2003 SAR
NPOESS	\$5.8 B	December 2009 SAR
VH-71 Presidential Helicopter	\$3.7 B	September 2008 SAR
Expeditionary Fighting Vehicle (EFV)	\$3.3 B	December 2010 SAR
Transformational SATCOM (TSAT)	\$3.2 B	Annual Budget Justification Documents
Crusader	\$2.2 B	December 2001 SAR
Advanced SEAL Delivery System (ASDS)	\$0.6 B	December 2005 SAR
Armed Reconnaissance Helicopter	\$0.5 B	September 2008 SAR
Aerial Common Sensor	\$0.4 B	December 2005 SAR
CG(X) Next Generation Cruiser	\$0.2 B	Annual Budget Justification Documents
CSAR-X	\$0.2 B	Annual Budget Justification Documents

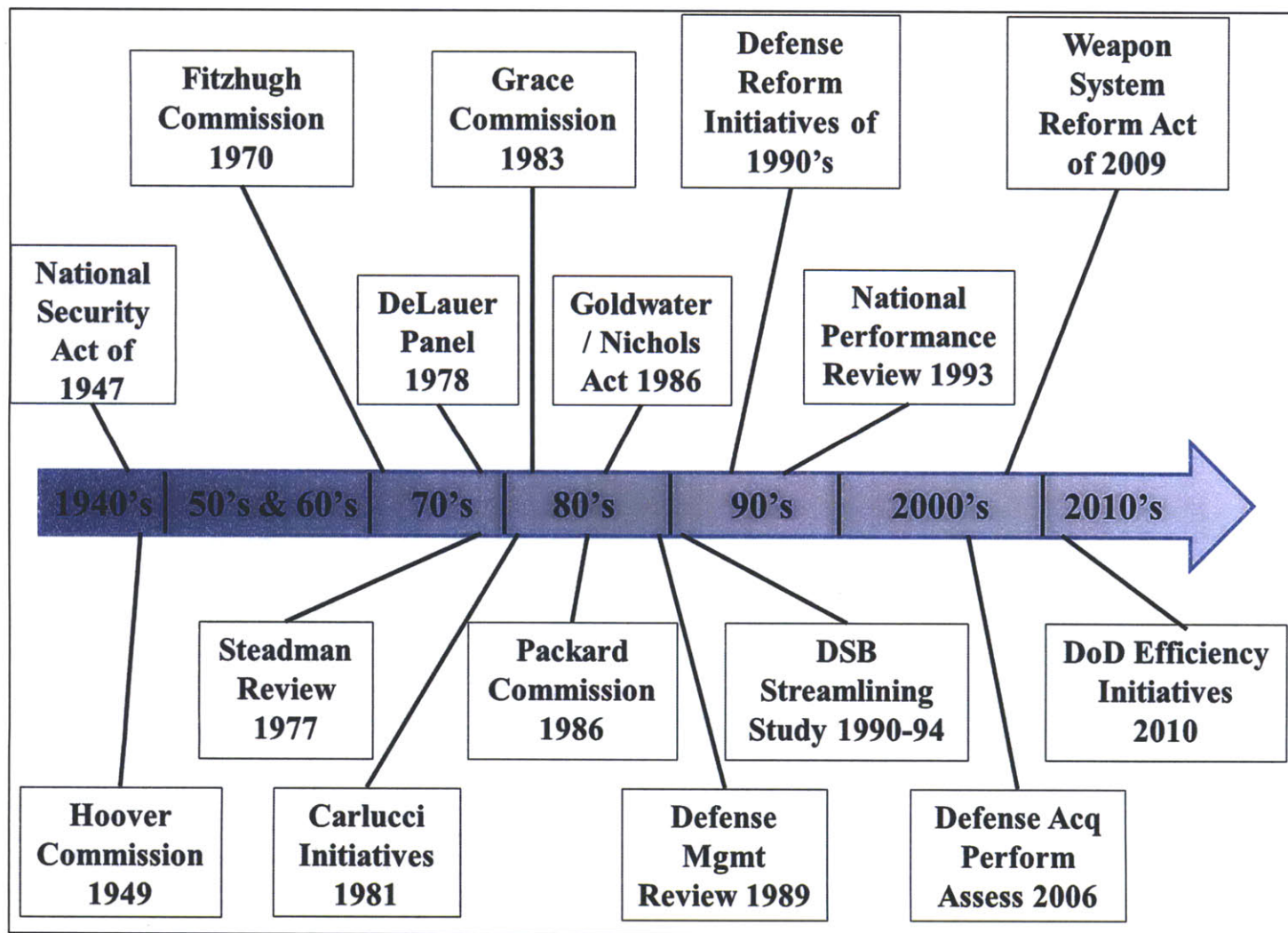
Source: Harrison 2012, p. 36, Table 3

This performance is not a new phenomenon. History is replete with examples of poor performing acquisition programs, as well as government reform efforts to achieve better results.

The most common early reference point for the start of these reforms is in the years immediately after World War II. This coincides with when both the Department of Defense and the United States Air Force were established under the National Security Act of 1947. Since that time numerous Commissions, Reviews, Panels, Initiatives, Studies, Acts, and Assessments have all taken aim at identifying problems and proposing solutions.

The timeline in Figure 8 shows a partial list of these efforts over the last 65 years. The timeline shows the past 30 years have been particularly active with numerous acquisition reform initiatives. As the decades pass, there is more evidence of poor performance and more willingness to attempt to fix a ‘broken system.’ A report by RAND identified 63 specific acquisition reform initiatives since the early 1990’s (Hanks 2005). Collectively, every single one of these efforts share a common goal of yielding greater military capability, more quickly, from every defense dollar spent. This may also be known as faster, better, cheaper, or getting the most bang for the buck. Regardless of phrase, it is about greater value delivery, where value is defined as benefit at cost.

Figure 8 -- Timeline of Acquisition Reform Initiatives



Source: Timeline adapted from list in AIA Special Report (Blakey 2011, p. 3)

1.4 Thinking About Acquisition as a System

Understanding how to achieve greater value delivery from the defense acquisition process begins by applying systems thinking. There are many definitions for what constitutes a system (Rechtin & Maier 2009, p.5; INCOSE⁷; Crawley & Cameron 2012, p.7), but most share the following common ideas. *Systems* include parts, components, and elements, which are connected through some set of relationships, into a larger entity in order to perform functions and deliver value which is not possible when its pieces are in isolation. The whole is intended to be greater than the sum of the parts. Most in the defense acquisition world have become quite comfortable with the idea of military weapon *systems* and even the notion of *systems of systems*.

The Global Positioning System (GPS) provides a great example. One can zoom in and define the system at the satellite level, with numerous sub-systems such as mission payload with precise timing clocks, propulsion, communication, and thermal. These sub-systems have physical and functional relationships, which enable them to interact to perform the function of transmitting precise and synchronized timing signals. One can also zoom out to define the system as the entire GPS constellation of approximately 30 satellites working together, with the ground control systems, and numerous GPS receivers. This system informs an individual of her precise geo-location on planet earth. The acquisition world deals in systems, and system of systems, all the time. So it is a natural extension to think of defense acquisition as a system itself.

Just like the GPS example, the defense acquisition system is a system of systems. It has inputs such as requirements, appropriated dollars, and policies, acted on by Government entities charged with development, testing, and procurement. These Government teams then work with contractor teams under contractual agreements, to yield the output of military hardware and system capability. Just as in the GPS example above, one can zoom in on the acquisition system to a minor contract modification intended to redesign an aircraft landing gear to new requirements. One can then also zoom out on a large ACAT I program to examine the entire life cycle management system shown in Figure 6 previously. Each shape in the graphic represents an element of the system and its interconnections with other elements to enable a program to move from concept, through design and test, to delivery, operations and maintenance, and ultimately disposal.

⁷ Accessed January 18, 2013 from: <http://www.incose.org/practice/fellowsconsensus.aspx>

With an understanding of the acquisition enterprise as a system, it is possible to appreciate its value delivery to our nation. For decades, skilled warfighters and excellent training have combined with our sophisticated military weapon systems to provide the United States with one of the most powerful and effective fighting force in the history of the world. The fabric of US military strength consists of advanced complex systems which span from the stealthy B-2 bomber, to the nuclear submarine fleet, and all the interconnecting information and intelligence systems woven together in between. By achieving this level of prominence with our military systems, is it appropriate to accept cost overruns and schedule delays simply as the cost of doing business? This author believes it is not acceptable, but also that one cannot honestly look at what the defense procurement system has delivered and label the process entirely broken. Nonetheless, we can and must do better.

This is what improving value delivery of the acquisition enterprise is all about. In fact the dozens of acquisition improvement panels and commissions shown earlier have focused on this challenge for decades. If we do not continue to improve the military capabilities we deliver with the dollars we have, in a more expedient way, then it may be only a matter of time before our military is second best in the world. This creates an imperative constant. The efforts to reform acquisition will not, and should not cease. We must though, be cautious and deliberate in our improvement attempts and think through undesirable second and third order affects from any potential, or enacted improvement initiatives. A corollary in the flying world is pilot induced oscillation (PIO), which is, “sustained or uncontrollable oscillations resulting from efforts of the pilot to control the aircraft.” (MIL-HDBK-1797A, 1997, p.25) If PIO continues as a result of the pilots well-intended actions to recover the aircraft, it can have catastrophic results. This same deliberate caution is necessary to ensure the value gains realized from ‘targeted acquisition improvements’ are not completely offset or washed out by system inefficiencies and waste they generate.

1.5 Program Managers – Essential System Elements

Press Conference Comments from outgoing Air Force Chief of Staff General Norton

Schwartz – 24 Jul 12:

With respect to the larger acquisition enterprise, ...this is a continuing effort to improve the skills and the expertise of the workforce, whether it be in contracting, whether it be in

cost estimation or program management, these are all unique and important skills that, frankly, defense-wide are in relative short supply. ...certainly we are working hard to build back that bench of folks who can run major programs, who can tell the difference between a good deal and, you know, good advertising, and understand what it takes to manage the tradeoffs between cost, schedule, and capability.

All systems have critical elements upon which the system is extremely dependent. The human body as a system is more highly reliant on the heart and the brain than on a hand or the spleen. The defense acquisition system is no different. Fiscal resources are certainly essential and enable both quality and quantity of military capability. Likewise, our acquisition personnel, led by Program Managers are essential elements of the larger acquisition enterprise system. Program Managers perhaps could more appropriately be called Program Leaders. Among many required functions, they must set vision, motivate personnel, create and innovate process and strategy, communicate effectively, and ensure sufficient adherence to federal procurement policy.

Government PM's are also on the front lines in dealing with policy that can turn out to be counterproductive. Not only are they the ones who must implement new guidance, they often are first to see the unintended effects, which tend to be more negative than positive. To be effective and continue to create value for the program, PM's must have the ability to think dialectically and understand both the reason for, and the intent of, a new policy. In addition, they must identify inefficiencies, improvise, adapt, innovate, and clearly communicate the best options to decision makers.

The examination of the PM as an essential system element frames the focus of this research. Considering increased value delivery as the primary objective, many acquisition reform initiatives have focused heavily on policy and process changes, i.e. improving the rules of the game. In contrast, this research effort focuses on how to increase value delivery by raising the talent level of the players in the game. The contention is program managers and their relationships with other key acquisition players, namely the operational user and their contractor's lead, provide areas of high leverage for increased value delivery. This triad team of super-salient stakeholders navigates many programmatic obstacles, and it serves as the program access point for most other program stakeholders. As a triad team they must also find the best way through intended acquisition system improvement initiatives, which actually can do more

harm than good if not managed effectively by the triad. This point was recently emphasized by the newly appointed Chief of Staff of the Air Force.

From General Mark A Welsh III, CSAF, email to Airmen in the Acquisition Force, 5 Oct 12

One of my biggest takeaways from my time [in acquisition] is how difficult it was to navigate the bureaucracy to deliver timely combat capability to the warfighter. But despite frequent delays and sometimes unanticipated obstacles, the acquisition professionals I met pushed on and found a way to prevail each and every day. I can't tell you how impressed I was with our Airmen, who through amazing innovation and sheer determination, found ways to succeed.

1.6 Investigation Opportunity – Hypotheses

This research examines the role of the Government PM and the relationship of the PM with the primary operational user representative and the prime contractor's PM, as a means for the defense acquisition enterprise to achieve greater value delivery. These three individuals are referred to as the super-salient stakeholders and for brevity in this research at times they are referred to as PM, User, and KTR respectively. Having already established that:

A) improving the defense acquisition enterprise is an imperative constant, and

B) the program manager is an essential element of the acquisition-as-a-system construct, the following hypotheses are offered.

Hypothesis #1: PMs able to use dialectical problem-solving skills up, down, and across their program are able to achieve greater value delivery. Up refers to higher level decision makers, down refers to leading their own acquisition team, and across refers to extending the same thought/action pattern to peer stakeholders, with primary attention on the lead user and the lead contractor.

Hypothesis #2: When the super-salient stakeholders are well aligned and have strong dyadic relationships, as well as a strong triadic relationship, there is a higher probability for success in a program. When these relationships are weak or misaligned, there is lower probability of success in a program.

Hypothesis #3: Strong program leadership and relationship management do not just yield greater value delivery in programs today, they are also necessary aspects of understanding the defense acquisition enterprise as a national dynamic capability which sustains our military competitive advantage over the long term.

1.7 Chapter Summaries

The remainder of this thesis is organized in six additional chapters as described in the following summaries.

Chapter 2 – Acquisition Literature Review:

Chapter 2 reviews acquisition literature in three sections. It begins with a look at the challenges associated with the larger defense acquisition system and the importance of relationships in that system. The second section examines literature on PM competencies that span the spectrum of Technical, Professional, Managerial, and Leadership competencies. The third section then reviews efforts to correlate PM competencies with successful program outcomes.

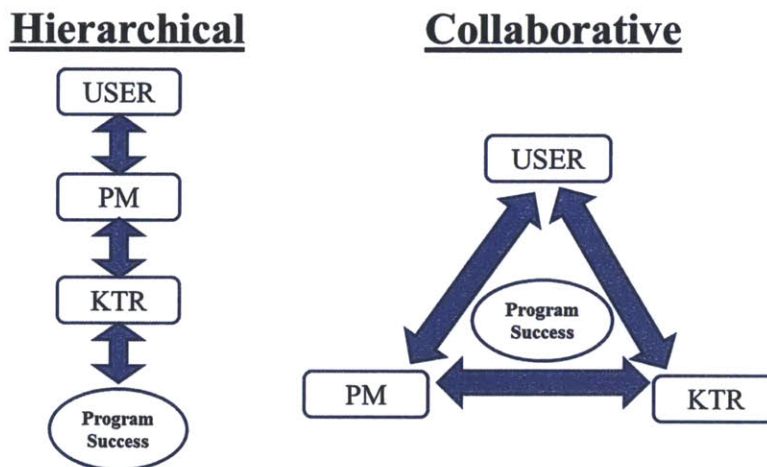
Chapter 3 – Theory Literature Review:

This chapter introduces a broad compliment of established theoretical literature to inform the research work. Leadership and management theory is applied to PMs in the DAS and this informs how a PM can achieve improved program outcomes. Systems theory enables an examination of the acquisition enterprise as a system with attention towards stakeholder theory. This allows for an understanding of value exchange and greater value delivery. The application of negotiation theory furthers value creation and value exchange among key stakeholders. Lastly, there is examination into the applicability of knowledge creation and management theory as well as organizational learning through routines and activity systems. This last application of theory enables the consideration of dynamic capabilities within the defense acquisition system as well as extending the concept to consider the defense acquisition enterprise as a national security dynamic capability.

Chapter 4 – Research Method & Approach:

The primary data gathering effort for this research is case interviews with leaders of three major weapon system programs as well as expert PMs. Data is gathered on the DAS enterprise boundary and an understanding of success within the DAS. The research also gathers the attributes of an effective PM and how this enables increased value delivery on a large defense acquisition program. The interviews focus on three separate perspectives, 1) the operational user lead, 2) the Government PM, and 3) the prime contractor PM, thereby providing a multi-dimensional program perspective. This data gathering focuses on alignment and misalignment within the three separate dyadic relationships as well as the overall triadic stakeholder relationship. The research is targeted at how these relationships contribute to, or detract from, total value delivery and program success. To inform this approach a simple model is used to shift the perspective from a traditional hierarchical relational model for the three super-salient stakeholders, to a collaborative triangular relational model, with the shared common objective of program success at the center. This is captured in the two figures below.

Figure 9 -- Super-Salient Stakeholder Relationship Models



Chapter 5 – Analysis & Findings:

Chapter 5 analyzes the interview data and provides findings from the research. Each program case provides an opportunity to explore the presence and absence of strength in Program Leadership Competencies and Key Program Relationships. Much of the analysis and

findings connect back to the issues surfaced in the acquisition literature review and the theory literature review relative to improving value delivery and program outcomes.

Chapter 6 – Conclusions:

This chapter provides four specific conclusions from the research and they are connected back to the original hypothesis provided in chapter 1. There are four conclusions discussed in chapter 6, which are also included here:

- C1: Acquisition People are more important than acquisition Process
- C2: Acquisition relationship management improves program outcomes
- C3: Exceptional PMs are strong dialectic Leaders with managerial and technical competence
- C4: Strong PMs build acquisition “dynamic capabilities” in the Small and the Large, which provide important contributions to US national security

Chapter 7 – Recommendations:

The final chapter of this thesis provides a set of recommendations based on the evidence gathered and analyzed from the research. This includes a set of actionable recommendations organized into three categories by the level of applicability, from PM to DoD. There is also a category with several recommendations on areas of opportunity for future research. These four major categories follows:

- Category 1: PM Self-Improvement
- Category 2: Efforts to Professionalize PMs
- Category 3: Moving Towards a Holistic Acquisition Enterprise
- Category 4: Future Research Opportunities

Chapter 2 – Acquisition Literature Review

2.1 Introduction

The DAS and its' program manages have been studied, analyzed, and assessed extensively. This literature review is organized into the following three sections.

Section I examines relevant insights on improving acquisition as a larger system, with a focus on how people and their key relationships in the system can relate to overall performance.

Section II looks at literature that addresses Defense Acquisition Program Manager competencies, leadership & management, and introduces the concepts of dialectic program management and objective advocacy.

Section III integrates concepts from the first two sections by reviewing recent literature aimed at correlating PM competencies with program success.

2.2 Section I – Defense Acquisition System

2.2.1 Defense Acquisition Performance Assessment (DAPA)

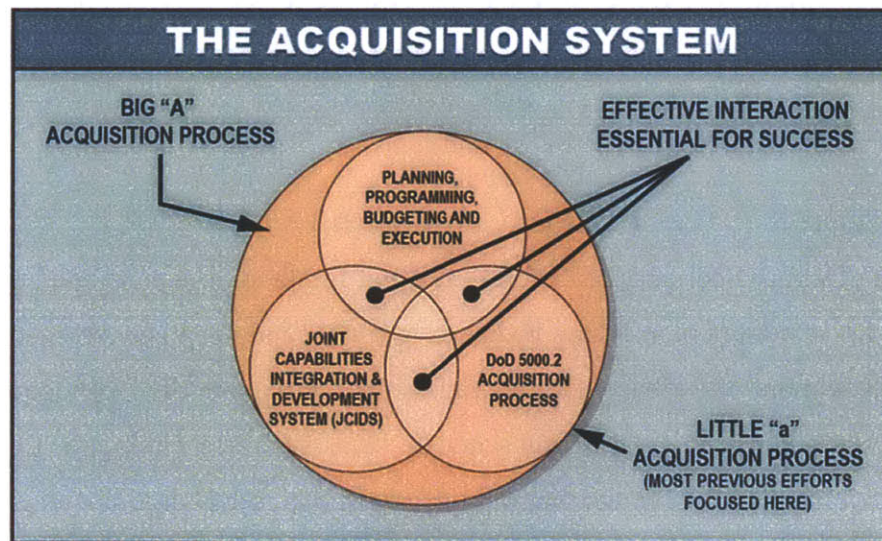
The Acting Deputy Secretary of Defense, Gordon England, commissioned the DAPA in June of 2005. In his action memorandum, he cited, “growing and deep concern within Congress and within the Department of Defense (DoD) Leadership Team about the DoD acquisition processes.”⁸ Once again significant cost and schedule increases were driving the desire to ‘fix the broken system.’ The DAPA project was remarkable in both the charge it was given, as well as the approach taken by the review panel, which was led by retired USAF Lieutenant General Ronald Kadish. The England memo authorized, “an integrated acquisition assessment to consider every aspect of acquisition, including requirements, organization, legal foundations (like Goldwater-Nichols), decision methodology, oversight, checks and balances – every aspect.”⁹ To do this effectively, the panel had to zoom out and look at the entire acquisition system to understand why previous efforts to improve defense acquisition had fallen short.

⁸ DAPA Tasking Memo is included in the DAPA Executive Summary (2005, p. V)

⁹ Ibid

The DAPA project’s reframing of the problem was as significant as what they found. After reviewing one hundred and twenty-eight prior studies, they concluded the problem resided with ineffective DoD management systems and not simply the acquisition process (Kadish 2005). The panel took a holistic view of the larger complex problem and redefined the acquisition system using the term Big “A” Acquisition Process. As shown in Figure 10, the Big “A” process includes the traditional Little “a” Acquisition Process, governed by the DoD 5000 series documents, interlinked with both the JCID System for requirements, and the PPBE fiscal resource management system. The implication from this diagram is that the three separate systems are interdependent and success of the overall Big “A” process is enabled through effective interactions between the constituent systems. This finding is critical to understanding *acquisition as a larger system*, comprised itself of other interacting systems. One could even refer to the constituent systems as sub-systems.

Figure 10 -- DAPA View of the Larger Acquisition System



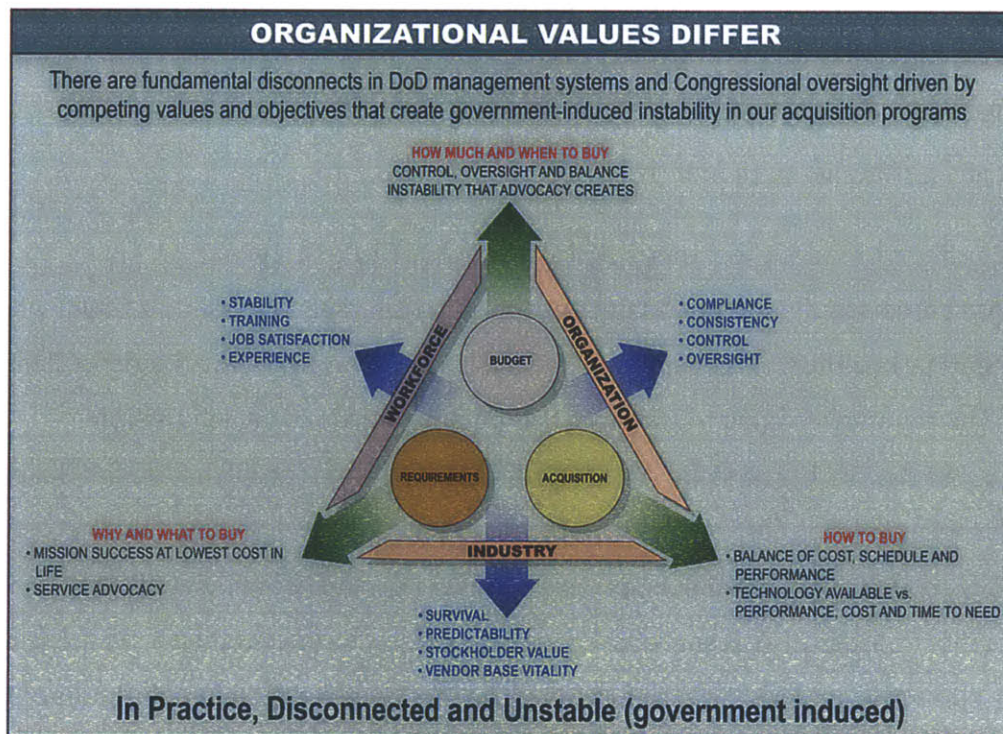
Source: DAPA Executive Summary (Kadish 2005, p.3)

An operational analogy is to consider an Air Force fighter wing as a system, which must have successful interacting constituent sub-systems. These would include an ‘aircraft system’ with jets, sensors, and weapons; a ‘maintenance system’ of crews, tools, and spare parts; and a ‘mission planning system’ with intelligence, mapping, and planning tools. Clearly there must be established relationships and effective interactions within, and among, the constituent systems to

achieve the intended function of the larger system and deliver value in the form of combat power to the primary system beneficiary, the combatant commander.

The DAPA project’s report noted the multiple forces acting against efficient interaction, and instead they were pulling apart the interdependent PPBE, JCIDS, and DoD 5000 systems. Surrounding the requirements, budget, and acquisition systems are the supporting elements of organization, workforce, and industry. Each of these entities has different organizational values that make sense in isolation, but when pursued, may drive actions that negatively impact the values sought by the other elements supporting the systems. The DAPA project saw this conflict as a source of government-induced instability, which was a primary contributor to acquisition system failings (Kadish 2005). Figure 11, from the DAPA report, graphically shows the opposing forces at work. The system dynamics created by these multiple interconnected systems and entities, and their competing values, drive home two key points. First, it is impossible to gain complete understanding of the challenges of defense acquisition by only looking at the Little “a” process, and second, finding effective policies to satisfy all these different values is not trivial. This perspective helped to show why so many previous attempts to ‘fix a broken acquisition system’ fell short of their goals.

Figure 11 -- Instability Created by Opposing Forces



Source: DAPA Executive Summary (Kadish 2005, p. 4)

The DAPA project's reframing of the problem informed a multitude of findings and recommendations aimed at improving acquisition system performance. Several of the most relevant to this research are included here and taken directly from the DAPA Executive Summary.

Selected DAPA Major Findings

- DoD management model based on lack of trust – oversight is preferred to accountability
- Complex acquisition processes do not promote success – they increase cost and schedule

Selected DAPA Recommended Performance Improvements for the Workforce

- Rebuild and value the acquisition workforce and incentivize leadership
- Establish a consistent definition of the acquisition workforce to include acquisition-related budget and requirements personnel
- Establish and direct standard and consistent training, education, certification and qualification standards for the entire acquisition workforce including requirements and budget acquisition personnel

The last two recommendations clearly target the need to expand the current boundary of the acquisition workforce beyond those in the Little “a” acquisition process. It is also important to note the DAPA project made significant recommendations in the areas of requirements management and partnering with industry.

2.2.2 CNA Independent Assessment: Air Force Acquisition – 2009

The Air Force acquisition establishment was at an extreme low point in 2008, when its senior leadership tasked the Center for Naval Analysis (CNA) to perform an independent assessment. The report noted that all services had demonstrated recent acquisition incompetence, but the Air Force stood out in particular with major problems on the Space Based Infrared Radar System, and multiple failed attempts to put in place contracts for a new search and rescue helicopter (CSAR-X) and a new aerial tanker (KC-X) (Christle et al 2009).

The authors of the CNA report chose words to convey strong emphasis on the issues and the necessary corrective actions. The report noted the Air Force acquisition community was recognized as the DoD's best as it entered the 1990's. From its high point of 52,000 members,

the community was now less than half the size, and with much less representation in the flag officer ranks. “This is not only a matter of national urgency, it is a matter of Air Force pride.” (Christle et al, p.2) Again using emphatic language, the panel took aim at the three year old attempt to operationalize the acquisition organizational structure with wing, group, and squadron designations. Based on the 48 interviews they conducted, the report stated:

We recommend that the wing structure be abolished as soon as practicable. This recommendation does not have to be studied! The structure is so obviously dysfunctional within the context of the acquisition mission that there should be no delay in ending this unfortunate experiment. (Christle et al, p. 7)

This rebuke of the Air Force’s organizational structure was not the only finding affecting the people conducting the acquisition mission.

In fact, the CNA panel constructed the report with as much attention toward *people* issues, as was given to *process* issues. There were 24 recommendations that aligned either to people or process, with the five most important referred to as “critical” and requiring immediate action. Of those five, findings for Culture and Senior Leadership were the top two and also the most directly relevant to this research (Christle et al 2009):

#1 Culture:

- The Air Force does not value acquisition as a profession
- The Air Force does not view the equip function equivalent to organize and train

#2 Senior Leadership:

- The Air Force leadership is not focused on acquisition
- The chain-of-command does not enforce accountability or process discipline
- Leadership is not regularly engaged in review of programs

If the acquisition profession is not valued, it may be unreasonable to expect to retain top talent to manage programs, or that they will be motivated to give their very best to any effort. Also, putting organize and train above the equip mission, may yield greater combat power in the near term, but as argued in chapter 1, without a sustained emphasis to develop future capabilities, the advantage over ones adversaries begins to diminish.

These types of cultural challenges can only be addressed by senior leadership, which is why the findings in that category are so important. Additionally, the tensions within the Big “A”

Acquisition System highlighted by the DAPA report also require senior leader understanding and engagement. Acquisition programs can be stalled and delayed significantly while requirements and resourcing issues languish within the PPBE and JCID systems. Resolving these issues quickly is the most efficient manner to enable a program to move forward, and so it requires senior leader attention on the equip mission.

2.2.3 Better Buying Power (BBP)

“As a matter of principle and political reality, we must do everything possible to make every taxpayer dollar count.”

Secretary of Defense Robert Gates, 2010¹⁰

2.2.3.1 BBP – Round 1

The DoD took on a challenge in 2010 to find \$100 billion in savings over six fiscal years from 2012 to 2017. Led by Dr. Ash Carter, USD(AT&L), the Better Buying Power initiative was envisioned to increase efficiency and productivity to enable the DoD to “Do More Without More,” or alternatively, ‘Do Same With Less.’ The 17-page guidance memorandum issued in September of 2010, has 23 initiatives across five broad areas. The effort focuses almost entirely on the Little “a” acquisition process. There are no major initiatives targeted at the larger Acquisition System, as framed by DAPA in 2005, and the essential interactions among the JCID, PPBE, and DoD 5000 systems. Also absent from the initial BBP approach are initiatives targeted at improving the workforce itself. In fact, some may view BBP as taking more than it gives, since understanding and implementing new initiatives requires a great deal of time and effort from the acquisition workforce. Implementation diverts attention from previously planned program activity. It can also add program office burden and schedule delays, while decision coordination is slowed by the myriad of acquisition oversight and staff functions striving to ensure BBP initiatives have been properly considered. The overall strategy may yield some efficiencies, but arguably at some additional cost to the program. Determining if the net benefits exceed the costs is rarely possible.

¹⁰ (Gates & Carter 2010) Introductory remarks on June 28, 2010, prior to Dr. Ash Carter’s briefing on Acquisition Efficiency, Accessed December 15, 2012 from: <https://dap.dau.mil/policy/Documents/Policy/Carter%20Briefing.pdf>

2.2.3.2 Industry Perspective

Better Buying Power includes industry in its strategy by targeting them as a source for savings through initiatives like Promote Real Competition, Increase Fixed Price Incentive Firm (FPIF) contracts, and mandating lower overhead rates on contracts. But at least one industry sector, aerospace, lacked optimism for the effort. In its own assessment of BBP, the Aerospace Industry Association (AIA) published a special report in November of 2011, entitled *Defense Acquisition Reform: Moving Toward an Efficient Acquisition System*. In an attempt to help the DoD learn from history rather than repeat it, the AIA report included a historical perspective on the many previous acquisition reform efforts dating back to the 1940's, stating:

Like most red tape, the government's procurement rules were adopted with the best of intentions. Unfortunately, today's acquisition process does not reflect a coherent design. Instead, it is a collection of salutary incremental measures intended to fix narrowly defined problems. The unintended consequence of these additional layers of statutes, regulations and policies has been an increasingly complex process that is, in the words of one acquisition report author, "proving to be less than the sum of its parts." Rather than simplifying the process, rigid safeguards have been adopted that give federal managers little flexibility to buy what they need. (Blakey 2011, p. 3-4)

The AIA report concluded that neither finger-pointing nor "cyclical reinvention of cleverly-titled acquisition strategies" will address the root causes of schedule delays and cost overruns (Blakey, p. 6). Instead, AIA pointed to the need to, "rein in the appetite of the requirements community" and to use, "realistic, independent cost estimates and technical risk assessments." These two points resonate with the DAPA framing of the interactions among the three major systems within the larger Acquisition System. A final point raised by AIA was that a "one size fits all" approach is not suitable for government acquisition. Rather, "each acquisition needs to be treated in a fashion suitable to its character." (Blakey, p.14) The AIA report offers its own extensive industry perspective on sensible reforms. Whatever value one may give to the AIA suggestions, they at least provide sufficient grounds to ask why they weren't solicited and addressed prior to the DoD's BBP launch. After all industry is a critical stakeholder to successful government acquisition.

Just prior to the BBP roll out, two separate Defense Business Board (DBB) Task Groups studied DoD's partnership with industry and reported findings to the Secretary of Defense. The 2008 Task Group focused on the strategic relationship between DoD and industry and observed, "the limited and inconsistent role by industry in shaping military capability requirements leads to

technical ‘overreach’ on requirements, and cost, schedule and performance problems in acquisition programs.” (Bovin & Odeen 2008, p. 3) The DBB recommended strengthening communications between the senior military leadership (operational user) and the supplier base. The DBB also recommended regulation modifications to, “encourage the movement of experienced personnel between government and industry if there is to be a mutual understanding of each other’s operating environments, goals, and objectives.” (Bovin & Odeen, p.5)

The second industry-focused DBB effort was the *Task Group on an Outreach Plan to Improve Communications between the DoD and the Defense Industrial Base* and it reported out in 2009. The following list of findings represent the feelings of interviewed industry leaders (Bovin & Giambastiani 2009):

- Communications are ad hoc, limited, and infrequent. Open candid exchanges are rare.
- Information, when provided by DoD, often appears inconsistent and unclear
- Industry widely feels under siege and believes it is unfairly criticized for issues not under its control.
- DoD is perceived as far more interested in process than outcomes.
- There is no mutual feedback mechanism to ensure alignment.

These findings indicate the overall DoD – Industry relationship is less than fully effective. Similar to the 2008 DBB Task Group, the industry recommended they could contribute significantly to more realistic risk assessments if they were more engaged in the requirements process by providing inputs on costs, technical information, and schedule challenges (Bovin & Giambastiani 2009).

2.2.3.3 BBP – Round 2

The DoD recently updated its Better Buying Power strategy under Mr. Frank Kendall the current USD (AT&L). BBP 2.0 revises and expands the effort to now include 36 initiatives across seven focus areas. Updates to the previous initiatives indicate a greater desire for partnership. One of the new initiatives under the Control Cost Growth focus area is to, “Build stronger partnerships with the requirements community to control costs.” (Kendall 2012a) There is also a new ‘common sense’ initiative to “Employ appropriate contract types.” And in what appears to be a response to industry, there are now initiatives to “Better define value in ‘Best

value' competition," and to define 'Technically Acceptable' when the strategy of Low Price Technically Acceptable (LPTA) is used (Kendall 2012a).

There is only one entirely new Better Buying Power focus area. While the list did grow from five to seven focus areas, the second add came from splitting apart the "Target Affordability and Control Cost Growth" into two focus areas. The all-new focus area is called, "Improve the Professionalism of the Total Acquisition Workforce," and the BBP 2.0 memorandum states:

This new category emphasizes the most important single factor in the performance of the Defense Acquisition System: the capability of the professionals in our workforce, particularly the key leaders who implement the system and develop the people who will follow them. (Kendall 2012a, p. 5 of attachment 2)

This new focus area resonates well with the People, Culture, and Senior Leadership findings in the 2009 CNA report on Air Force Acquisition. The specific supporting initiatives tagged to this focus area include (Kendall 2012a):

- Establish higher standards for key leadership positions
- Establish stronger professional qualification requirements for all acquisition specialties
- Increase the recognition of excellence in acquisition management
- Continue to increase the cost consciousness of the acquisition workforce – change the culture

The specific implementation of these initiatives is unknown at this time, but it appears there is an attempt to place greater emphasis on the people (i.e. PMs and other acquisition professionals) in the large complex process. Additionally, BBP 2.0 seeks input from stakeholders such as the acquisition workforce, industry, and Congress. This signals an admission that a strategy dependent on so many to succeed is ultimately more robust and carries greater buy-in, when it is informed by those who are critical to its success. One last point is that the term "Total Acquisition Workforce" is likely referring to the Little "a" workforce. Given the criticality efficient interactions and the interdependence of the PPBE, JCIDS, and DoD 5000 systems, perhaps a similar focus area on the Total (Big "A") Acquisition Workforce is also needed.

2.3 Section II – Program Manager Competencies

2.3.1 Program Manager Definition

The Government PM is the central focus of this research and so the following definition is provided from the DAU Glossary. The PM is the:

Designated individual with responsibility for and authority to accomplish program objectives for development, production, and sustainment to meet the user’s operational needs. The PM shall be accountable for credible cost, schedule, and performance reporting to the Milestone Decision Authority (MDA). (Hagan 2011, p. B-212)

The words “*needs*” and “*credible*” in this definition connect to ideas that warrant particular attention. First, the PM is charged with meeting the user’s operational *needs*, **not** requirements. This is not intended to diminish the importance of requirements such as Key Performance Parameters (KPPs), but rather that if all requirements are achieved, and the user’s operational needs aren’t met, then the PM has failed the operator. Implied is that the PM must *think* in order to discern if meeting the requirements will in fact achieve a capability that will meet the needs. The Defense Acquisition Executive, Mr. Frank Kendall, recently distributed his description of the “optimal program structure” and in it, he states, “The first responsibility of the key leaders in the acquisition workforce is to think.” (Kendall 2012b, p.2)

Second, the definition states the PM shall be accountable to *credible* cost, schedule, and performance (CSP) reporting to the MDA. The emphasis here is on *credible reporting* of CSP status. This gets at the element of *truth* in communication. A PM is to be held more accountable to early identification and reporting of a major C, S, or P challenge, than to having a program that never breaches a CSP threshold. Large, complex development efforts typically encounter perturbations to the CSP baseline, but early identification and a proactive response are always preferable to denying the problem.

2.3.1.1 Dialectic Program Management

Thinking and pursuing *truth* in program management points to something which could be termed *dialectic program management*. The following two definitions for ‘dialectic’ are taken from Merriam-Webster.com¹¹ and they contain the notions of reasoning and truth:

- Discussion and reasoning by dialogue as a method of intellectual investigation; *specifically*: the Socratic techniques of exposing false beliefs and eliciting truth

¹¹ Accessed December 26, 2012, from: <http://www.merriam-webster.com/dictionary/dialectic>

- Any systematic reasoning, exposition, or argument that juxtaposes opposed or contradictory ideas and usually seeks to resolve their conflict

Program managers are often caught between conflicting policies and guidance, and blindly following one at the expense of the other is rarely wise. Rather, PMs must *reason* their way through the intent of each policy and seek the best, most prudent, or *true* way ahead. This forms the idea of *dialectic program management*. It is the important recognition and resolution of paradox by reframing problems, gathering objective data, and engaging in open and honest discussion with those who (ideally) are equally open, honest, and objective.

The DoD policies for how and when programs spend their appropriated dollars provide an excellent example of the need for dialectic program management. On one hand, USD (AT&L) policy advocates achieving maximum value for every dollar, which may require time to structure and negotiate contracts and creative business deals. On the other hand, USD (Comptroller) monitors each program's fiscal obligations against timelines and benchmarks to enable reallocation of unexecuted funds to higher DoD priorities. This challenge is captured well in a joint USD (AT&L) and USD (C) memorandum that states, "We must strive to meet both goals while also taking into account two types of risks." (Hale & Kendall 2012, p.1) The risks are identified as 1) over-focusing on, and 2) ignoring the obligation benchmarks because both can harm the program. PMs who focus too much on obligation rates may spend imprudently, "to avoid reductions in future budgets." (Hale & Kendall). When programs ignore obligation rates, unexecuted funds are vulnerable to Congressional actions such as rescission of previous appropriations, or reductions in future defense appropriations.

The resolution to this dilemma is a policy that requires dialectic thinking from PMs, financial managers, and their leaders. In light of their jointly identified goals, Hale & Kendall provide six tenets to be "adopted and enforced" as a means to guide the best and most prudent way ahead. The six tenets are included below with emphasis added:

1. Taxpayer funds should be obligated and ultimately expended only in the taxpayers' interest and if best value is received for the money in support of the Warfighter.
2. While they can be useful indicators, obligation rates slower than established benchmarks should not be the determinative measuring stick for program execution and must not be regarded as a failure.

3. Late obligation of funds should not be presumed to imply that the funds are not needed or that future budgets should be reduced unless there is other evidence to support that conclusion.
4. Providing savings to the organization, military service, or DoD component as early in the fiscal year as possible should be encouraged and rewarded, professionally and visibly.
5. Savings will not be reallocated at any higher DoD level than necessary to fulfill shortfalls in priority requirements.
6. Managers who release unobligated funds to higher priorities will not automatically be penalized in their next year's budget with a lower allocation and may be candidates for additional funding to offset prior year reductions. (Hale & Kendall 2012, p.2)

The guidance is imploring DoD personnel to think more corporately and utilize funds most wisely for the larger enterprise. It is the contention of this author that the most exceptional PMs already operated this way. They make the most of their resources and when it is imprudent to spend them, they ‘offer them back’ for reallocation to higher priorities. At times, when the funds are needed, but cannot be executed in a timely manner relative to the benchmarks, effective PMs work with financial managers and leaders to secure a means for a ‘pay-back’ in future years if the current year money is returned. Dialectic PMs learn to reframe problems and work through these types of paradoxes on a routine basis.

2.3.1.2 Objective Advocacy

Dialectic PMs gain credibility by demonstrating a passion for seeking the truth in their communication in addition to seeking it in their thinking and reasoning. Truth in communication feeds the notion of *Objective Advocacy*. PMs must advocate for their programs as if, and because, they are the most knowledgeable sources for what is best for the program. But this advocacy is most effective when it is objective and based in reasoning that truly considers multiple viewpoints and the objective data, which supports or counters those perspectives. To advocate only with exuberance and not objectivity, is to create the appearance of either a programmatic ‘used-car salesman’ or an emotionally over-involved zealot. Passionate advocacy with purpose, data, and careful consideration of the facts is objective advocacy.

Program managers who fail to employ dialectic thinking and objective advocacy fall victim to what the Packard Commission (1986, p.45-47) referred to as a “Huckster Psychology.”

This is not productive and does not contribute to improved program outcomes. From the Final Report of the Packard Commission:

All of these pressures, both internal and external to DoD, cause the program manager to spend most of his time briefing his program. In effect, he is reduced to being a supplicant for, rather than a manager of, his program. The resulting huckster psychology does not condition the program manager to search for possible inconsistencies between performance and schedule, on the one hand, and authorized funding, on the other. Predictably, there is a high incidence of cost overruns on major weapon systems programs” (Packard 1986, p.47)

To be clear, the Packard Commission was referring to the environment which consumes the PM’s precious time, causing them to lose focus on the program’s goals and objectives. For certain, it is the purview of such notable, high-level commissions, panels, and studies to identify improvements to the defense acquisition system, such that it is more conducive for effective management and better program outcomes. But regardless of any current flaws in the system, or pending improvements, it is the purview and responsibility of the Program Manager, and those who develop PMs, to ensure they are able to contribute in the most effective manner possible.

2.3.2 PM Competencies

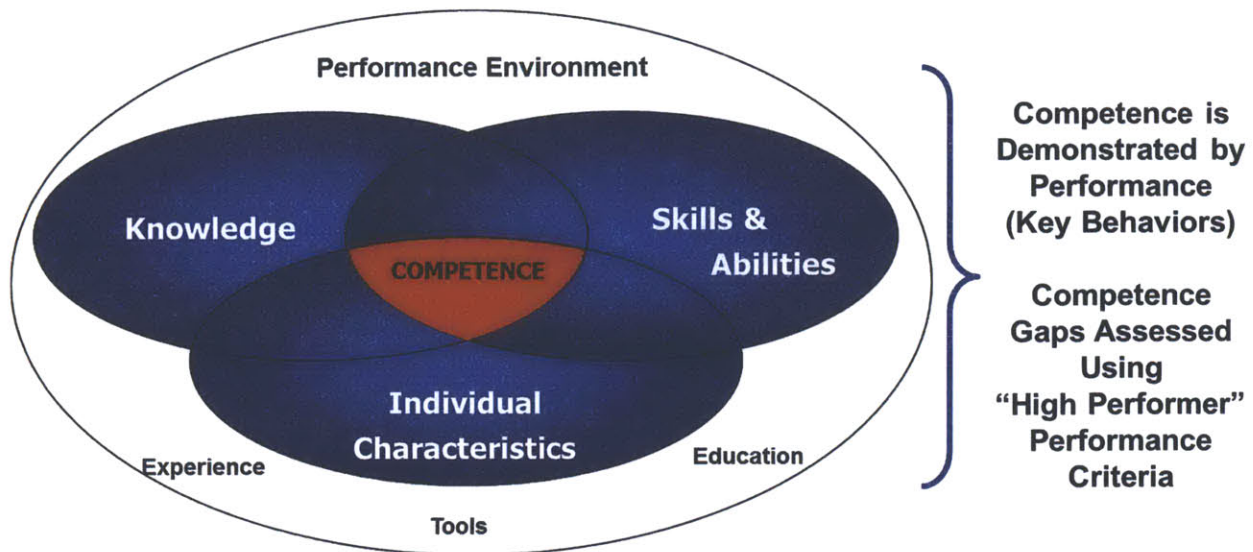
There have been a number of recent studies targeting Government PM performance that warrant review, but first is the need to examine a descriptive framework for competencies.

2.3.2.1 Competency Model – Behavior Challenge

The Office of Personnel Management (OPM) defines a competency as, “an observable, measurable pattern of skills, knowledge, abilities, behaviors & other characteristics that an individual needs to perform work roles or occupational functions successfully.”¹² There are many elements to this OPM definition as shown in Figure 12, which is a graphic from the USD (AT&L) Workforce Career Management Office.

¹² Accessed December 21, 2012 from: http://www.opm.gov/hiringtoolkit/ht_10_00.asp

Figure 12 -- Competency Model



Source: Higgins 2006, p.2

This representation indicates competence emerges to the extent there is an intersection of Knowledge, Skills & Abilities, and Individual Characteristics. While Knowledge and Skill may be amassed through experience and education, specific Abilities, and Individual Characteristics are more difficult to hone and shape in a formal setting such as DAU. This doesn't make them any less relevant for PMs though, as confirmed by several competency studies reviewed in this Section.

As stated on the right side of Figure 12, Key Behaviors demonstrate competence. So if one wants to see improved competency, looking at behaviors can be an important indicator. This notion is furthered in a recent *Aviation Week* viewpoint article entitled "Fix Bureaucratic Behaviors First," which comments on the feasibility of success for the DoD's Better Buying Power initiative. The author states, "Acquisition community leadership must address workforce behaviors to achieve concrete, productive reform in how the Defense Department buys weapons, equipment, and services." (Patterson 2012, p.58) The point is BBP is well intended and necessary, but it once again focuses on process over product or people. A prime example is that BBP states a need to reduce bureaucracy, while also mandating 36 new initiatives, which most certainly add new reviews, coordination, and approvals. The author Patterson, references a study his institute conducted for one military department that identified redundancies and duplications that could lead to a two-thirds reduction in reviews and reports, but none of it was implemented

because individuals didn't want to surrender "their" particular review or report (Patterson 2012). In summary, competence is more than just PM knowledge, skill, and experience. In fact, several DoD competency studies indicate PM 'abilities' and 'individual characteristics' are also important behavioral aspects.

2.3.3 CNA Program Manger Competency Model Validation – 2008

The DAU tasked the CNA to develop competency models for the primary acquisition career fields so DAU could understand better the competencies they are trying to develop in the acquisition corps. The CNA effort on Program Management utilized extensive input from across the acquisition workforce gathering data on 45 separate behavioral elements (Tregor et al 2008). The validated PM Competency Model includes ten competency units, 9 Technical, and 1 Professional, as shown in Figure 13 below.

Figure 13 -- Ten PM Competency Units

<u>Type</u>	<u>Unit</u>	<u>Competency Area</u>
Technical	1	Information Management (IM), Information Technology (IT), and Software Management
	2	Overseeing Contracting and Cost Estimating
	3	Life-Cycle Planning and Production
	4	Managing Programs and People
	5	Process Management
	6	Life-Cycle Budgeting and Financial Planning
	7	Technical Management Process
	8	Identify and Protect Technologies
	9	International/Joint/Inter-Agency Program Management
Professional	10	Program Management Professional Competencies

Each of the ten units of competency was assessed on a scale of 1 (low) to 5 (high) for frequency of use, criticality to job, and current level of proficiency. The Professional Competency area proved to have a much higher level of frequency and criticality than any of the other 9 Technical Competency areas. The CNA report provided a list of ten separate competencies that fell under the broader Unit 10 area of Program Management Professional Competencies. Figure 14 includes a list of all these sub-competencies, along with descriptions for each.

Figure 14 -- CNA List of Professional Competencies

Competency Name	Description
Oral Communication	Makes clear and convincing oral presentations. Listens effectively; clarifies information as needed.
Team Building	Inspires and fosters team commitment, spirit, pride, and trust. Facilitates cooperation and motivates team members to accomplish group goals.
Flexibility	Is open to change and new information; rapidly adapts to new information, changing conditions, or unexpected obstacles.
Influencing and Negotiating	Persuades others; builds consensus through give and take; gains cooperation from others to obtain information and accomplish goals.
Interpersonal Skills*	Treats others with courtesy, sensitivity, and respect. Considers and responds appropriately to the needs and feelings of different situations
Decisiveness	Makes well-informed, effective, and timely decisions, even when data are limited or solutions produce unpleasant consequences; perceives the impact and implications of decisions.
Partnering	Develops networks and builds alliances; collaborates across boundaries to build strategic relationships and achieve common goals.
Resilience	Deals effectively with pressure; remains optimistic and persistent, even under adversity. Recovers quickly from setbacks
Problem Solving	Identifies and analyzes problems; weighs relevance and accuracy of information; generates and evaluates alternative solutions; makes recommendations.
Accountability	Holds self and others accountable for measurable high-quality, timely, and cost-effective results. Determines objectives, sets priorities, and delegates work. Accepts responsibility for mistakes. Complies with established control systems and rules.

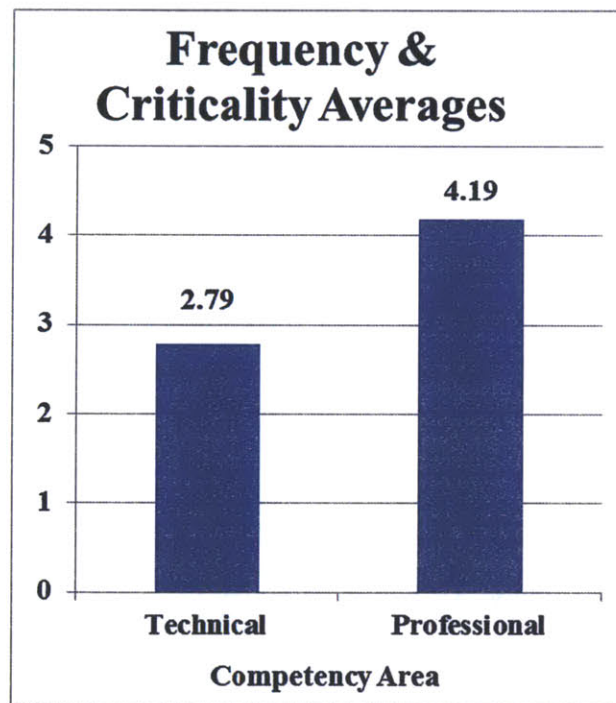
Source: Tregor et al 2008, Appendix B

2.3.3.1 Comparing Technical and Professional Competencies

2.3.3.1.1 Frequency and Criticality

The top 3 Professional Competencies identified by the CNA analysis were *Interpersonal Skills*, *Team Building*, and *Accountability*. But most interesting is that every one of the Professional Competencies shown in Figure 14 scores higher in frequency and criticality than the highest scoring Technical Competency, which is Unit 4, Managing Programs and People. The data tables which provide this insight are included in Appendix A. Taking an average score of the last column in these data tables, Professional Competencies score 4.19 in Frequency and Criticality, which is 50% higher than the Technical Competency average of 2.79 as shown in Figure 15.

Figure 15 -- PM Competency Comparison

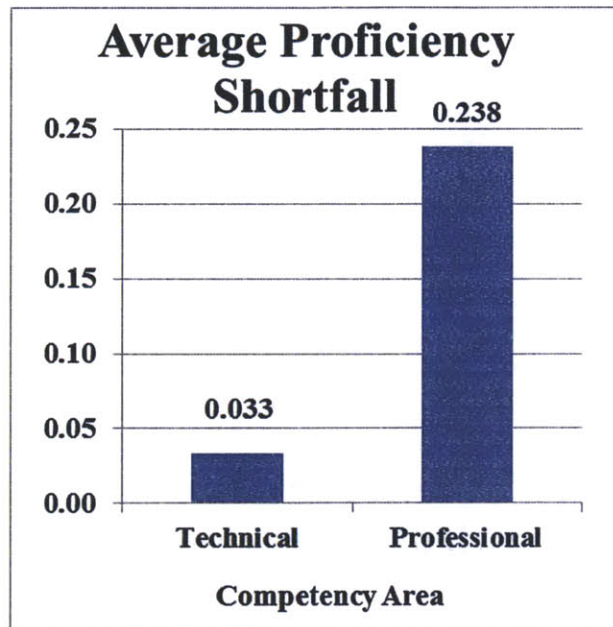


2.3.3.1.2 Proficiency

The data tables in Appendix A also show that *Professional* Competency Proficiency levels are farther behind their associated average Frequency and Criticality score compared to the *Technical* Competency Proficiency levels. The average gap between proficiency and the average frequency and criticality score is seven times higher for Professional Competencies (0.238) than that of Technical Competencies (0.033), see Figure 16. In other words, if there is

ground to be made up in PM development, the data may suggest given limited training resources of time and money, it may be best to focus on Professional Competencies.

Figure 16 -- Competency Proficiency Shortfalls by Comparison



2.3.3.1.3 Analytical

The analysis contained in the CNA report is much more focused on Technical Competencies than Professional. The CNA conducted and reported on the following extensive analysis related to the Technical Competencies:

- Factor Analysis
- Demographic Comparisons by:
 - Component (Army, Navy, Air Force, and other DoD agencies)
 - Assignment Type (Weapon Systems, Business Management, Services, International)
 - Job Title (PM, Deputy PM, and Integrated Product Team Lead)
- Proficiency & Gap Analysis – Journey Level vs. Senior Level

There is no similar analysis on the Professional Competencies included in the CNA report, nor is there any reason stated for why this same level of analysis was not applied.

2.3.3.2 Summary of CNA PM Competency Study

The relative significance of the Professional Competencies compared to Technical is not mentioned in the CNA report, nor is the above noted proficiency differences. But the following quote from the report's Executive Summary, under the heading, "Opportunities for Positive Change in Professional Competencies" demonstrates some awareness of the significance of the Professional Competencies:

Overall, PMs rated all the professional competencies very highly across frequency and criticality. Professional competencies should be incorporated into most training and development activities because they cut across all technical activities of the job and underlie superior performance. (Tregor et al 2008, p. 7)

Given the comparative importance and proficiency shortfalls between Professional and Technical Competencies, perhaps more attention should have been given to analyzing the Professional Competencies in a manner more conducive to assisting DAU with improving PM development training. This observation in no way diminishes the need for analysis on, and improvement of, Government PM Technical Competency, but rather highlights the opportunity to do more work on the Professional Competencies, when they have been validated as a high leverage area.

2.3.4 PM Competencies – What's Most Important?

Numerous efforts have attempted to identify which PM competencies are most important. Here is a look at a few studies in particular, that help provide some insight into trying to find the right balance for PM competencies in leadership, management, technical, and professional areas.

2.3.4.1 Leadership & Management

One competency study (McVeigh 1995) notes the importance of leadership and management by revisiting a previous 1989 study conducted by the Defense Systems Management College (DSMC). While McVeigh focused on just Army PMs, both efforts were aimed at identifying the 16 most important competencies as well as those which distinguished successful PMs from their peers. This research was conducted at the Naval Postgraduate School (NPS) and revalidated 14 of the 16 previous top competencies as identified by DSMC. Figure 17 includes the complete list for both studies.

Figure 17 -- Competency Model Comparison

Original DSMC Competency Model (1989)	Revised NPS Competency Model (1995)
Sense of Ownership (*)	Political Awareness
Political Awareness (*)	Coaches Others (*) (@)
Relationship Development (*)	Relationship Development (*)
Strategic Influence (*)	Self-Control (*) (@)
Interpersonal Assessment (*)	Results-Oriented (*)
Assertiveness (#)	Innovativeness
Managerial Orientation	Sense of Ownership
Results-Oriented	Long-term Perspective
Critical Inquiry	Managerial Orientation
Long-term Perspective	Action-Oriented
Focus on Excellence	Focus on Excellence
Innovativeness	Strategic Influence
Optimizing (#)	Critical Inquiry
Systematic Thinking	Systematic Thinking
Action-Oriented (*)	Proactive Information Gathering
Proactive Information Gathering	Interpersonal Assessment (*)
<p>Notes: (*) Indicates competency that distinguishes a successful PM (#) Competency deleted from the original DSMC model (@) Competency added to the revised NPS model Source: McVeigh (1995) – Figure 2, Page 32 has been reconstructed for easier readability</p>	

The competencies validated in both models which distinguish a PM from his or her peers include (McVeigh 1995):

- Relationship Development -- Spends time and energy getting to know program sponsors, users and contractors.
- Interpersonal Assessment – Identifies specific interest, motivations, strengths and weaknesses of others

In summary, McVeigh’s work places a premium on successful program managers having strong leadership and management competencies with little mention of the need for technical competencies or hard PM skills.

Another validation of ‘PM as a leader’ comes from Gadeken (2004), where he gathered input from 326 student groups, over three years, as they passed through the 14-week Advanced Program Managers Course (APMC) within DSMC. Each of the student groups was asked to generate attributes of the ideal PM leader and then rank the top five. The results in order of those attributes student groups most selected to be in the top five are:

- Communication
- Vision/Strategy
- Delegation/Empowerment
- Integrity
- People Skills
- Competence/Expertise
- Team Building

Gadeken then overlaid results of a 360-degree evaluation of PMs to rate current performance of these competencies, which showed the most improvement was needed in Vision/Strategy and Delegation/Empowerment, with Team Building next in line. While the research was targeted at ‘the ideal PM,’ and leadership attributes dominate the list, noted at number six on the list is Competence/Expertise, which suggests sufficient technical or hard PM skills are almost a pre-requisite to any competency listing.

2.3.4.2 Technical / Hard Skills – Industry Perspective

A more recent research effort took a new approach at trying to discern the overall importance and need for improvement of PM competencies. Wood (2010) gathered a unique perspective by interviewing 146 industry managers and asking them to rate the importance of 35 Government PM skills, which he categorized as 20 technical/business “hard skills” and 15 leadership/management “soft skills”. Industry managers were then asked to rate how well their Government PM counterparts were doing on all 35 skills. Wood suggested those skills with the largest gap between importance and performance could be the focus for PM development.

What is most relevant about Wood’s approach for this research is the gathering of perspective from industry PMs. These are the contractor counterparts who government PMs must interface with to make DAS programs successful. Most other competency studies, to include those already reviewed here, are based on PM self-survey data. The conclusion was that

while the top 10 list for importance and performance, “represented a relatively even mix of technical and soft skills,” the gap analysis heavily favored the technical hard skills as areas for the greatest improvement (Wood 2010). Correlating these findings back to the CNA competency assessment is challenging as there is not a clear one-to-one correspondence between Wood’s Hard/Soft skill list and the CNA’s Technical/Professional Competency lists. The “soft skills” that did make the top 10 competency shortfall list included *Team Building* and *Negotiations*.

Gathering industry’s perspective on government PM competency importance and performance may provide new and unique insights, but it also may be too narrow a view compared to the full scope of the role of the PM. By scanning Wood’s top 10 list of competency shortfalls, the results appear heavily centered around those things a contractor needs most in order to be successful on a program, to include these top seven (Wood 2010):

- Develop a budget
- Determine program deliverables
- Implement change control
- Determine program goals
- Document program constraints
- Develop a schedule
- Establish program controls

In essence, the industry voice to the government may be saying, ‘tell me what you need, give me clear boundaries, and program stability, and I will be successful for you.’ This perspective of the role government PMs must play with their industry counterparts is very important. But also important is the role PMs must play with many other stakeholders in the program (i.e. Users, resource managers, and Congress) in order to achieve success.

2.3.4.3 Lean Program Managers

Newly published research applies the traditional six Lean Principles to managing engineering programs. This joint effort by the Project Management Institute (PMI), International Council on Systems Engineering (INCOSE), and the Massachusetts Institute of Technology Lean Advancement Initiative (MIT-LAI) refers to “Lean Enablers” as a means to, “lead your program to excellence.” (Oehman et al 2012). The work is based on the following six Lean Principles:

- Value

- Map the Value Stream
- Flow
- Pull
- Perfection
- Respect for People

This Lean research argues how Lean Principles blend with Program Management and Systems Engineering to improve program outcomes using 43 separate “Lean Enablers” (Oehman et al). But what is most relevant to this research is that the joint triad team chose to elevate to first, the Lean Enablers associated with the sixth principle, “to emphasize its importance” as shown here (Oehman et al):

#1 Lean Category: *Treat People as Your Most Important Asset*

- Build a program culture based on respect for people
- Motivate by making the higher purpose of the program and program elements transparent
- Support an autonomous working style
- Expect and support people in their strive for professional excellence and promote their careers
- Promote the ability to rapidly learn and continuously improve
- Encourage personal networks and interactions

It is quite interesting that even a theory such as Lean, which is so focused on continuous improvement of *process*, puts *people* at the top of the list for what to focus on for greater program outcomes.

2.4 Section III – Correlating Program Manager Competency to Program Success

For any large defense acquisition programs, there are many variables and contextual factors which influence program outcomes relative to cost, schedule, and performance. For this reason, it is difficult to gather quantifiable evidence to support the logical and widely held belief that strong program manager competencies translate to more successful program outcomes. Several recent studies have attempted to do this and are reviewed below.

2.4.1 PM Professionalism Related to Program Outcomes – 2011

One particular NPS research effort pursued the validation of a simple hypothesis for major defense acquisition programs: *PM professionalism is positively correlated with program outcomes* (Snider 2011). The research noted that there were no previously attempted data-driven studies to correlate the widely held belief that a professionalized PM workforce contributes to better program outcomes. Snider’s research considered ‘professionalism’ within the context of the Defense Acquisition Workforce Improvement Act (DAWIA). In 1990, DAWIA mandated the establishment of an Acquisition Corps to be professionalized through dedicated and intentional education, training, and work experience (DAU 2012). To quantify professionalism, Snider’s research focused on these three factors:

- 1) PM program tenure (time on the measured program, **not** total PM experience)
- 2) PM status (civilians were assumed more professional than military PMs)
- 3) Program Component (Air Force PMs were considered more professional than Army, which was considered more professional than Navy).¹³

Program outcomes were measured using schedule breaches and percentage unit cost variance information from annual Selected Acquisition Reports (SARs) to Congress (Snider 2011).

Ultimately, this NPS research did not validate the hypothesis and concluded further research is needed to find a link between professionalism and program outcomes (Snider). Two additional conclusions partially explain the inability to prove the hypothesis. First, Snider stated “Other factors outweigh the PM’s influence,” to describe how large programs, in the DAPA defined “Big-A, little-a” construct, have many issues outside the PM’s direct control. Second, the research concluded that “Every program is different”, whereas the research made the simplifying assumption of a program homogeneity (Snider). While this author agrees with much of Snider’s recommendations, to include the recommendation “Do not abandon PM professionalization,” one could argue a different framing of the dependent and independent variables may have made it possible to validate the hypothesis.

An alternative framing could weight PM experience and level of competency differently. For instance, the NPS research appears to disregard total PM experience in its measure of professionalism. In the NPS framing, a 5-year PM with three years of tenure on a program, is

¹³ Snider’s research indicated this order of professionalism by Service was appropriate based on available data that indicated a corresponding stratification for the average years of experience for ACAT I PMs by Service.

considered more “professional” than a 20-year PM with only one year on that same program. An alternative approach would give more professionalism credit to the 20-year PM. Also, some have argued PMs with greater program phase-specific experience (i.e. Technology Development, Production, or Operations & Sustainment) could contribute to more successful outcomes for programs entering that particular phase (Kinner 2012). Relative to PM competencies, the NPS research did not reference the CNA validation of PM Technical and Professional Competencies, which had just recently been completed for DAU in 2008. A quantitative measure of these competencies in a PM could be more indicative of “professionalism” than their status as Civilian or Military, or which Service component they were in, which Snider noted was a, “blunt surrogate for PM training, education, and experience levels.” (p.42) Figure 18 below summarizes this comparison of PM professionalism variables.

Figure 18 -- Options for Variables to Quantify PM Professionalism

Variables for Quantifying PM Professionalism	
<u>NPS Research</u>	<u>Alternative Framing</u>
PM Tenure (time on specific program)	PM Experience (total time as a PM)
PM Tenure (program time, as of SAR)	Relevant Program Phase-Specific Experience
Civilian over Military	Measure of PM Professional Competency
Service (AF, Army, then Navy)	Measure of PM Technical Competency

Ultimately, this suggests that Snider’s research framing contributes more to demonstrating the challenge associated with conducting a sufficiently comprehensive quantitative study, than on proving or disproving the need for PMs to be professionalized. Perhaps this challenge is why no other research has attempted to perform such a quantitative assessment, especially given the broad acceptance of the importance of PM professionalism. For instance, would anyone boarding a commercial airplane question if research had validated whether pilot “professionalism” contributes to more successful take-offs and landings? Not likely, but passengers may question how much experience the pilot has, or trust that the airline provides significantly comprehensive training. This could explain why there are many more studies attempting to discern which PM competencies are most important and which ones are least developed. Continuing the analogy, this type of data gathering for pilots would help to

focus on which skills a pilot needs to improve in a flight simulator before taking command of a passenger airline.

It is the contention of this author that in fact PM professional competencies, such as those defined by the 2008 CNA assessment are more likely to positively influence program outcomes. Furthermore, as argued in chapter 4, these same PM competencies can mitigate some, but not all, of the challenges associated with Snider’s two conclusions, “Other factors outweigh the PM’s influence” and “Every program is different.” This NPS research does contribute to the understanding of just how challenging it can be to draw the quantitative link between professionalism and program outcomes.

2.4.2 GAO Report Linking Strong Leadership to Stable Weapon Programs – 2010

The Government Accountability Office (GAO) recently made its own attempt to understand contributing factors to those programs with positive outcomes. The GAO identified programs from the 2008 MDAP list which it deemed as stable due to the program closely tracking original cost and schedule targets (Sullivan 2010). Their analysis led them to conclude stable programs shared the following four factors as shown in Figure 19; 1) Senior leadership support, 2) Sound business case, 3) Disciplined execution, and 4) Strong PMs. While the GAO report provides ample evidence for each factor, the following two extracts from the report are typical of the ‘Strong PM’ references made (emphasis added):

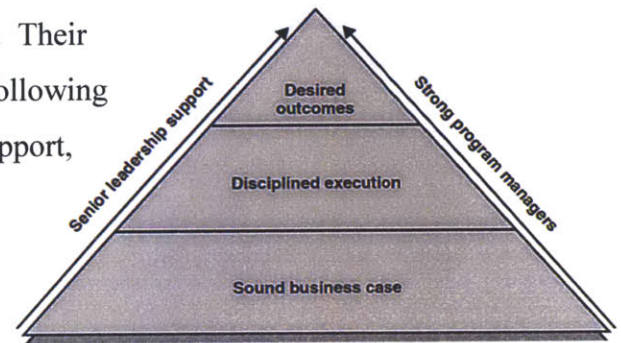


Figure 19 -- GAO Key Factors to Program Success
Source: Sullivan 2010, p.10

Program managers from successful programs tended to have similar attributes for success such as experience, leadership continuity, and communication skills that facilitated open and honest decision making. These program managers were empowered to make good decisions, allowing them to be accountable for the success or failure of the program. We found that successful managers took proactive measures to ensure the stability of their programs, including reaching out to stakeholders in the user and testing communities to facilitate their collaboration. (Sullivan 2010, p.14)

While the admission of program difficulties may be seen as detrimental to a program manager’s career, leaders of our case study programs understood that direct and candid communication are essential to program success. Program officials observed that, by fostering a reputation for honesty and leadership, they were able to develop credibility with stakeholders, including contractors, and make compelling cases for what was needed. They emphasized the importance of including stakeholders early on in the

process of solving problems so they are invested in the solutions being developed. (Sullivan 2010, p.15)

In just these two extracts from the GAO report, the following 12 Professional Competencies were identified in the ‘Strong PMs’ leading stable programs:

Leadership, communication skills, open and honest decision making, empowerment, accountability, proactive, partnering with stakeholders, facilitating collaboration, direct and candid communication, honesty, credibility, and problem solving

These GAO findings strongly suggest that Professional Competencies contribute to stable programs.

The GAO report goes on to suggest recent acquisition reforms implemented by Congress and the DoD may be partly responsible for the increased stability in the programs analyzed by the GAO. A list of recent policy initiatives are ascribed to the factors of ‘Sound business case’ and ‘Disciplined execution’ in the GAO stable program model. Arguably, it is difficult to reform ‘Senior leadership support,’ it is either there or not, but with regard to ‘Strong PMs,’ the GAO identified no substantive reforms targeted at finding, creating, or sustaining these PMs, even though the GAO indicated they are critical to program success. Figure 20 shows how many initiatives the GAO ascribed to each of these three key success factors. In fact, in the entire report, the most significant DoD actions mentioned with regard to the people doing the acquiring was a 5-year plan to increase the workforce size and the effort to enforce PM service agreements (Sullivan 2010).

Figure 20 -- Summary of Initiatives by Success Factor

<u>Success Factor</u>	<u># of Reform Initiatives ID'd in Report</u>
Sound Business Case	10
Disciplined Execution	2
Strong PMs	0

Source: GAO Report (2010) pgs 28-29

The GAO either didn't look for any PM initiatives, or they didn't find any worth mentioning. In either case, it seems to undervalue this key factor. There is certainly no shortage

of findings and recommendations to inform new initiatives aimed at improving PM professional competencies and overall development, as evidenced in these final two studies.

2.4.3 OSD Study of PM Training and Experience – 2009

Mr. David Ahern, Director, Portfolio Systems Acquisition in OSD directed a study of PM training and experience in 2009. His interest focused on determining a) the need to improve current PM training, and b) the need to add prior PM experience to job-selection requirements. The report noted that this effort followed the CNA’s PM Competency Validation (reference section 2.3.3 of this thesis) by six months and, “was designed to supplement the CNA study.” (p.3) The OSD study interviewed 55 senior, mostly military, government PMs and asked them the same question for 22 separate program manager challenges. “Is acquisition training sufficiently practical and comprehensive (other than on-the-job training) to enable you to manage or deal effectively with this challenge?” (DAU 2009, p.4). The PM challenges are listed below (see Figure 21) in order of the ones for which the greatest percentage of interviewees answered “No” or “Uncertain” about the sufficiency of acquisition training.

Figure 21 -- Responses in OSD PM Training and Experience Study

<u>List of 22 Generic PM Challenges</u>	Response	
	"No"	"No" + "Uncertain"
Unexpected Cost Growth	76%	86%
Cost Control Challenges	61%	75%
Software Management Challenges	57%	75%
Cost Estimating Challenges	65%	73%
Overseeing Contractor Performance	57%	69%
Earned Value Challenges	47%	63%
Understanding and Using Contractor Financial Reports	47%	61%
Dealing with User Requirements	51%	59%
Changes in Directed Schedules	47%	59%
Changes in Directed Funding	51%	57%
Technical Failures	47%	57%
Source Selection Challenges	51%	55%
Logistics Challenges	45%	55%
Risk Management challenges	51%	51%
Changes in Technical Requirements	43%	49%
Test and Evaluation Challenges	39%	49%
Systems Engineering Challenges	43%	47%
Responding to Inquiries From Outside DoD	41%	47%
Understanding and Using Government Financial Reports	35%	45%
Responding to OSD Inquiries	35%	45%
Contracting Challenges	37%	41%
Responding to Military Service Inquiries	29%	37%

Source: DAU 2009, p.6

2.4.3.1 Missed Opportunity

The study was not clear how or why it arrived at this particular list of PM challenges. Also, there was no attempt to describe how these challenges correlate to the PM Competencies the CNA had recently validated. In fact, the specific CNA Technical and Professional Competencies are not mentioned anywhere in the report, to include any attempt to address the observation that, based on CNA’s research data, the Professional Competency proficiency gap is much higher than the gap for Technical Competencies. For a study specifically “designed to supplement the CNA study,” this would appear to be a missed opportunity. An interesting, although unanswered question is whether DAU training targeted at improving the CNA validated competencies could assist with these challenges.

This author’s contention is that focusing training on improving the CNA validated PM competencies would help PMs with the challenges in the OSD study. The primary question in the study asked if the training was sufficient to, “enable [the PM] to manage or deal effectively

with this challenge?” Arguably for a PM to “manage or deal effectively with [a] challenge,” they must identify the issue, formulate options, chose one, and then implement it. One possible mapping is to consider that many of the Technical Competencies enable PMs to look for and identify issues, while the Management Competencies help mostly with formulating and choosing options, and the Professional Competencies assist with being able to implement the solution, or ‘deal effectively with the challenge.’ This mapping of challenges to competencies may be worth its own study and analysis, but the OSD study was incomplete in the sense of trying to make the connection of which competencies would be most relevant in aiding PMs to confront challenges.

2.4.3.2 OSD Findings

As shown in Figure 21, there were 14 of the 22 program manager challenges for which at least 50% of those interviewed felt the training was not sufficiently practical and comprehensive (DAU 2009). The results from this OSD study clearly confirm there is opportunity to improve the sufficiency of PM training. Similarly, the study validated that extensive experience was critical for effective program managers. Of the 13 major findings, each with multiple recommendations, these two stand out:

- #1) PMs need additional training in industry practices, including factors that motivate contractors
- #12) Improvements are needed in PM communications with users regarding technical requirements

Once again, recommendations from this study touched on the need for PMs to improve their understanding of, and ability to partner with, both industry and the operational user community.

2.4.4 DBB Review of Program Managers – 2011

The DoD often looks at the private sector to attempt to leverage best practices, as done in this case by the DBB with the aim to improve selection and development of military PMs. “The USD(AT&L) tasked the Board to identify the structure, selection, leadership development, and the assignment paths for military leadership in acquisition, technology, and logistics.” (Cook & Wright 2011, p. 1) The DBB found that PMs spent excessive time keeping many stakeholders informed with similar information, that there was an erosion of authority and an increase in bureaucracy, often times there were “checkers checking checkers,” and in general too much time was spent managing politics and process, instead of program (Cook & Wright). These findings

are not new given all the other research reviewed thus far and the general sense of the ever-growing acquisition bureaucracy.

The DBB's final report was relatively short and poignant, with essentially just two recommendations regarding military PMs, which are included below with several selected supporting recommendations (Cook & Wright):

- 1) Professionalize the Uniformed Acquisition Corps (or just put civilians in all the leadership positions)
 - a. Make the Acquisition Corps a career destination, not a rotational stop
 - b. Build a culture and tradition that is proud, responsible, and enduring
- 2) Better Align the Requirements, Resources, and Acquisition Processes
 - a. Redefine and expand the PM role so that it is an effective integrator at the intersection of requirements, resources, and acquisition.

These two recommendations in many ways encapsulate the literature review of chapter 2 on PM Professional Competencies and the need for improved relationships among key stakeholders in the Big "A" acquisition community. The challenge here is that the DBB was tasked by the USD(AT&L) who owns the "little-a" acquisition community, and not the Secretary of Defense who has purview over the "Big A" acquisition community. This means even if USD(AT&L) embraces the recommendations, at best, the PM is charged with leading the effort to keep the Big A triad aligned.

2.5 Summary

The literature reviewed in the three Sections of this chapter provides the following insights. First, the acquisition system is larger than just those in the little "a" acquisition community. It is dependent on effective interactions of the constituent systems of JCIDS, PPBE, and DoD 5000. The PM has a critical role in program success by facilitating these effective interactions at the enterprise interfaces in the Big "A" system. This requires both "hard skill" (Technical Competencies), as well as strong leadership and management skills (Professional Competencies). It is this author's contention that Technical Competencies are a pre-requisite for an ACAT I PM, and the Professional Competencies are the difference maker for those PMs who are highly effective. As will be argued in the next chapter it is easier to compensate for weaknesses in Technical Competencies than it is to compensate for a lack of Professional Competencies. Also, the Professional Competencies enable the relationships required to achieve

effective interactions within the larger Acquisition System. The relevant theories for this argument are provided in chapter 3.

Chapter 3 – Theory Literature Review

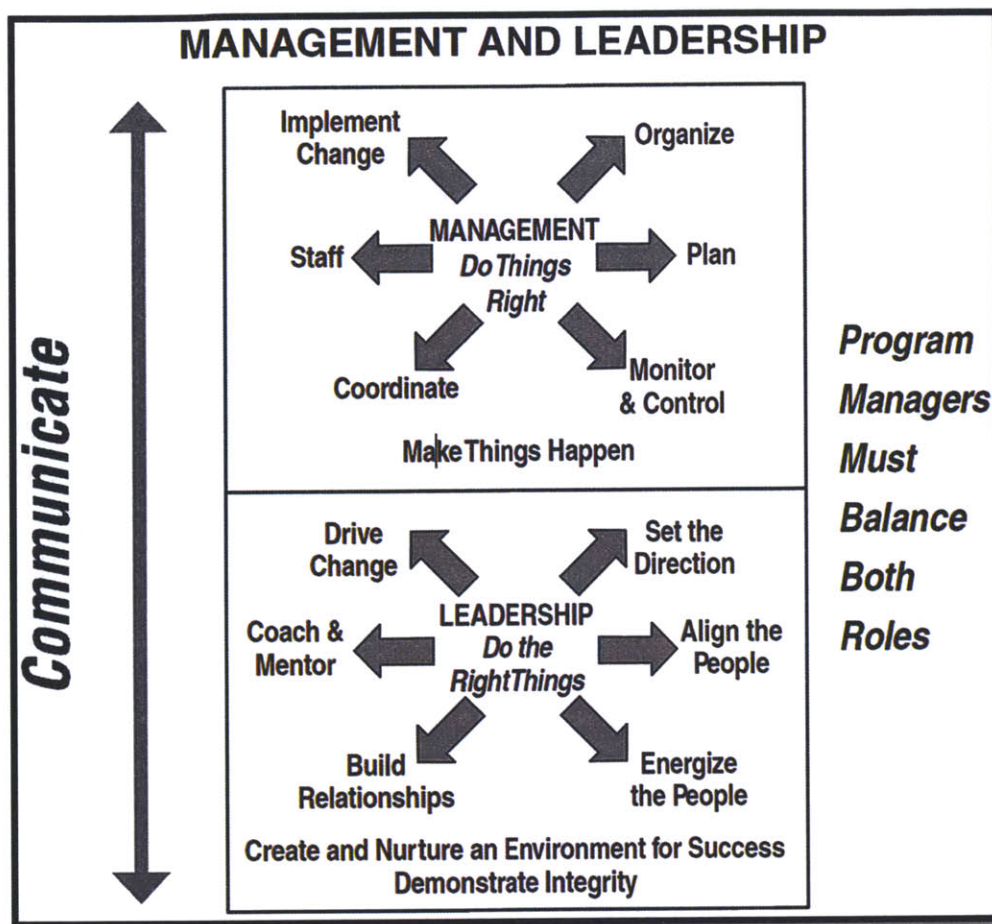
The problem described thus far is expansive. PMs strive to manage large, complex projects with many stakeholders, under immense process and policy guidance. There are over a hundred major studies documenting why cost and schedule growth is a recurring issue for defense acquisition programs. The acquisition literature review identified Professional Competencies as critical for PMs as well as the need to build strong relationships with key stakeholders to enable greater value delivery for the program. To provide some insight into how and why PM competencies and relationships can be useful in this manner, a broad set of relevant theories are used for this research. The list as it will be reviewed in this chapter, includes:

- Leadership & Management
- Acquisition Enterprise as a System with Value Exchange, and Stakeholder theory
- Negotiation Theory
- Organizational Routines & Activity Systems
- Knowledge Creation and Management
- Dynamic Capabilities

3.1 Program Manager AND Leader

Leadership and management are complimentary, not synonymous, concepts, and both are necessary for success. There is ample literature to address the similarities and differences of these two subjects. Yukl & Lepsinger (2005) reference Kotter's view, "that managing seeks to produce predictability and order, whereas leading seeks to produce organizational change." (p.361) Another differentiation (Kent 2005, p. 1012) is that managers "do things right" and leaders "do the right things." This latter view is expressed in Figure 22 below as referenced from DAU's *Program Managers Tool Kit*.

Figure 22 -- DAU View of Need for PM Leadership & Management



Source: Parker 2011, p. 103

The central point of all these perspectives is that management is sub-optimized without leadership, and likewise, great leaders must have sufficient management skills relative to the applicable area of practice. “Too much emphasis on the managing role can discourage risk taking and create a bureaucracy without a clear purpose. Too much emphasis on the leadership role can disrupt order and create change that is impractical.” (Yukl & Lepsinger, p. 361)

Indeed Government Program Managers require both leadership and management. The definition of a PM provided in chapter 2 refers to the individual with responsibility and authority for the program and who is accountable to the MDA. ACAT I program costs are in the billions of dollars and the program office reporting to the PM can number in the hundreds or even the thousands if the extended contractor workforce is included. While the title is Program *Manager*, the position also requires *Leadership*. There is a strong argument for the PM as a CEO, with both leadership and management as essential elements (Wood 2009). There are endless demands

on their time, tremendous pressures to succeed, and the large bureaucratic machine they serve has an insatiable appetite for program status reports and information. The job can be overwhelming, and many PMs experience “burn-out” trying to keep all the plates spinning as they try to do and be ‘all things for all people.’ This is a common phenomenon for many top executives and one leadership theory advises a counter-approach.

A *Harvard Business Review* article entitled, “In Praise of the Incomplete Leader” offers a distributed leadership model that requires the leader to accept his or her own imperfection (Ancona et al 2007). The modern business world thrives on collaboration, and leaders must embrace this. “Only when leaders see themselves as incomplete – as having both strengths and weaknesses – will they be able to make up for their missing skills by relying on others.” (Ancona et al, p. 94) The framework of this leadership model includes the following set of four capabilities:

- *Sensemaking* – understanding the context in which a company and its people operate
- *Relating* – building relationships within and across organizations
- *Visioning* – creating a compelling picture of the future
- *Inventing* – developing new ways to achieve the vision

This framework clearly includes leadership competencies that were covered in the acquisition literature review. But what is unique is the admission a leader should not expect to excel in every area, and in fact only really begins to excel after they accept they cannot master every area. Working to improve weaknesses is encouraged, but the authors argue that often, “it’s more important for leaders to find and work with others to compensate for their weaknesses.” (Ancona et al 2007).

This last point essentially implies a 5th capability of “*Humility*” for leaders and PMs. It allows the PM to realize her team is stronger when she relies on others to supplement her weaker competencies. Additionally, humility can facilitate the *Relating* capability, enabling stronger relationships within and across organizations. In the large acquisition enterprise system, establishing effective relationships was shown in chapter 2 to be very important for programs and PMs.

While the “incomplete leader” argues you need not have every skill to excel, it does argue you must have humility to realize that you don’t. There may be a parallel here for other PM Professional Competencies in that they are more difficult to compensate for than Technical

Competencies. For example a PM may be weaker in a technical competency like contracting and thus ensure he has a strong and trusted Contracts Officer on his program. But a PM with poor interpersonal skills may find it difficult to motivate and inspire his team until he works on improving his own skills in this area. Likewise, a PM may ask a financial expert to assist with identifying the salient points of a financial report (Technical Competency), but as the PM it is difficult to expect others to help him with his decisiveness (Professional Competency).

3.2 Acquisition Enterprise as a System

In chapter 1, the DAS was described as an enterprise system. Existing literature explains how systems thinking relates to viewing an enterprise as a system (Nightingale & Srinivasan 2011; Nightingale & Rhodes 2004; Rouse 2005). This enterprise systems theory informs this research, but particular attention is given to important enterprise system interfaces, often represented by stakeholders. In one interview conducted for this research a DAU Professor noted the consistent feedback from students who complete the Program Manager's course and return to manage ACAT I programs is that stakeholder analysis proves to be one of the most valuable skills acquired from the training.

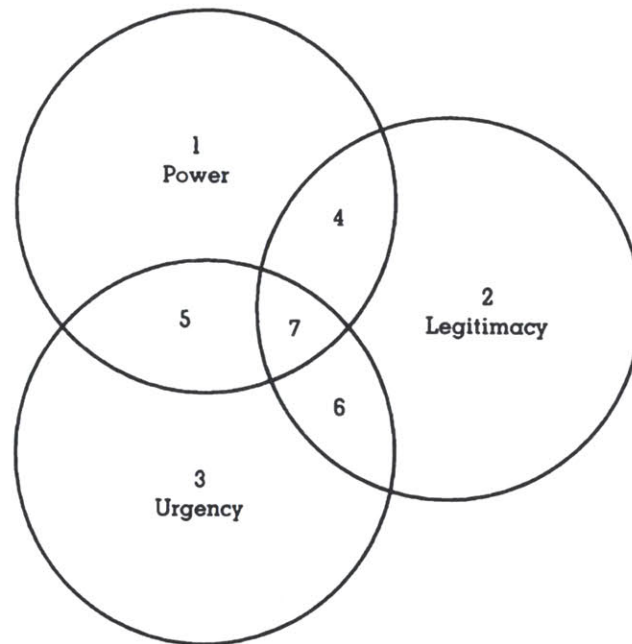
3.2.1 Stakeholder Theory

Defense acquisition programs, like any other venture, have stakeholders who have some claim, or stake, in the outcome of the program. Examples include; 1) the commander of the warfighting community who will inherit and operate the system being procured, 2) the taxpaying citizen who benefits from the national security provided by the new capability, 3) the congressional member whose district includes a major prime contractor, or 4) a CEO of a company bidding on a new major defense weapon system contract. Of course there are many more than these, and also the examples provided can also be represented by entire organizations or entities like; warfighters, taxpayers, Congress, and corporation XYZ. As a program manager, the important question is discerning who the stakeholders are and perhaps more importantly, which ones warrant the PM's precious time and energy?

Mitchell addresses this topic in a 1997 paper entitled, *Toward a Theory of Stakeholder Identification and Salience: Defining the Principle of Who and What Really Counts*. Mitchell's framework defines power, legitimacy, and urgency as three key attributes of a stakeholder and that how much of each is present in a stakeholder defines their salience, or, "the degree to which

managers give priority to competing stakeholder claims.” (p.854) Figure 23 shows the three stakeholder attributes in a Venn diagram with each region numbered. Regions 1, 2, and 3 are defined as low salience areas, regions 4, 5, and 6 as moderate salience areas, and region 7 as an area of high salience (Mitchell 1997).

Figure 23 -- Mitchell's Stakeholder Salience Model



This model provides a convenient method to map program stakeholders into categories, but in practice it can be quite challenging to conduct a thorough stakeholder analysis for a large ACAT I program. Not only are there many stakeholders to map, but where they fall on the range of power, legitimacy, and urgency can be context and issue specific, and thus dynamic with time. For this research, stakeholder theory is leveraged in the following two ways. First, it is argued that the PM, the User, and the KTR all have a sufficient level of power, legitimacy, and urgency, that they each have high salience. As a ‘iron-triad’ for the program, the three entities are referred to as the three super-salient stakeholders. This is not to trivialize other high salience program stakeholders, but rather to indicate that a defense program cannot succeed without a need (User), a producer (KTR), and the means to connect the two (PM).

Secondly, stakeholder theory informs the variable and complex dynamics of an acquisition program. Mitchell makes the point there is a dynamic nature to stakeholder-manager relations, meaning it is important to pay attention to shifts in power, urgency, and legitimacy over time. This is certainly true for acquisition programs. Many large acquisition programs span

a decade or more. During this time there is not only significant turn-over in key roles (i.e. Congress, DoD political appointees, and user community representatives) but also dynamics in the powers, authorities, and policies governing various offices and stakeholders within the DAS. For this reason, it is important for PMs to continuously track program stakeholders and their salience throughout the life of the program. As shown in chapter 2, many of the acquisition system studies claim effective interactions with program stakeholders are critical to program success.

3.2.1.1 Value Exchange

Any examination of successful enterprises relies on the notion of stakeholder value proposition. The value proposition is the exchange of value between an enterprise and its stakeholders such that the stakeholders are, “sufficiently satisfied so that they continue to engage with the enterprise.” (Nightingale & Srinivasan 2011,p. 19) In essence there is a two-way exchange of value. If a government program office is not satisfied with the value from a contractor, they may terminate the contract for convenience. Likewise, Congress, expects the benefit from a large weapon system to warrant the cost to the American taxpayer. If they do not, they may decide to no longer ‘stay engaged’ in the enterprise and cancel the program. There are value exchanges happening at every level of the program. They happen among stakeholders internal to the enterprise, as well as those stakeholders who are external to the enterprise. Program Managers must be able to recognize and appreciate the significance of these value exchanges, as they influence stakeholder motivation, support, interest, and decisions.

3.3 Negotiation Theory

The relevance of strong negotiation skills for PMs is well established (CNA Report, 2008; Wood, 2009 & 2010; Parker, 2011). The applicability goes well beyond a PM working a formal contract negotiation with a prime contractor for an annual quantity buy or for a development contract modification. Clearly negotiation skills are important in these traditional settings, but they also surface in numerous other ways. A PM can find herself negotiating with a matrix manager for personnel resources. PMs often negotiate with staff functions on what ultimately is required to gain their approval and coordination on an acquisition decision. When it becomes apparent that costs of desired requirements will exceed tolerable limits, a PM will negotiate options with the user community. Negotiation is often a way to resolve conflict and

there is ample evidence of the need to manage conflict in large complex projects, see Fox and Miller (2006).

The book, *Getting to Yes, Negotiating Agreement Without Giving In*, by Fisher and Ury (1991) provides a four part negotiation method that is just as applicable for PMs as for any professional negotiator. Each of these areas is described below with representative examples illustrating the relevance to PMs and their program office.

3.3.1 Separate the People from the Problem

Large acquisition programs involve hundreds, or even thousands of people. PMs often find themselves negotiating with a stakeholder and emotion or perceptions seem to be getting in the way of working towards resolution of an issue. By recognizing the other side has a strong emotional investment, and seeking to understand the reason for why they hold a certain perception on the issue, a PM may be better able to broker an agreeable outcome. This part of the method also relies heavily on effective communication, (both active listening and clear speaking), which is another valuable PM professional competency. It is not uncommon for defense programs to develop an “us vs. them” climate between government program office and prime contractor. At the slightest sign of this taking root, a PM is well advised to separate the people aspects from the issue at hand and move in the direction of dealing objectively with the problem.

3.3.2 Focus on Interests, Not Positions

Fisher and Ury refer to interests as the “needs, desires, concerns, and fears” that drive the position taken by a side in the negotiation. Positions at odds tend to draw battle lines in a negotiation, making it difficult to come to resolution. Interests provide the common ground upon which deals can be made. The key is that some interests are shared by both parties and also, some interests are more important than others. By PMs understanding this, they can construct more creative deals and move the program forward.

A good example is multiyear procurement, which happens when Congress agrees to appropriate money over several consecutive years to allow for a larger contract total quantity than if only a single year’s units were purchased. Congress typically desires to work from annual appropriations and each year’s procurement is intended for units that can be delivered over a 12 month period. Contractors have interests in profits, but also in the predictability of

revenues, and multiyear contracts provide very predictable projected revenues. By satisfying more of their ‘predictability’ interest, the contractor may yield more on the ‘profit’ interest and offer the products at a lower price. The larger buy also affords economic order quantity discounts. Multiyear procurements are not trivial and programs must prove they create sufficient government savings over a ‘single year buy’ in order to get Congressional approval, but in part they work by understanding that contractors have other interests like predictable revenue and not just total profit.

3.3.3 Invent Options for Mutual Gain

PMs can work with their Contractor and User counterparts to invent new options to resolve situations where the contractor is having technology challenges that prevent achieving a performance attribute without major additional cost. It is much better to view these situations as opportunities (i.e. for mutual gain) than problems. The PM could seek agreement from the User to lower the acceptable limit on one technical performance area, in order to avoid the significant cost of resolving the technical issue to meet the original performance level. This in turn can free up resources to be redirected towards other system attributes the User desires. Given the challenge of getting all the requirements exactly right at the beginning of a program, this type of ‘requirements trade’ can make a lot of sense for all parties. In the end, the program moves forward, the User is satisfied, and the contractor succeeds in knowing he has still satisfied his customer. The multiyear procurement example above is also applicable here. Since demonstrating significant government savings is a requirement for Congress to approve a multiyear appropriation, the government and the contractor achieve mutual gain in the multiyear option.

3.3.4 Insist on Using Objective Criteria

The use of objective criteria provides common ground that can enable both parties to feel comfortable accepting an outcome as fair and reasonable. In a home purchase, the seller wants to get ‘top dollar’ and the buyer wants to get a ‘good deal.’ This can lead to two vastly different desired sale price numbers. But the seller also has an interest in being free from the home to do other things in life, and the buyer may really have interest in that home as a perfect fit for their family. By using objective criteria, such as recent sale prices on comparable homes, both parties can feel comfortable settling on a common sale price to achieve their other interests. In a similar

way, objective criteria can provide clarity in an acquisition dilemma that enables resolution on an issue so the program can move forward.

Applying negotiation theory to defense acquisition programs is not about the PM squeezing the contractor to agree to do the prescribed work at the lowest possible price. It is about creating greater value. This happens when all parties involved can identify shared common interests. It is this researcher's contention that there is no greater shared common interest than program success. The government wants its hundreds of millions of program dollars to deliver fielded operational capability. Likewise, the contractor wants to maintain a revenue stream in production sales, modifications, and sustainment of a weapon system once they have won the development contract. They also want their company brand affiliated with a successful government acquisition effort. The User desires to deliver a successful system to fellow operators in the field who are relying on the new capability. At times, emotions and passion on a defense acquisition program can run high. All parties involved do well to advance their unique interests by first returning to, and identifying with, their shared common interests. From this point, you can begin to separate the people from the problem, focus on interests, and construct options for mutual gains as measured by objective criteria.

The notion of *dialectic program management* discussed in chapter 2 is relevant in the application of negotiation theory. Successfully moving through a negotiation has a lot to do with reframing the problem along the way. For example, separating the people from the problem and moving from positions to interests tends to open up new options. This is not always easy to do, but the application of dialectic thinking enables this. Trying to reason through perspectives of others can shed light on their true interests and motivations. It can also help you separate from your own.

In a parallel to the 'Incomplete Leader,' Malhotra and Bazerman (2007) state, "negotiation geniuses are aware of their limitations—and those of others—and work vigilantly to address them." (p.140) These authors of the book, *Negotiation Genius*, discuss techniques like using more System 2 thinking, characterized as "slower, conscious, effortful, explicit, and logical," than System 1 thinking, "which corresponds to intuition, is typically fast, automatic, effortless, implicit, and emotional." (p.141) Another technique offered by Malhotra and Bazerman is the application of an 'outsider lens,' which is cleaner and more objective than the 'insider lens,' and requires one to detach or separate themselves from the situation they are

currently in, as if they were an objective third party. These types of approaches utilize a dialectic strategy.

A dialectic program manager can move beyond applying these approaches to minimize his own biased way of thinking, and apply them to understanding others. Those who appear irrational in a negotiation very well may not be, and a dialectic approach can help a PM see this for the betterment of the program. Malhoutra and Bazwerman provide three reasons why a negotiation partner may appear to be irrational, but rather is actually: uninformed, dealing with hidden constraints, or has hidden interests (p. 260).

As an example, a PM may wonder why the testing authority is refusing to sign and approve a very reasonable test plan? The PM could label the testers as irrational, perhaps previous disagreements even justify that view. Or the PM could ask herself, which one of these reasons (information, hidden constraints, hidden interests) explains why my negotiation partner is not on board with the approach? It may be the end of the fiscal year and the testing agency has a funding constraint until the new fiscal year begins. As such they are seeking to not make commitments until they have the resources. By the PM uncovering this missing piece, she may be able to structure the deal and enable the program to move forward by providing the tester some bridge funding, which is far less expensive than delaying the entire program three months. The application of negotiation theory to program management is important because it goes far beyond the formal contract negotiations to nearly every aspect of a program manager's job.

3.4 Additional Supporting Theories

The PM is the organizational leader but the cumulative work of the program office far exceeds what any single PM can accomplish. The PM's leadership can amplify organizational outcomes by establishing a culture that contributes to, rather than detracts from, success. For this reason, it is important to examine several organizational management theories to understand how the PM can lead a program office such that the entire organization achieves greater value delivery in the execution of the acquisition program.

3.4.1 Organizational Resilience

As one of the four elements of the "Incomplete Leader" model, Sensemaking asks the leader to provide a common map to enable everyone in the organization to work towards common purpose (Ancona et al 2007). Like the modern business world, the acquisition world is

dynamic, not static. So policies, stakeholders, and situational variables can change the landscape quickly and corrupt or confuse the ‘common map’. How organizations respond to this change is vital. In times when there is a collapse of sensemaking, Weick (1993) argues the following four sources of resilience become important: 1) improvisation and bricolage, 2) virtual role systems, 3) the attitude of wisdom, and 4) respectful interaction (Weick 1993, p.638). These last two sources are of particular interest for leaders who seek to establish an organizational culture that values wisdom and respect. Weick argues that wisdom is more an attitude than possessing knowledge. That in fact, wisdom is often knowing that one does not possess certain knowledge, which again harkens back to the humility aspect of the ‘incomplete leader.’ Weick describes wisdom in action and how it facilitates resilient organizations by stating:

Wise people know that they don’t fully understand what is happening right now, because they have never seen precisely this event before. Extreme confidence and extreme caution both can destroy what organizations most need in changing times, namely, curiosity, openness, and complex sensing. The overconfident shun curiosity because they feel they know most of what there is to know. The overcautious shun curiosity for fear it will only deepen their uncertainties. Both the cautious and the confident are closed-minded, which means neither makes good judgments. It is this sense in which wisdom, which avoids extremes, improves adaptability. (p. 641)

Similar to wisdom, the respectful interaction element of Weick’s model contributes to organizational resilience by noting that no one person has all the best ideas. Rather the best ideas can come from different sources over time, and can also emerge from melding several ideas from those different sources. It is from the basis of trust, honesty, and self-respect that people will be best able to engage the other idea-generators in the organization to maximize resilience (Weick 1993, p. 642-3). PMs who embrace and cultivate the culture of wisdom and the value of respectful interaction in their organizations not only enable their own individual successful contribution to the program, but they magnify it, by helping the entire organization adopt the approach in everything they do.

3.4.2 **Organizational Routines and Activity Systems**

Organizations have been characterized as, “a series of interlocking routines.” (Weick, 1993, p. 632) Feldman initially referred to organizational routines as, “repeated patterns of behavior that are bound by rules and customs and that do not change very much from one iteration to another.” (2000, p. 611) Organizations have also been viewed as activity systems,

defined by Zott & Amit (2005, p. 3) as “a set of interdependent organizational activities centered on a focal firm, and encompasses activities that are either conducted by the focal firm or by partners, customers, or vendors.” The Big “A” defense acquisition system easily maps to this characterization given its myriad processes and operational routines embedded within the JCIDS, PPBE, and DoD 5000 system. As such, theories on organizational routines and activity systems are relevant and can provide insight for PMs striving to enhance value delivery.

While organizational routines allow for similar activity to be repeated more easily based on established patterns of previously performed work, they can also be viewed as static and limiting. Defense acquisition system routines can assist in value creation, for instance successfully executing a competitive source selection activity based on past experience, so as to yield a new best value development contract. But similarly, routines can steal value away from a program when the “routines resemble solutions in search of problems...where there is a way, there is a will” (Weick 1974, p.365). For example, when a program team takes a smaller ACAT III acquisition program through every step of the larger DoD 5000 process it may add unnecessary costs and delays. The DoD 5000 series process is applicable for all program sizes, but ultimately designed for the much larger, higher cost, higher risk, ACAT I programs. A prudent PM knows how to tailor government acquisition process steps to strike a balance between sufficient rigor and excessive process that adds little value.

By thinking in terms of defense acquisition as an activity system one can assess not just how well it is currently functioning, but also how it can adapt, grow, and improve. Analyzing organizations this way, “encourages people to stand back from their everyday routines and to perceive the overall pattern that such routines fall into.” (Blackler 1993, p.881) Knowledge work is best analyzed by looking at expertise, defined as effective activity, versus just analyzing the knowledge or the knowledge workers in the organization (Blackler). Expertise emerges when knowledge workers apply their knowledge both within, and to their routines. This is also true for defense acquisition which succeeds when it is executed to the strategy most suited to the uniqueness’s of the program, and not exactly per every step of the DoD 5000 process. “Routines do become entrenched and people *may* be controlled by events, but they are also capable of debating, reworking and rethinking the contexts within which they participate.” (Blackler, p. 881)

Indeed, others argue (Feldman 2000) that organizational routines in knowledge organizations are not entirely static, but in fact they can be a source of continuous learning. Feldman's experiments showed how agents in the system learned from reflection and observations of outcomes, and over multiple iterations, they improved the routines they were executing. But the leadership of an organization can either stifle or amplify this type of learning from continuous improvement, based on the culture they establish. Organizations that publicly recognize and reward those who don't just do their work, but improve how they do their work, can trigger virtuous cycles that continue to improve processes and yield improved results.

3.4.3 Knowledge Creation and Management

Because acquisition is knowledge work that involves thinking, engineering, designing, creating, and strategizing, the acquisition enterprise must value how knowledge is created and managed. In today's dynamic technology driven world, "successful companies are those that consistently create new knowledge, disseminate it widely throughout the organization and quickly embody it in new technologies and products." (Nonaka 2000, p.96) Nonaka argues the key to knowledge creation is understanding and embracing both *tacit knowledge*, which is much more personal and difficult to document and share, and *explicit knowledge* like facts, figures, known procedures etc. "Tacit knowledge has an important cognitive dimension. It consists of mental models, beliefs, and perspectives so ingrained that we take them for granted, and therefore cannot easily articulate them." (Nonaka 2000, p.98) This type of tacit knowledge usually comes from years of expertise. The expert program manager, with layers of 'acquisition scar tissue' may be inclined to take a certain course of action and not necessarily reflect a great deal on why they are doing so. Taking time to coach subordinates and other team members can help impart and proliferate the valuable knowledge that is driving the PMs course of action.

Managing tacit knowledge can also be critical to the success of a weapon system development effort. Von Hippel (2005) argues users have certain tacit knowledge about their craft that is difficult to document and share, but they 'know it when they see it.' Ask two experienced pilots to document their requirements for an ideal cockpit redesign and you will experience this first hand. The answer in these cases is to embrace this tacit knowledge and include operators, such as pilots, in 'tacit knowledge extracting sessions' such as cockpit design working groups with mockups and dynamically reconfigurable graphical user interface tools.

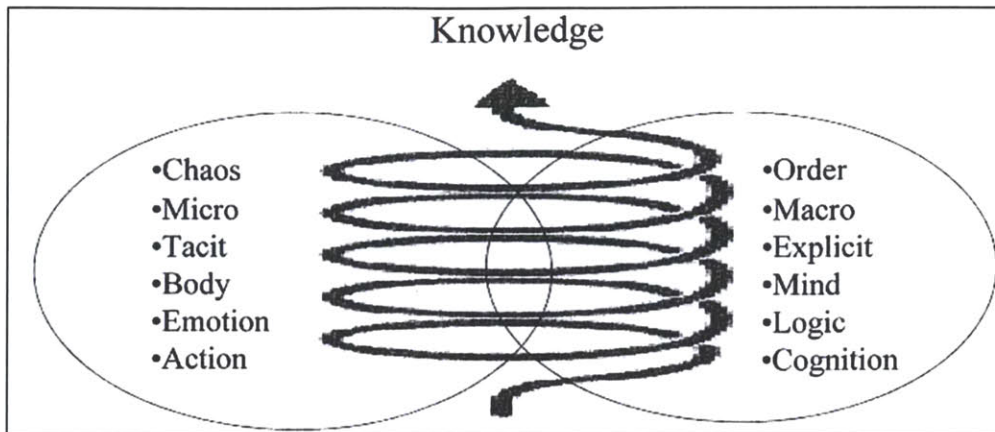
These are methods by which you can get at the tacit knowledge when it is otherwise difficult to uncover and share.

An acquisition program that exemplifies the application of user input is the Remote Operator Video Enhanced Receiver (ROVER) program. The ROVER allows battlefield operators to receive direct video from overhead cameras on board unmanned aircraft and other platforms. It is the brainchild of an Army Special Forces chief warrant officer, Christopher Manuel. In 2002, after returning from Afghanistan, Manuel traveled to Wright-Patterson Air Force Base (AFB) to visit with the office responsible for the Predator unmanned aircraft seeking a way to receive the Predator's video feed directly on the ground (Barnes 2007). The acquisition office worked quickly with a contractor and delivered the ROVER product, which was an instant success. But it didn't stop there. By putting ROVERs directly into the hands of operators and gathering continuous feedback on what worked well, and what would enhance ROVER effectiveness, the system evolved rapidly. The chain between the user, the program office, and the contractor (L3-Com) was short and tacit knowledge flowed freely. Based on direct user feedback, the ROVER system incorporated additional channels, chat and messaging tools, and telestrator-like features, and by 2011 L3-Com had produced close to 15,000 units in multiple configurations.¹⁴

Organizations that can successfully create and manage knowledge will have an advantage when it comes to knowledge work like acquisition. Nonaka, Toyama, and Konno (2000) argue for a knowledge creation process that enables a successful conversion, transfer, and propagation of tacit and explicit knowledge. But also, they argue the key to leading this knowledge process is *dialectic thinking*.

¹⁴ Based on data from the manufacturer L3 Communications

Figure 24 -- Knowledge Creation Spiral



Source: Nonaka et al 2000, p.6

The knowledge creation spiral in Figure 24, “goes through seemingly antithetical concepts such as order and chaos, micro and macro, part and whole, mind and body, tacit and explicit, self and other, deduction and induction, and creativity and control.” (Nonaka et al 2000, p.7) Dialectical thinking is key to managing this because it “transcends and synthesizes such contradictions.” Dialectic program managers who work to adopt and embrace learning from these types of contradictions and multiple viewpoints can enrich the knowledge creation process in their program offices and enhance program outcomes.

3.4.4 Dynamic Capabilities – In the Small and In the Large

Organizational dynamic capabilities can be viewed as a blending of the several theories previously discussed. When organizational routines and activity systems incorporate results of knowledge creation to improve their advantage in their market, they are essentially exercising dynamic capability. Winter (2003) described ‘zero-level capabilities’ as what a company does today or, ‘how a firm earns a living now,’ whereas higher-order capabilities are routines that enable a firm to create new ways to earn a living. This is not the same as ‘ad-hoc problem solving’ or firefighting, as Winter is clear to draw a distinction between the two. Dynamic capabilities are routines and activities into which organizations can invest time and energy so they are there when needed. The knowledge creation process described above provides a good example. “The most important aspect of understanding a firm’s capabilities concerning knowledge is the *dynamic capability* to continuously create new knowledge out of existing firm-

specific capabilities, rather than the stock of knowledge that a firm possesses at one point in time.” (Nonaka et al 2000, p.6)

Teece and Pisano (1994) claim dynamic capabilities are a source of competitive advantage. They claim it is not sufficient for firms to take a “resource-based strategy” of technology assets and “an aggressive intellectual property stance” to achieve strategic advantage over their competitors. Organizations must quickly adapt to changing market conditions and reshape their current knowledge, personnel, and corporate assets to achieve new and successful products and services. The Air Force and other Services, have several acquisition organizations known for their speed and agility in creating new warfighting solutions to challenging problems. Traditional acquisition offices often seek to emulate their success. One could argue this is achieving acquisition *dynamic capability in the small*. These types of program offices develop an action-oriented culture, with a sense of urgency, and experienced people who strive to find ways to make things happen as opposed to discuss many different reasons and policies on why it cannot happen.

The notion of *dynamic capability in the large* expands this same idea to include the entire Big “A” Defense Acquisition System and the role it plays for US National Security. The international security world is dynamic and responding with development of defense weapon systems today, so they are there when needed in the future is an imperative constant as described in chapter 1. Teece and Pisano concluded their discussion of dynamic capabilities in firms by stating:

We posit that the competitive advantage of firms stems from dynamic capabilities rooted in high performance routines operating inside the firm, embedded in the firm's processes and conditioned by its history. Because of imperfect factor markets, or more precisely the non-tradability of "soft" assets like values, culture, and organizational experience, these capabilities generally cannot be bought; they must be built. This may take years – possibly decades. (1994, p. 21)

Viewing the DAS as a dynamic capability in the large enables a necessity-driven view that everyone in the Big “A” acquisition world must play a role in the decades long process of building the values, culture, and organizational experience necessary to ensure the acquisition system is more dynamically capable tomorrow than it is today.

3.5 Summary

This literature review provides broad coverage of available theory in support of the Program Manager as an acquisition Leader and how the PM can play a role in the DAS to span enterprise boundaries and facilitate more effective relationships with key stakeholders. Both management and Leadership were described as distinct and necessary for the PM role. Negotiation theory was labeled as a PM professional competency and at the same time its effectiveness was shown to be enhanced by other PM professional competencies. The additional supporting theories discussed provide a construct by which PMs can build robust and responsive acquisition organizations that emulate a PM's dialectic leadership and amplify total program office value delivery and contributions toward program success.

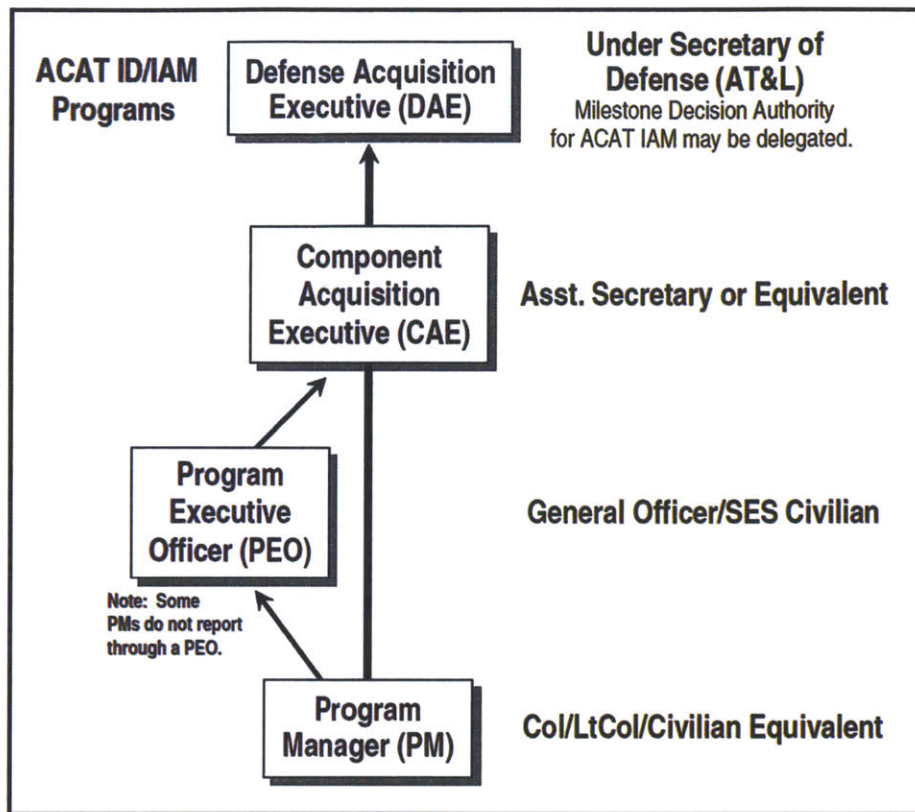
Chapter 4 – Research Method & Approach

The problem discussed thus far has focused on the important challenge of achieving greater value delivery in defense acquisition programs. It was argued in chapter 1 that a unitary big-bang fix of the acquisition system is not possible. Rather, continuous improvement was advocated and it was argued to be an imperative constant. The literature was used to shed light on the DAS as a system of systems requiring effective interactions among its constituent sub-systems. PMs have been described as essential system elements and the role of a PM described as a program leader who is empowered to establish and maintain effective key stakeholder relationships. This chapter provides a relationship framework for the three super-salient stakeholders previously identified as USER – PM – KTR. This relationship framework is used to guide the data gathering towards investigating the importance of relationships among the three super-salient program stakeholders and how they contribute to greater value delivery on the program.

4.1 Level of Analysis

The PM is vested with the authority for program execution and as such provides the targeted level of analysis for this research. This level also includes two of the PM's direct counterparts; a) the lead User representative for requirements and b) the prime contractor's lead program manager. The Government PM and lead User are typically at or near the O-6 or GS-15 grade levels for MDAPs, and the prime contractor lead is usually a senior program manager with at least 20 years of experience. As shown in Figure 25, the Government PM is at the base of a streamlined DoD acquisition authority chain. This structure was established as a result of findings from the President's Blue Ribbon Commission on Defense Management, referred to as the Packard Commission of 1986, which were reiterated by the 1989 Defense Management Review (Brown 2010, pp. 23-24).

Figure 25 -- Defense Acquisition Authority Chain



Source: Brown 2010, p. 25

The purpose of the streamlined acquisition reporting chain is to minimize the layers of management above the PM, such that there is not more than two levels between the PM and the DAE.

The PM nominally reports to a Program Executive Officer (PEO) who is typically responsible for a portfolio of MDAPs. The PM is also the designated leader of the multi-disciplined acquisition program office. Program management, finance, contracting, logistics, test, and engineering experts all work collaboratively under the PM to execute the acquisition program. This construct where the PM is leading the program office, and reporting to a PEO of multiple programs, essentially means the PM is the most senior ranking individual who is 100% dedicated to the program. This makes the PM and his direct User and Contractor counterparts the appropriate level of analysis for this research. Below the PM, there are multiple levels of similar relationships between members of the program office, the user representative team, and the contractor. While this research is not focused on those interactions specifically, it is argued

later in this chapter that strong relationships are effective at all levels and in fact, the lower levels will emulate successful leaders' relationships for the betterment of the program.

4.2 Hypothesis Revisited

For ease of reference the original three hypothesis as first offered in chapter 1 are included here again:

Hypothesis #1: PMs able to use dialectical problem-solving skills up, down, and across their program are able to achieve greater value delivery. Up refers to higher level decision makers, down refers to leading their own acquisition team, and across refers to extending the same thought/action pattern to peer stakeholders, with primary attention on the lead user and the lead contractor.

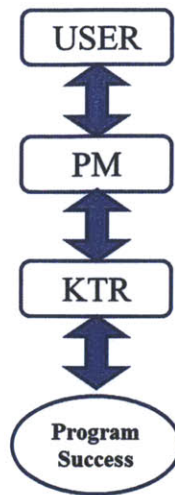
Hypothesis #2: When the super-salient stakeholders are well aligned and have strong dyadic relationships, as well as a strong triadic relationship, there is a higher probability for success in a program. When these relationships are weak or misaligned, there is lower probability of success in a program.

Hypothesis #3: Strong program leadership and relationship management do not just yield greater value delivery in programs today, they are also necessary aspects of understanding the defense acquisition enterprise as a national dynamic capability which sustains our military competitive advantage over the long term.

4.3 Relationship Models

A traditional view of the relationship of the three super-salient stakeholders is the model shown in Figure 26 that includes the User, PM, and KTR entities in a hierarchical orientation. The User represents the operational community providing their needs and requirements to the PM and the program office. The program office awards a contract to the prime contractor, who is represented by the lead contractor program manager (KTR). In this simple hierarchical relationship model, the KTR achieves success by designing and building the weapon system to the stated requirements within cost and schedule targets, as validated by the PM. Program success is achieved when the PM delivers the weapon system to the User, who accepts the system on behalf of the operational community.

Figure 26 -- Hierarchical Relationship Model



It is possible to look at this vertical chain as a way to pass down dollars, timeline expectations, and operational requirements, (i.e. Cost, Schedule, Performance), with the expectation that *program success* is achieved when the completed system is passed back up the chain having met the budget, schedule, and performance specifications.

The acquisition world is much more complex than this model. In reality, numerous issues surface throughout the life of an acquisition program and resolution of those issues requires effective interaction among these three super-salient stakeholders. For example, the stakeholders must collaborate when it becomes clear that:

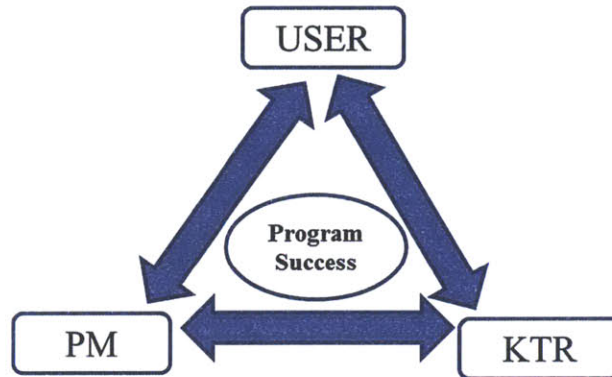
- Requirements must be updated due to changes in the strategic threat
- The system will be built to the stated requirements, yet not meet the User's needs
- Technical challenges in meeting current specifications will drive up cost significantly
- Program restructure could deliver an earlier increment of capability, for added cost
- The system exceeds most expectations, but some specifications have not been met

In all of these cases, system dynamics in the program exist such that any major issue affecting cost, schedule, or performance, will almost certainly relate to and affect the other two. Many programs realize this during risk management workshops when they wrestle with categorizing a risk as a technical, cost, or schedule risk. When complex issues surface, the best solutions to the dilemmas often require value tradeoffs among the three super-salient stakeholders. There are

usually other stakeholders involved as well, but often one of the three super-salient stakeholders serves as a primary conduit between the additional stakeholders and the program.

A more collaborative relationship model is offered in Figure 27 to help address the reality of the program dynamics and the necessity of effective interactions. This model places program success at the center of an “iron-triangle,” surrounded by the three super-salient stakeholders.

Figure 27 -- Collaborative Relationship Model



In this construct, each member has an equal stake in the success of the program. If any member allows their relationships with the other members to grow weak or break, the triangle can ‘open up,’ allowing success to escape. Also, this model explicitly adds an important connection, which is not present in the hierarchical model. That is the link between the User and the KTR. This helps the contractor access the extremely important tacit knowledge from the user community as described in chapter 3. It also provides a means by which the User can hear first-hand, the challenges the KTR is working through and participate in trade space discussions to generate better program options.

This iron-triangle model does not change the reality of the ‘contractual’ relationships between the User and the PM, or the PM and the KTR. The User’s requirements document is a technical performance contract between the User and the PM. Requirements changes and performance variances must be properly acknowledged and documented by both parties. Similarly, any official changes to the formal contracts between the program office and the contractor must be accomplished through that channel. This iron-triangle is not meant to eliminate or dissolve these formal relationships, but rather to show each super-salient stakeholder plays a key role in program success through their dyadic relationships with the other two members. This requires each member to play their own role successfully, and also to understand

and appreciate (dialectically) the roles played by the other two members. When this happens it enables an effective triadic relationship among all three super-salient stakeholders for the betterment of their shared common interest of program success.

The notion of an “iron-triangle” where each member understands and executes their own role, while expecting the other members to do the same, is analogous to a successful professional sports team. Professional sports teams expect each member of the team to understand their own role and how that role blends with the roles of the other team members. They all hold each other accountable, there is strong mutual respect and trust, and they each expect the very best from their teammates. Coaches and players on championship sports teams reference this elevated interaction and dynamic as a critical factor in their team’s ability to achieve greatness and success. Similarly, acquisition program teams can achieve greater success under such a construct of mutual respect and effective interaction.

4.4 Understanding and Measuring “Program Success”

There are many challenges in measuring defense acquisition system success for the purposes of finding the definitive factors to focus on to achieve greater success. This section is intended to provide some insight into this challenge using the following three arguments:

1. Program success is not absolute, but rather on a value continuum
2. All programs are justifiably unique, and
3. Comprehensive quantitative analysis is difficult to apply to the DAS construct

Lastly, and because of the three arguments above, a Qualitative Framework is offered to aid in the understanding of how PMs can add value into the DAS in a manner that yields greater program success.

4.4.1 Value Continuum

As part of the statement of the research question in chapter 1, Value was defined as Benefit at Cost. Two other definitions are provided here to expand on the notion of value and how it relates to the understanding of acquisition program success.

Value 1: A capability provided to a customer at the right time at an appropriate price, as defined in each case by the customer (Womack & Jones 2003 p.353)

Value 2: The particular worth, utility, benefit, or reward that stakeholders expect in exchange for their respective contributions to the enterprise (Nightingale & Srinivasan 2011, p. 2)

Both of these definitions include the notion of the customer or stakeholder making the value determination based on the subjective ideas of “appropriateness” and “expectations.” This is indeed highly relevant in the realm of defense acquisition.

Success is not binary, but rather resides on a value continuum based on objective and subjective components. First, is the objective comparison of the program’s final C-S-P measures relative to its original C-S-P targets. For instance, a program stakeholder could attribute more success to a program that has 5% cost and schedule growth, but greatly exceeds all of its technical performance measures thereby providing tremendous additional military capability, or value. The same stakeholder may attribute less success to a program that had met its cost and schedule targets, but also just met its performance objectives. In this manner, a single objective stakeholder could place several programs on the success continuum based on the value delivered from the acquisition system.

The subjective component of success emerges from the fact that different stakeholders can make different value determinations for the same program. While they can agree on the actual cost (in terms of time and money), they may not agree on the cumulative benefit. For these two reasons, labeling a particular program as successful or *unsuccessful* is not as absolute as anyone may desire. Given the somewhat relative nature of success based on both objective and subjective components, it may be helpful to think of success as residing on a continuum based on value determinations of the program stakeholders.

4.4.2 Program Uniqueness

The same mechanistic DoD 5000 series process is applicable for all defense programs. But the reality is every program has unique circumstances and differentiating characteristics the PM and the program office must consider when they apply the DoD Life Cycle Management Process to the task of structuring program decisions and strategy. Programs differ by attributes such as:

- Mission area and weapon system type (space, aircraft, and shipbuilding)
- Stakeholders (in quantity, composition, and level of interest)
- Contractors and contractual teaming arrangements

- Competition and incentive structures
- Amount of prior system reuse (commercial derivatives versus all new development)
- Program origin (rapid acquisition projects and technology demonstrations that turn into programs of record versus traditional new developments)

Because every acquisition program is justifiably unique, the search for specific requisite success criteria is challenging. The same contract and incentive strategy that enables one program to succeed could be entirely wrong in another context and contribute to a program's demise. Snider (2011) cited "non-PM" factors and that "every program is different" as contributing rationale for why he was not able to support the hypothesis that PM professionalism is positively correlated with program outcomes.

4.4.3 Quantitative Challenge

As discussed in the acquisition literature review of chapter 2, the only literature that attempted to correlate specific PM attributes to quantitative program outcomes are the Snider (2011) Naval Postgraduate School research and the GAO Report (2010) that identified Strong PMs as one of the key factors in stable weapons programs. Most of the quantitative research about defense acquisition PMs has been directed at identifying competencies and measuring the level of importance and the level of performance of those competencies. There is extensive qualitative literature on Program Manager competencies, but it is limited in its connection to measured program outcomes. As previously argued in chapter 2, framing PM professionalism in a way that can determine its correlation to program outcomes is difficult.

Even if one could provide an accurate measure of PM professionalism based on experience and competencies, a further challenge to this type of quantitative study lies in normalizing different programs and their outcomes. Some programs arguably are more challenging than others. Factors such as size, technical risks, mission criticality, number of stakeholders, level of political sensitivities, and unclear individual or organizational responsibilities, authorities, and accountabilities (RAAs) can all add to the level of difficulty in executing a program. Consider if one could successfully and quantitatively, stratify PMs by experience and competency. They would fall along a distribution of PM capability, where, by definition, 50% of the PMs would be 'below average.' Given this range of capability, it is reasonable to question how best to match PMs of varying levels of capability to programs with varying levels of difficulty.

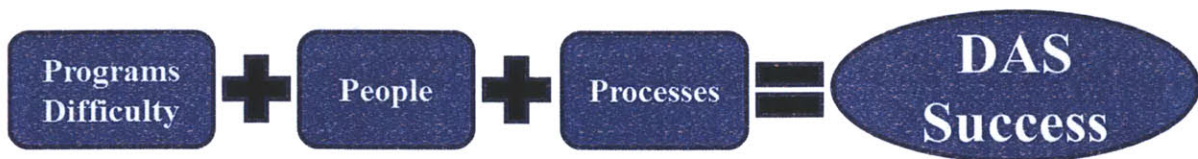
This fact is not lost on senior leaders who currently choose which PMs are assigned to which program based on a more subjective assessment of PM ability. To maximize total DAS program results, the most common strategy is to match the best PMs to the most difficult programs. The very best PMs, sometimes referred to as the “A players,” are not typically assigned to smaller, less critical, ACAT III programs. Rather, when possible, the “A players” are assigned to the most difficult programs, the “B players” are assigned to less difficult programs, and on down the line. This match-up system is not an absolute rule, but a common practice as part of strategic personnel decision processes.

An analogy in Major League Baseball is when a team arranges their starting pitcher rotation based on talent level and attributes like right-handed or left-handed pitchers and hitters. This gives the team the best chance of success, which is defined as winning the most games and not by winning games by the greatest margin. Also, a high-school wrestling match is won by accumulating the most total success (in accumulated points) through a number of individual head-to-head match-ups. The analogous rationale for the DAS is that the goal is to deliver as much military capability as possible given the available personnel and fiscal resources. The best way to do this is to match stratified talent to the stratified challenges. Thus, a fair quantitative study would not only need to accurately quantify PM professionalism, but also normalize performance outcomes against some kind of program difficulty index. Only in this way could it appropriately determine how much PM professionalism contributes to program outcomes.

Examining ways to achieve greater success within the DAS may be informed by considering the relationship between the following three variables described below and shown in the subsequent “DAS Success equation” in Figure 28:

- 1) Programs Difficulty – defined above as a combination of factors such as size, technical risks, mission criticality, stakeholders, political sensitivities, and clarity of RAAs
- 2) People – defined above as the collective experience and competency of the workforce
- 3) Processes – nominally JCIDS, PPBE, and DoD 5000 processes that make up Big “A”

Figure 28 -- DAS Success Equation



The implication from this relationship is that people of sufficient experience and competency could execute programs with nominal levels of difficulty, given adequate processes. When this happens the DAS is successful in the sense that programs are mostly meeting their C-S-P targets.

But as evidenced by the many studies performed on the DAS over the last 65 years (reference Figure 8 in chapter 1), off-nominal situations are quite common (i.e. where C-S-P targets are not being met). When this happens, it is necessary to look at each variable in turn to understand how to get the equation back in balance.

Programs Difficulty: By lowering the collective difficulty of programs, greater DAS success is possible, assuming the same ‘People’ and ‘Processes.’ This could be done by reducing the total number of programs in the DAS or by committing to “easier programs” with lower technical risk. In essence, strive to achieve military advantage with less ‘state-of-the-art systems.’ If the President, Congress, and senior defense officials are unwilling to lower defense capability requirements based on national security priorities, this option is not viable. Nonetheless, while it may be a valid variable in the DAS success equation, it is not a focus of this research.

People: Holding ‘Programs Difficulty’ and ‘Processes’ constant, greater DAS success is possible by raising the quality and capability of the ‘People’ in the workforce. Assuming an accurate PM professionalism metric could be defined and validated, this strategy would essentially aim to raise average competency scores for all PMs. This can happen through formal training as well as individual self-improvement efforts. This research focuses on both options. It aims to inform PMs where there is value to be gained through actions they have the ability to directly influence on their own, and also inform those who are tasked with formal PM training and development. Other efforts (Gadeken 2004) have had similar aims.

Process: If the overall level of ‘Programs Difficulty’ and the ‘People’ were to remain the same, then greater DAS success could be gained with improvements in ‘Processes’ like JCIDS, PPBE, DoD 5000, and how all three can be integrated more efficiently and effectively. This has been the aim of most acquisition improvement studies to date, but is not the focus of this research. This author contends that the impact from projects like DAPA and the Packard Commission are overwhelmingly positive and should continue in support of the aforementioned imperative constant to maintain the most capable defense procurement system possible.

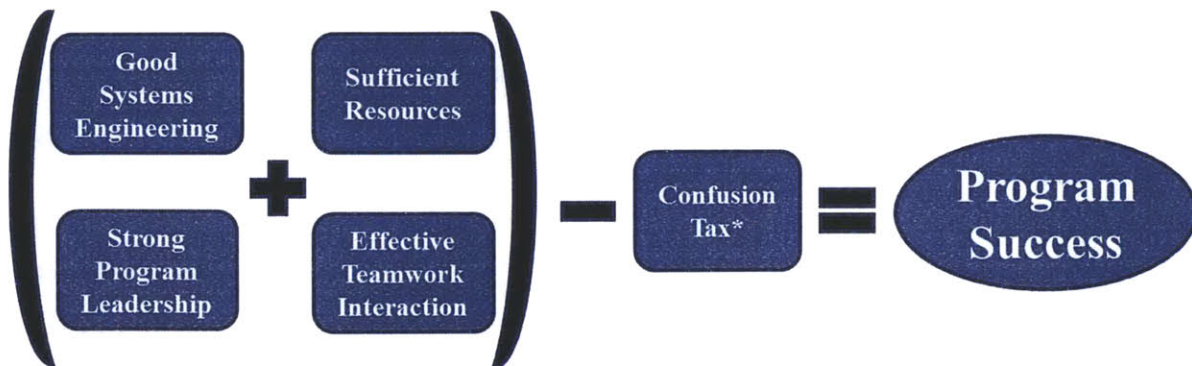
Although a note of caution is offered for those who focus on such process improvement. ‘Processes’ are executed by ‘People’ who already have a good bit of ‘Programs Difficulty’ to contend with, and as such added ‘Process Difficulty’ will not aid them in the pursuit of greater DAS success.

It has been argued that success resides on a value continuum; that all programs are justifiably unique; and that comprehensive quantitative analysis is difficult to apply to the DAS construct. This framing also provides support for why it has been argued here that a unitary big-bang fix is not possible for the DAS – it is too complex of a problem for a single, simple solution. This research has instead argued that there are multiple ways in which value-added contributions can be made within the system, including the PMs, to increase the probability of program success. For these reasons, a qualitative framework may provide some further insight into how PM competencies can positively affect program success.

4.4.4 Shifting to a More Qualitative Framework

The model in Figure 29 suggests five factors contribute to program success. Four of them correlate positively, Good Systems Engineering, Sufficient Resources, Strong Program Leadership, and Effective Teamwork Interaction, and one, Confusion Tax, correlates negatively. As the value from the four factors is increased, and / or if the Confusion Tax is reduced, there should be greater value delivery in the form of greater program success.

Figure 29 -- Program Success Qualitative Framework



*Confusion Tax is a concept that takes value out of a program due to factors such as:

- Unclear Responsibilities, Authorities, and Accountabilities (RAAs), or
- Broad Stakeholder Misalignment that delays decisions or causes other program inefficiencies

The factors in this model were compared against the acquisition literature previously reviewed in sections I & III of chapter 2. An “X” in Figure 30 indicates that a particular “Success Factor” was discussed and is important in the acquisition study or report listed across the top of the figure. Figure 31 provides a listing of the full name for each acquisition literature source referenced in Figure 30.

Figure 30 – Mapping of Program Success Factors to Acquisition Literature

Program Success Factor	Applicable Supporting Literature							
	AIA	BBP	CNA	DAPA	DBB	GAO	NPS	OSD
Good Systems Engineering			X	X		X		X
Sufficient Resources	X	X	X	X	X	X		X
Strong Program Leadership		X	X	X	X	X	X	X
Effective Teamwork Interaction	X	X	X	X	X	X		X
Lower Confusion Tax	X	X	X	X	X	X	X	X

This is not intended to be an exhaustive list of Success Factors but rather a workable set that covers many of the primary contributors to program success using a constructive qualitative framework. Also, a much broader review of acquisition literature could be performed to identify the success factors most commonly referenced. For this research, the intent was to review the literature already discussed in chapter 2 for validation of the qualitative framework, and as shown in Figure 30 there is broad support from the literature for the identified success factors.

Figure 31 -- Summary of Acquisition Literature References

Short Name	Full Name of Literature Source (Year)
AIA	Aerospace Industries Association (AIA) Special Report on Defense Acquisition Reform: Moving Toward an Efficient Acquisition System (2011)
BBP	USD(AT&L) Better Buying Power 2.0 (2012)
CNA	CNA Independent Assessment: Air Force Acquisition Return to Excellence (2009)
DAPA	Defense Acquisition Performance Assessment Report (2006)
DBB	Defense Business Board Review of DoD's Program Managers (2011)
GAO	Government Accountability Office Report on Defense Acquisitions, Strong Leadership is Key to Planning and Executing Stable Weapon Programs (2010)
NPS	An Analysis of the Relationship Between the Professionalism of Defense Acquisition Program Managers and Program Outcomes – Dr. Snider, Naval Postgraduate School (2011)
OSD	OSD Study of Program Manager Training and Experience (2009)

The qualitative model in Figure 29 is not provided as a means to calculate the definitive path to a program success, but it is used to argue the following points:

- 1) PMs can contribute positively to each of the five factors on the left side of the model in a way that impacts the probability of program success, but
- 2) PMs do not have the same level of influence on every factor

The factors for which the PM has the greatest influence are “Strong Program Leadership” and “Effective Teamwork Interaction” and thus are the primary focus of this research. These two factors receive a greater explanation as to how a PM can add value to the program, but first it is important to review other three factors in the model for which the PM has less influence:

Good Systems Engineering: A good PM can recognize the need for strong system engineering on a program and ensure it is adequately addressed in the contract requirements and perhaps even part of the contract incentive structure. One could argue these proactive steps by the PM map more directly to the “Strong Program Leadership” success factor than to the “Systems Engineering” factor. The point is that the strength of a program’s systems engineering is mostly connected to the workforce, their training and development, and the robustness of their

previous systems engineering expertise; and not the amount of good systems engineering the PM can do on her own.

Sufficient Resources: It is hard for a program to stay on track if it does not have the fiscal resources at hand when needed. Without necessary resources programs can be delayed and costs can go up. Both of these are less desirable program outcomes. Programs often must endure budget cut drills for various reasons. Good PMs work diligently to justify the funding and prevent the loss of necessary budget, but they may not always be successful. A good PM can create options to minimize the programmatic impact from the budget cut, but it is not always possible to totally isolate the program from all impacts caused by such cuts. Similarly, when annual Congressional appropriations are delayed under a continuing resolution, a good PM can find ways to ‘buy time’ while they await the appropriation, but not indefinitely. It can be just a matter of time before the program is impacted.

The workforce is one of the program’s most valuable resources. A good PM works to fill critical vacancies in the program office as soon as possible. The PM also seeks to bring in people with needed skills at the right time to help the program succeed. Yet there are times when critical shortages exist in a career field, such as contracting, and every program in an acquisition center is asked to do the best they can with who they have. Contracting officers hold a warrant and they are the only ones permitted to formally obligate the government in the form of a contract. Without sufficient contracting personnel, contract actions take longer as they wait for their turn in the queue, which can cause cost increases and schedule delays. Again, a good PM will do his best to minimize the program impacts from a contracting personnel shortage, but total impact isolation is not always possible. Similar to the Systems Engineering discussion, one could argue the PM actions to minimize impacts from insufficient resources are more appropriate to map into the Strong Leadership success factor.

Confusion Tax: A program may experience confusion tax in the form of high-level stakeholder misalignment. This can occur when there is disagreement within the Service (i.e. Air Force, Army, Navy) Leadership, or between the Service Leadership and OSD about the mission set priorities and program strategies to deliver needed military capabilities. This ‘confusion’ can delay decisions or cause them to be made in a much less efficient incremental manner. Similarly, a PM may recognize that unclear responsibilities, authorities, and

accountabilities (RAAs) among multiple competing stakeholders are delaying decisions, causing confusion and contributing to program inefficiencies. The PM can seek leadership involvement to clarify the RAAs so as to improve program efficiency and increase the likelihood of program success. But just like the challenges discussed above with trying to ensure Sufficient Resources, even the best PMs cannot resolve every issue in such a way as to prevent program impacts.

It is important to summarize two key points from the discussion of these three success factors. First, the PM has the ability to influence each of the success factors to some extent, but not completely. As stated by Snider (2011), there are “non-PM” issues outside of the PM’s span of control. Snider argues these external factors help to explain why PM professionalism could not be positively correlated to program outcomes. I argue that in fact PM professional competencies do contribute to better program outcomes, but they cannot solve every problem. Admittedly, it is a significant challenge to measure this in a quantitative study due to the numerous relevant variables and the unique characteristics of every program. Snider acknowledged his study, “implicitly assumed that MDAPs represent a homogeneous population,” (2011, p. 80) which is a very simplifying assumption.

The second observation from the qualitative framework is that every factor has the ability to consume a significant amount of the PMs limited time and energy. The more effort the PM must put into establishing proper systems engineering discipline, working to secure sufficient resources, and ‘paying the confusion tax,’ the less time the PM has to work on the other two success factors in a positive and proactive way to generate greater program value. As described, PMs can use Strong Leadership and Effective Teamwork Interaction to the program’s advantage in minimizing impacts from weak systems engineering, insufficient resources, and confusion tax, but Strong Leadership can also be applied in a very powerful and proactive fashion when the PM is not caught up in daily fire-fighting of issues.

4.5 Greater Value Delivery – Making the Connection

The qualitative framework for program success identified “Strong Program Leadership” and “Effective Teamwork Interaction” as the factors the PM could most influence. The following four areas explore two ways a PM can apply Strong Leadership and two ways a PM can build Effective Relationships so as to create greater value delivery on a program and thereby increase the probability of program success. These are representative examples of the many ways in which leadership and effective relationships create greater program value.

4.5.1 Leadership: Unity of Purpose

As the program leader a PM can work to harmonize the inputs to the contractor team. This is sometimes referred to as providing a single government voice to the contractor. When multiple government organizations (i.e., program office, lead user, testing organization) provide contradictory messages to the contractor team, at best it distracts and dilutes the contractor team efforts, and at worst, causes major problems and perhaps even a costly constructive change to the contract. A strong PM leader will not only work with the entire government team to ensure they all speak with “one-voice” to the maximum extent, but also, the PM will emphasize to the entire contractor team to make sure they raise any contradictory messages or guidance coming from the government team.

A PM can also work to ensure there is a shared common vision across the program and a unity of purpose with shared priorities. A Vision allows everyone on the program (government and contractor) to know where the collective effort is going. It provides a “commander’s intent” that enables everyone to keep moving forward and still contribute in a meaningful way when they otherwise might have to wait for a decision, guidance, or an interpretation. This vision is usually supported by a set of priorities. When the contractor, the government program office, and the user community have their priorities aligned, there is a much higher likelihood that their collective efforts will be more efficient and contribute to program success. Priority misalignment breeds inefficiency, costly errors, and schedule delays.

4.5.2 Leadership: Virtuous Cycles

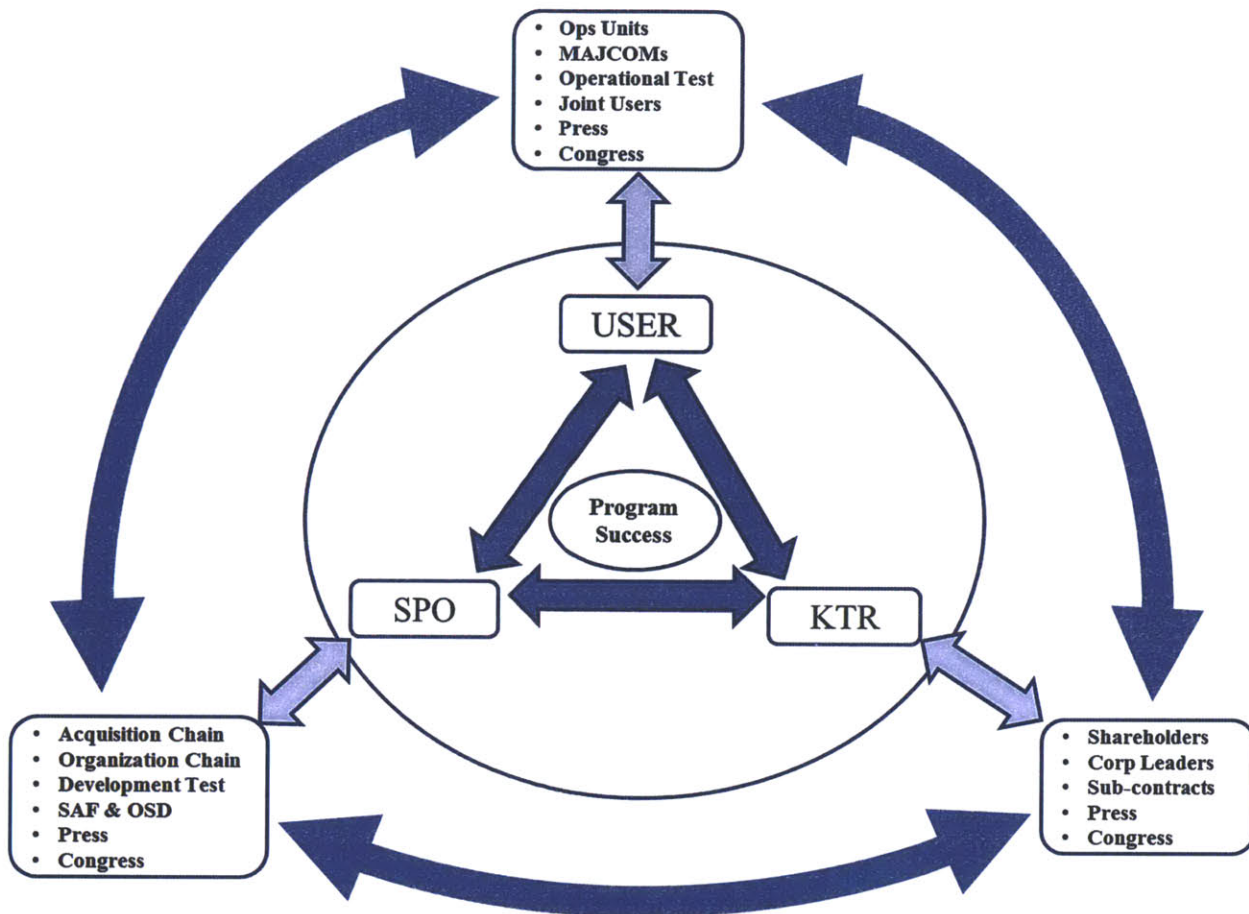
Leaders set the tone and the example—good or bad—in organizations. When a PM adopts an ‘Us vs. Them’ adversarial relationship with the contractor, others in the program office will begin to think and act in the same counterproductive way. But people much more desire to emulate successful leaders. So when a PM treats any team member with mutual respect, or when the PM openly thinks through an issue dialectically, or engages in objective advocacy of the program, others will want to emulate this when they see it is successful. As others in the organization emulate it and they see positive results from these approaches, it spreads even further and builds a positive and reinforcing culture. This virtuous cycle then leads to a resilient organization with wisdom, mutual respect, creativity, better problem solving ability, and dynamic knowledge creation. All of these attributes of an organization increase its value delivery and probability of program success.

4.5.3 Relationships: Avoiding Program Waste

The “iron-triangle” can serve to increase efficiency and effectiveness of the collective program team by minimizing wasteful distraction. A strong iron-triangle helps to center the program on the same priorities and keep all key players engaged on what is most important, while also staying current on the latest program information. To illustrate this point, additional stakeholder groups have been placed around the iron-triangle relationship model in Figure 32.

A complete mapping of every program stakeholder and their interactions with other stakeholders would not only be very complex, but it would also be unique for every program. So the intent with this representation is to convey some of the more familiar and significant interactions managed by each of the super-salient stakeholders. Each ‘constituency’ of stakeholders typically, but not exclusively, accesses program information via a primary super-salient stakeholder. For example operational units and Major Command (MAJCOM) staffs will have their greatest connection to the program through the Lead User member of the iron-triangle. Likewise, the prime contractor’s corporate leaders and shareholder are important stakeholders for the KTR and for the program, but their primary interface to the program is through the KTR lead PM. Two other important points from Figure 32 are; 1) the stakeholders from each constituency may interact with each other, and 2) some stakeholders like the Press and Congress commonly interface any of the three super-salient stakeholders they choose, which is why they are listed in all three additional stakeholder ‘constituencies’ shown in the diagram.

Figure 32 -- Stakeholder Interacting with the Iron-Triangle



Managing these relationships provides the opportunity for greater value delivery on the program. The converse holds that mismanaging these relationships can add wasteful activities, which lower program value delivery. When the iron-triangle is well integrated, timely and accurate program information flows freely among the super-salient stakeholders. As a result they are well positioned to inform and successfully influence the broader stakeholder community. When the super-salient stakeholders are not well integrated, or the broader stakeholder community observes an ‘Us vs. Them’ relationship among members of the iron-triangle, value delivery is diminished. Program opportunities can be missed due to one of the members having incomplete or inaccurate information. Also, the broader stakeholder community may lose trust in the program triangle when they gather dramatically different information from two different super-salient stakeholders.

This loss of confidence can trigger significant excess non-value added work for the program as it becomes immersed in answering numerous clarifying questions in the form of tasker responses, point papers, status reports, and informational briefings. OSD level program reviews require significant cost and program office preparatory work, and have been shown to have six-month timelines that include many pre-meetings and pre-reviews (Dillard 2005, p. 338). This extra work is important to inform the broader stakeholder community, and to ensure they are still fully supportive of the program, but it takes energy and effort from the collective program triad, which would be more value-added if it was focused on moving the program forward. Simply put, an ounce of stakeholder prevention is worth a pound of informational briefing cure, or a relationship stitch, in time, saves nine.

Proper alignment of priorities among the super-salient stakeholders also contributes to greater program value delivery. The iron-triangle benefits greatly from having a common set of program objectives, to which the collective user, program office, and contractor team can devote their full attention. When non-harmonized priorities exist among the super-salient stakeholders, the work of the collective program team is less efficient. As an example, the contractor team often relies on the government program office to coordinate other government resources, such as test centers, for the contractor to stay on schedule. If this is not a common and shared priority due to program triangle misalignment, the program will likely experience some kind of inefficiency, in the form of added cost or delayed schedule while the program office works to schedule the government testing resource.

4.5.4 Relationships: Creating Program Value

Relationships built on trust and open communication are more productive. Strong relationships with open communication tend to identify problems sooner and as a result fewer resources are consumed getting to resolution. Anytime fewer resources are consumed on an issue, it essentially creates program value as it frees up those resources for other purposes. Trust is a similar value creator. In his book, *The Speed of Trust*, Covey (2006) argues the economics of trust and claims lower trust equals slower speed and higher costs, whereas higher trust equals faster speed and lower costs. In defense acquisition, faster speed and lower costs are two of the three primary measures of success in the C-S-P triad. “Low trust is the greatest cost in life and in organizations...Low trust creates hidden agendas, politics, interpersonal conflict, interdepartmental rivalries, win-lose thinking, defensive and protective communication—all of

which reduce the speed of trust. Low trust slows everything—every decision, every communication, and every relationship.” (Covey 2006, p.xxv)¹⁵

The theories reviewed in chapter 3 provide insights into how better relationships yield greater value delivery. Negotiation theory suggests trust and strong relationships are critical to allow negotiation partners to move from positions to interests to negotiated deals that end up creating greater total value for both parties to share. Leveraging tacit user knowledge provides another example. Some PMs attempt to micro-manage, or limit, the amount of user interaction with the contractor for fear a user representative will give the contractor ‘government direction’ that could trigger a costly constructive contract change. It is much better to establish strong relationships that enable the user to interact with the contractor and impart essential tacit and explicit knowledge. This is critical for the contractor to achieve success in delivering a capability that doesn’t just satisfy the document requirements, but that also meets the user’s needs. Creativity, innovation, and rapid problem solving are all part of an organization’s dynamic capabilities that deliver value to programs, but they are reliant on strong relationships and effective teamwork interaction.

4.6 Data Gathering

4.6.1 Interviews

The primary data source for this research is sixteen separate interviews. Thirteen of the interviews were conducted over the phone and the other three were conducted in person. Each interview lasted about one hour and the interview subject was given an advance summary of the research along with the list of questions used in the interviews. This advance information sheet is included at Appendix B for reference. All interviews were recorded with permission of the interviewee and later transcribed in detail to ensure accuracy of comments.

4.6.2 People

Twelve of the sixteen interviews were directly related to three separate large Air Force acquisition programs, and four interviews were with senior PM experts.

¹⁵ Stephen R. Covey forward in *Speed of Trust*, authored by his son Stephen M.R. Covey

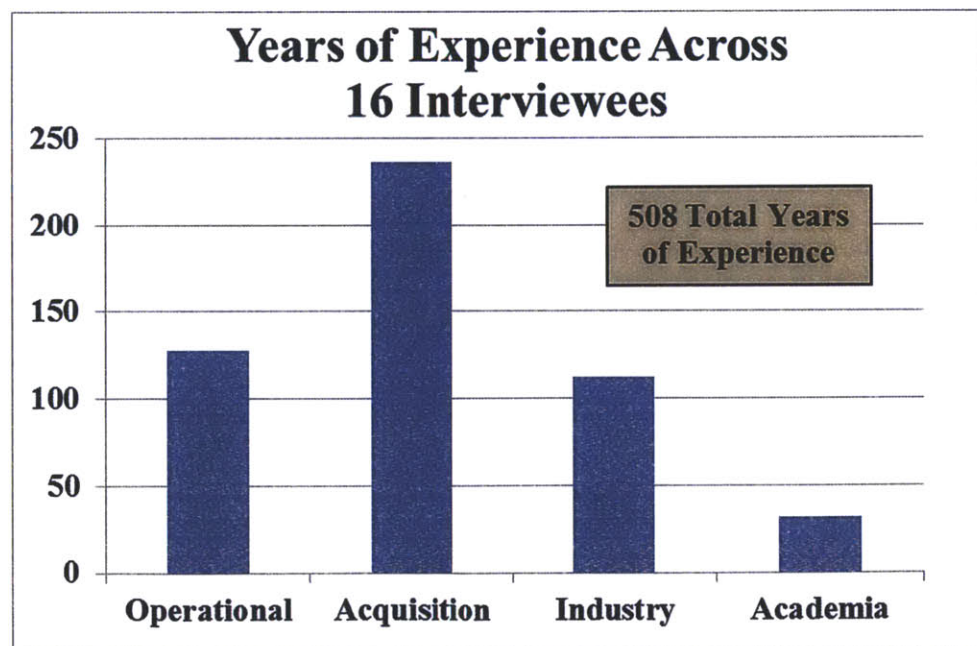
4.6.2.1 Level of Analysis – Selection

Interview subjects were chosen based on the level of analysis as described in section 4.1 earlier in this chapter. All the program managers were at or above the grade of O-6 or GS-15 and had between 23 and 42 years of experience. The KTR and User interviewees were identified by the lead Government PM for the case study programs. Collectively, these program-specific interviews gathered perspectives from the Government PM, the User, and the contractor PM. The four additional interviews were with experienced senior program manager experts, three of whom are currently DAU faculty. The same question set was used for the expert PM interviews. This provided additional insights from their past PM experiences as well as their observations from training hundreds of ACAT I PMs of all Services.

4.6.2.2 Experience Diversity

Figure 33 provides aggregate demographic data on the years of experience of all those interviewed. In total, they had over 508 years of experience across four major categories defined as Operational, Acquisition, Industry, and Academia.

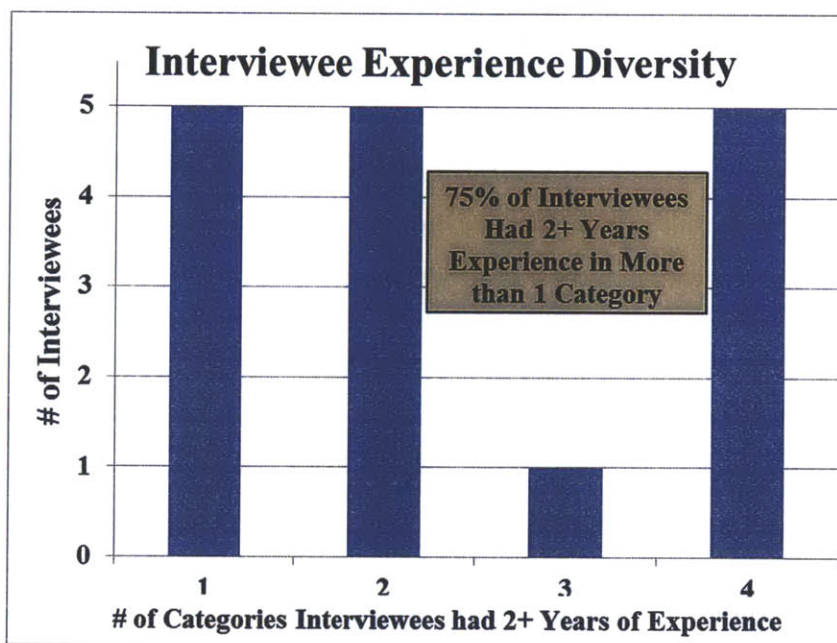
Figure 33 -- Interviewee Demographic Data



This diversity of background experience is important to ensure the collective interview responses represent different perspectives from separate and distinct vantage points in the defense acquisition system. The interview subjects also have a great deal of individual diversity

in perspective beyond just their current positions at each point of the programmatic “iron-triangle.” Twelve of the sixteen interview subjects have two or more years of experience in at least two of the major categories (e.g. Operational and Acquisition), and five interview subjects had more than 2 years of experience in every category, reference Figure 34. This is important because it has been argued that better outcomes are possible when each member of the relationship triad not only appreciates the role they play, but also has the ability to understand the role played by other members of the triad. By interviewees having experience in more than one role, or category, they have greater credibility in their perspectives about understanding the interactions with other roles. For instance, a retired military acquisition officer who spent several years with private industry brings a valuable diversity of perspective to the PM – KTR dyad relationship.

Figure 34 -- Interviewees Experience in Multiple Categories



4.6.3 Programs

The research gathers perspectives from the User – PM – KTR “iron-triangle” of three specific Air Force ACAT I programs. Because there are so many variables that differentiate one acquisition program from another, the programs were not chosen based on a homogeneous set of criteria for comparative purposes. Rather, the three programs were chosen such that there were a variety of factors among them. This supports the attempt to answer the research question, which

is targeted at common practices a PM can apply to any program, not just certain programs under limited conditions. The target case programs cover the following broad descriptive categories:

Program Phase: pre-milestone B; concurrent development and production; major modifications; and operations and sustainment

Mission Areas and Platforms: aircraft and space systems

Organizations: different Air Force product centers, contractors, and user representatives from different MAJCOMs

4.6.4 Question Development

The interview questions are designed to gather insights from experts currently active in the acquisition enterprise. This includes both the set of senior program managers as well as the members of the “iron-triangle” for three programs. Through a question and response dialogue, the target data is individual perspectives informed by relevant and current experience. The interview question set is structured in three distinct sections to gather data on the acquisition system in the large, the role and effectiveness of the PM, and the relationships within the “iron-triangle.” The next three sections detail the questions and provide the explanation for how they support the research theories and explore the hypothesis.

4.6.4.1 Section I – Context and Discussion Framing

This section of the interview includes the following three questions to elicit perspectives from the interviewee on the defense acquisition enterprise as a large system, as it was described in the chapter 1 problem framing, as well as sections 2.2 and 3.2 of this thesis.

- 1) What is the Role and Purpose of the Acquisition System?
- 2) How do you describe the Acquisition System? What is part of, vs. outside of the system?
- 3) How do You define success in the acquisition world?

The first two questions are designed to understand individual respondent bias when discussing the defense acquisition enterprise and to gather insight into where these experts draw the boundaries of the system. By design, the questions naturally lead the interviewee to reflect on their own program experience in a larger system context for the remainder of the interview. This is important as many of the interviewees have very busy schedules and this research interview

could be sandwiched between two detailed lower-level programmatic discussions. These questions set the context of the acquisition enterprise as a system and help guide the respondents to reflect on how they, their program, and their experiences fit within that larger system construct.

The third question asks the interviewee to define success in the acquisition world from their own perspective. This aids in understanding individual respondent bias on the term success. Section 4.4 of this chapter described the many challenges associated with understanding and measuring successful program outcomes. Also, because this research is targeted at identifying how PMs can improve program outcomes, it was important to gather the interviewee insights and descriptive examples as to how their view of success relates to better program outcomes.

4.6.4.2 Section II – Government PM

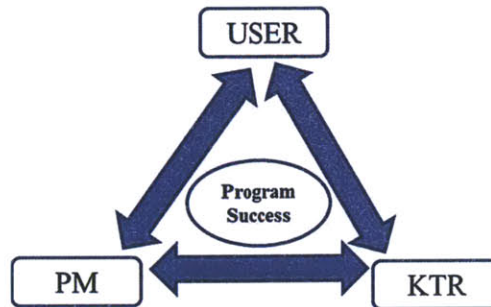
The second section of the interview uses the following three questions to focus on the role and success of a Government PM.

- 4) What is the Role of the Government PM?
- 5) Think of an exceptional PM you know. One who has succeeded and is recognized as a guy/gal who really knew the job well. What made that PM really good?
- 6) Can you think of examples of how members of the program team take on the characteristics of their leader?

This section of questions correlates back to section 2.3 of the literature review, which focused on PM competencies. Through these questions, it is intended to examine if there is a common understanding of the role of the Government PM from all three perspectives on the programmatic “iron-triangle,” and how common the important competencies were from each vantage point in the triad. Question 6 is designed to explore how both positive and negative leadership behaviors have contributed to program outcomes by the larger program team emulating the behavior of their leaders.

4.6.4.3 Section III – Relationships

The third section of the interview uses the following four questions to examine the specific relationship dyads on the case programs, as well as the overall triadic relationship as described in the collaborative relationship model discussed in section 4.3 of this chapter.



- 7) Do you believe your program is well aligned on top priorities?
- 8) Describe your relationship with the Lead _____ (Pick One: User, KTR, Gov't PM)
- 9) Describe your relationship with the Lead _____ (Pick Other: User, KTR, Gov't PM)
- 10) How does PM-USER-KTR triad for your program interact?

The PM experts who were not affiliated with one of the target case programs, were asked to provide either specific program examples from their experience or general observations of strong or weak dyadic or triadic program relationships.

4.6.5 Analysis Approach

The approach used for analyzing the data begins with listening to the recorded interviews and preparing detailed transcriptions of the responses. These transcriptions evolved into interview summaries which included additional comments and observations from the discussion. These summaries feed content coding matrices to identify recurring themes and patterns of behavior which contribute to both positive and negative program outcomes. Another reviewer listed to all of the interviews and independently validated the accuracy of the interview summaries. The interview content is aggregated, coded, and analyzed by Role (PM, User, KTR) and also by Program (A, B, and C).

Responses to the first six questions, which were not directly attributed to one of the target case programs, were analyzed for similarities and differences among the three role perspectives of User, PM, and KTR. This includes responses and comments on the role, purpose, and scope

of the acquisition enterprise; the view of success in the DAS; and the role and attributes of the Government PM. The interview questions about the larger acquisition system also enable some extension of the analysis from the program level, to higher levels within the DoD acquisition enterprise.

Throughout the interview summaries, particular attention is given to comments and insights about the PM as a program leader. This includes capturing the attributes of an effective PM as freely offered by the interview subjects. This data is aggregated into a master competency matrix, which enables analysis by role, and a comparative validation with the competencies previously identified in the literature. Similarly, the question of how program personnel emulate program leadership is examined for discovery of extended effects of positive and negative leadership in an acquisition program.

The data gathered on dyadic and triadic relationships is analyzed primarily by program. First, the program relationship dyads are analyzed across the program and how they contribute to, or inhibit, program success. Second, perspectives of all interviewees are used to analyze alignment of program priorities and the overall triadic relationship. An overview and application of ‘Confusion Tax’ is addressed for each program. The intent with the analysis of all the responses, is to identify patterns of behavior that qualitatively validate how value can be added into, or taken from, programs such that it improves or detracts from program outcomes.

4.7 Summary

The data gathered from the interview process, including the three program cases, provides a multi-dimensional (USER – PM – KTR) perspective on the defense acquisition system. This approach leverages a simple model to shift the perspective on the super-salient stakeholder relationship from a traditional hierarchical model, to a collaborative programmatic “iron-triangle” model centered around the shared common objective of program success. This data gathering focuses on the role of the PM as a program leader, the strength and alignment of the three separate dyadic relationships, and the overall triadic relationship within the “iron-triangle.” The research targets how the PM’s leadership and relationships contribute to, or detract from, total value delivery and program success using a qualitative framework.

Chapter 5 – Analysis & Findings

The analysis and results of this research is presented in three parts, which correlate to the three separate sections of the interview. Each part of the analysis includes common themes from the interview responses, unique observations based on differences in the responses, and summary findings from the analyzed responses.

Part I includes general observations about the DAS and acquisition success

Part II focuses on the role of the PM and important PM competencies

Part III reviews the case programs, their priorities, relationships, and program outcomes

While summary findings for each part of the analysis are included in this chapter, an overall summary of all the interviews is included as part of the overall research conclusions in chapter 6.

5.1 Part I – General Observations on the DAS and Success

5.1.1 Question #1: What is the Role and Purpose of the Acquisition System?

5.1.1.1 Common Themes:

There is broad agreement across PMs, Users, and KTRs that the purpose of the DAS is to provide a disciplined process to deliver needed military capability in the fastest and most cost effective manner. The interviewees used terms such as “affordable, reasonable, best value, efficient, timely, and effective” to describe the purpose of the DAS. Several of those interviewed acknowledged the system must sometimes operate with speed as the #1 priority, and when it does, there will be a cost premium, and/or the need to focus on more mature technology to meet the need quickly.

5.1.1.2 Unique Observations:

There were some responses which shared some commonality across the Government PM and User, but not the KTR. Several PMs mentioned the how the DAS is different than commercial procurement because the Government has a role as sovereign, in a monopsony, and thus must ensure the process maintains fairness, even over efficiency, with regard to the industrial base. Another PM extended this perspective by commenting how commercial procurement strategies include establishing ‘most-favored’ supplier partnerships that can yield procurement efficiencies. This is not a strategy the government can employ.

The notion of bureaucracy also surfaced among PMs and Users. One PM stated the current process is a result of government over-reactions to previous mistakes. A User expressed how the DAS is there to “maintain the watchful-eye on the government contractor so they don’t just sell the Air Force a [bad] widget for too much money.” This is based on the premise that the American people are inherently distrustful of government and as a result there are many layers of oversight are in place that add to program costs and schedule delays.

5.1.1.3 Summary Findings:

System & Efficiency: This collective interviewee responses indicate a common understanding of acquisition as a system, which converts money and requirements into military capability. The comments suggest there are C-S-P tradeoffs to be balanced and unique aspects of Government procurement to be considered in any type of ‘efficiency’ evaluation.

DAS as Dynamic Capability: The responses from all the interviews recognize the importance of the DAS’ mission of providing military capability and several recognized it as a US national security *dynamic capability*. One PM explained how he frequently tells others that the “DAS is also fighting wars and not *just* making stuff.” This same PM also referenced how personnel in the field have the knowledge the DAS must harness to truly be most effective. Similar to the strategy of parking an aircraft carrier off a nation’s coast as a show of force, by the DAS designing, producing, and fielding militarily superior capability, it too is executing US national security strategy. This example resonates with the description of a dynamic capability as previously described in the literature.

5.1.2 Question #2: How do you describe the Acquisition System? What is part of, vs. outside of the system?

5.1.2.1 Common Themes:

All of the respondents demonstrated an awareness of the DAPA concept of Big “A” acquisition and that it includes the three major decision processes of JCIDS, PPBE, and LCMS. The responses indicate equal importance among all three and that one can’t exist successfully without the others. None of the interviews defined the acquisition system boundary at the Little “a” level with the PM and the Program Office. In fact several of the comments drew much more expansive boundaries for the acquisition system, from the role played by Congress, to a company

sponsoring math and science programs in grade schools now to help ensure sufficient engineers with certain skillsets for the future.

5.1.2.2 Unique Observations:

The PM and the KTR responses seem to indicate a need for greater interaction with the User community on requirements, and that there is some resistance in this happening. This observation is drawn from the following paraphrased interviewee comments:

From PMs:

- ‘The PM sometimes has to help translate requirements for the user’
- ‘It is wrong to think of acquisition from JCIDS approval to product delivery’
- ‘Requirements guys don’t want to be “contaminated” by the acquisition guys, the warfighter has a desire to stay independent’
- ‘Too many JCIDS folks think their job is over when they provide the requirement document’
- ‘JCIDS doesn’t exist to conduct air-land warfare – it exists to help buy stuff’

From KTR’s:

- ‘MAJCOM guys and the upfront requirements process is very important’
- ‘Earlier coordination with the JCIDS process is better, and more efficient than trying to work it after you get too far down the path’
- ‘We really challenged the early draft requirements and it really paid off for the system’

From User’s: Several comments seem to support this compartmented perspective:

- ‘Program office and requirements folks are like defense and offense. On the same team, but not on the field at the same time.’
- ‘There is a line between me and the SPO. Developmental test is acquisition, and operational test is Not acquisition.’

One of the Users recognized the work of the entire PM-User-KTR team in refining requirements in the early phase of the program by commenting, ‘you can’t just throw things over the fence, because nobody writes requirements well.’ This same User differentiated between the requirements office as being the program office’s customer, and the end operational users who

would benefit from the system. The comment indicated, ‘These end users need to be much more involved in the acquisition to make sure it gives them what they need.’

The interviews also revealed examples where PMs took a compartmented stance and it was detrimental to the overall program. Several instances pointed to a system being built that the User no longer needed or wanted, and no one in the Program Office ever bothered to seek out User input. Another example included a confrontational PM who took the following stance with the User community, “I have your Requirements, if I need you, I’ll let you know.” The User recalled the Program Office (led by the PM) then went on to interpret the requirements, add unnecessary derived requirements, made things overly complicated, and the system is in the field today not performing well. This User said, “It’s amazing how electro-mechanical systems function to the level of the relationship of the organizations that made them.”

5.1.2.3 Summary Finding:

Role Interaction: The majority of comments from the interviews indicate the DAS works best when key stakeholders recognize the JCIDS, PPBE, and LCMS decision processes and the need for them to interact effectively, which is consistent with the 2006 DAPA findings. These interviews further reveal the systems interact better when their members not only understand their own role, but also understand how the other systems operate and why. This understanding allows each member to play their role better and in a manner that best enables the whole system to be most effective. For example, working up to the enterprise boundary and then throwing something “over-the-fence” is less effective than engaging in a collaborative exchange that will benefit all parties’ shared common interests. This role interaction is summarized in these comments:

- ‘When they all understand their role – productivity and options for mutual gain emerge’
- ‘With those roles, comes some responsibility for poor outcomes if those roles are not played well’
- ‘Everyone who touches the system, needs to see their role in the system, not selectively choose when they are in or out of the acquisition system’

The application of dialectic thinking can be one way for two super-salient stakeholders to seek understanding of each other’s role and how they can best serve the program in light of how their system interacts with other systems and stakeholders.

5.1.3 Question #3: How do You define success in the acquisition world?

5.1.3.1 *Common Themes:*

Meet C-S-P Targets & Adapt: The most common responses to this question described success in the acquisition world as either achieving the role and purpose of the DAS (as they had defined in interview question 1), or meeting C-S-P targets. But, at the same time, PM, User, and KTR respondents all acknowledged that program C-S-P baselines often change for numerous reasons. When this happens, success is defined in terms of rapidly getting broad stakeholder buy-in to a new executable program plan and meeting that plan. Adaptability, creativity, flexibility, and teamwork among the super-salient stakeholders are all widely accepted as critical to achieving success in situations where C-S-P baselines need to be reset.

Beat the Bureaucracy: Another common theme is the notion that success is “beating the bureaucracy” or “minimizing the amount of acquisition process that affects the program.” This includes one of the case programs, which didn’t have clear alignment on the weapon system purpose, mission, and priorities across the User and OSD communities which made it difficult for the PM and KTR to satisfy external stakeholders. In this case, the PM, User, and KTR all shared a similar idea that success was still being able to deliver militarily useful systems even when these communities were at odds with each other.

Success Has Many Forms: One KTR felt strongly that the only real success is when the system can declare Initial Operational Capability (IOC), which is when part of the system is in the hands of the warfighter and delivering militarily useful capability. This same KTR also pointed to many incremental “min-successes” along the way to that point. A User on a program, which had just completed a competitive phase of technology demonstration, stated that acquisition success was on a continuum. They had just completed a very successful competitive technology demonstration phase which vastly refined and improved the future system requirements and demonstrated some state-of-the-art technology. The User recognized the possibility of budget cuts ultimately terminating the program and preventing system IOC, but the program had still been very successful up to that point.

5.1.3.2 *Unique Observations:*

Success Enables Success: Several comments focused on how much benefit the program realized by simply meeting commitments. By setting realistic expectations, and meeting them,

programs are able to gain credibility, trust, and support. One PM – User – KTR triad all commented independently how this is benefiting their program. The PM has set and broadly communicated C-S-P targets and expectations, the program is meeting them, and OSD and other stakeholders in the Pentagon are so informed and trusting, they are ‘fighting the program’s battles’ on their behalf. This credibility and trust has helped to enable funding stability, and allowed the collective program team to focus more on forward planning and program execution, rather than excessive time in the Pentagon trying to ‘get out of the doghouse.’ In short, credibility is an acquisition force multiplier¹⁶.

Termination is Success: There were a few respondents who stated the DAS can be successful even when a program is cancelled and nothing is delivered. The intent from these comments is that there is significant risk in many weapon system programs, and it is not always possible to foresee the full extent of every challenge at the outset of a program. From their perspective, the DAS works, ‘when we decide not to buy something – when we cancel a program we shouldn’t buy because the process exposed the risk, and the effort gets stopped.’ In this regard, ‘Success is *Not* buying the wrong stuff, or things people don’t need, or things that don’t meet requirements, or cost way more than they should.’ An important point here is that programs do not self-terminate and they do not terminate automatically from a particular DAS process. Rather, program terminations should be the result of well-informed and objective decision makers (i.e. people) arriving at a correct conclusion.

5.1.3.3 Summary Finding:

Success is an Elusive Term: It is easy to identify success in the acquisition world when ‘the right stuff, gets to the right people, at the right time, within original, or even revised C-S-P targets. But the interviewees present a many other aspects of success within the acquisition world due to its complexity and numerous challenges. This is consistent with Snider (2011) who stated from his literature review of project management studies, “Agreement on specific success criteria is elusive, and most agree on only general standards like overall mission accomplishment, stakeholder satisfaction, and conformance to quality, cost, and schedule targets.” (p. 34) This challenge has also been framed by differentiating, “While program success

¹⁶ Force Multiplier is defined as: A capability that, when added to and employed by a combat force, significantly increases the combat potential of that force and thus enhances the probability of successful mission accomplishment. Source: JP 3-05.1 – Accessed January 17, 2013 from: http://www.dtic.mil/doctrine/dod_dictionary/data/f/8037.html

can be defined as meeting cost, schedule, and performance requirements, PM success is much harder to define.” (Gadeken 2004, p.14).

One of the case programs provides an great example of the challenge of definitively determining success. The system evolved from a technology demonstration project to an ACAT I program during the operational conflicts in Iraq and Afghanistan over the past 11 years. During this time, the system was called upon and “surged to the fight” multiple times, and in multiple ways. This type of rapid response came at a cost and schedule premium to the overall ACAT I program objectives. The User lead for this effort referred to the program as, “a series of successes culminating in a large failure.” This User later mused, “When considering success, you have to ask, will schedule still be the most important thing 5 years from now?” One KTR perspective used the term “selective amnesia” to describe how leaders and decision makers currently view the program relative to all of the ‘wartime accelerations’ it performed.

Because declaring that success to be ‘an elusive term’ can be unsatisfying for some, the following summary definition, albeit still rather subjective, is offered from this research. *Success in the acquisition world takes many forms and ultimately must be assessed by the cumulative positive and negative program outcomes evaluated in balance with objective and reasonable consideration of the collective set of circumstances within which the program was executed.*

5.2 Part II – Government PM Role, Competency, and Leadership

5.2.1 Question #4: What is the Role of the Government PM?

5.2.1.1 *Common Theme*:

Leadership: Using a variety of terminology and phrasing, nearly every interviewee cast the role of the Government Program Manager as one of Leadership. Figure 36 provides an aggregated set of responses to this question according to the role of the respondent. The words “Lead” and “Leader” are in **bold** and they show up in 21 comments, which is far more than any other descriptor of the PM’s Role. Other terms like “Advocate”, “Director”, “Manager”, “Quarterback”, and “Head Coach” suggest similar responsibilities, and they show up in another 18 responses.

5.2.1.2 Unique Observation:

Central Role: The data set indicates PMs, Users, and KTRs all see the PM as having a central role on the program. This would seem to support the traditional hierarchical relationship model discussed in section 4.3, also shown again in Figure 35.

Figure 35 -- Hierarchical Relationship Model



For instance, the PMs saw their role as the “Go-to person” and other comments used words like “at the center” and “in the middle.” A KTR viewed the PM as “the primary conduit to the contractor team.” KTR’s and User noted PM’s need to manage ‘User expectations,’ and Users noted PMs need to ‘hold the KTR accountable.’ Both KTR and User comments saw a PM’s role as communicating with external stakeholders on behalf of the program.

Figure 36 -- Interview Question #4 Comment Summary

Summary Comment Matrix for: "What is the Role of the Government PM?" (Freq = # of similar comments made by that Role)					
Freq	PM Interviews	Freq	User Interviews	Freq	KTR Interviews
6	Program Leader , CEO, Ship's Captain	5	Leader -- Band-director Harmonize expectations with User and fiscal realities with KTR	3	Leader - Program Executive Work with customers to meet warfighter needs
5	Manager of Details, Stakeholders, & Risks Marshal resources	3	Hold KTR accountable, every dollar counts	3	Director of the orchestra Synthesize all issues to find the best way forward
4	Orchestra Leader Manage "Functional Instruments"	3	Objective Advocate , Communicate with External Stakeholders	1	Keep the program on track
4	Go-to person for program facts, info, & decisions Program Advocate -- Face of the program	1	Set the example on how the rest of the community works & operates professionally	1	Leader & Coordinator of all Gov't agencies
3	Set Vision, Operate on Values, Motivate	1	Build Team and provide guidance	1	Primary conduit to the contractor team External Stakeholder Communication
2	Quarterback, Head Coach Lead by Example	1	Very good at holding their ground		
1	Take appropriate action to deal with unexpected, yet understandable, problems	1	Herding Cats		
1	Ability to communicate from tactical (technical engineer) up to strategic (OSD & 4-Star Generals)				

5.2.2 Question #5: Think of an exceptional PM you know. What made that PM really good?

5.2.2.1 *Content Analysis Approach*

This question is central to this thesis as it aims to identify the means in which PMs can add value in the DAS and improve program outcomes. The data gathered from this question enables a study of PM competencies using a multi-perspective approach. PM competencies were addressed at length in section 2.3 of the literature review. Most studies gathered input from PMs themselves or their subordinates or superiors. One study (Wood 2010) focused entirely on an industry perspective. This study is believed to be the first that gathers inputs from PM – User – KTR perspectives, to include members who are working on the same programs.

The analysis process included coding the responses to this question into a list of PM attributes and competencies, which the interviewee believed to be important for an effective PM. The question asked them to recall one or several successful PM(s) from their experience and not just the PM on the program they were currently working. A list of competencies was not provided to the interviewees. All of the competencies on the list are those identified in response to this question, or which emerged elsewhere in the interview as they referenced something that “made a good PM.” This list was then prioritized by the number of responses for each competency and also the competencies were binned into three separate leadership categories labeled Program, People, and Personal Leadership.

5.2.2.2 *Common Themes:*

The complete list of PM competencies is in Figure 37 by order of the frequency a particular competency was mentioned in the interviews. The maximum possible number is 16 based on the total number of interviews completed. The Top 4 most common Competencies were noted by 11 or more of the 16 interviewees as important for an effective PM:

- Understand Stakeholders (role and person)
- Relationship Management / Strategic Partnerships / Teambuild
- Problem Solving, Critical Thinking, Systems & Dialectic Thinking, and Enterprise Aware – Think Bigger than Program
- Open to Ideas, Input, and Discussion

These competencies certainly call upon a PM to interact successfully with many stakeholders and partners to work on problems in an objective way based on their own thinking as well discussion with others on different ideas and inputs. These findings all support the description of *dialectic program management* provided earlier in this thesis. The next item on the list is “Vision & Strategy” which is an affirmation of the PM as a Leader.

The next four competencies on the list include skills which could be argued as essential to enabling a PM to operate dialectically. These include:

- Technically Capable & Competent
- Credible and Knowledgeable (Face of the Program)
- Ensure Effective Organizational Communications (Internal & External)
- Good / Effective Communicator (Clear/Concise)

In essence, this suggests that having a sufficient mastery of the program knowledge and the acquisition system, along with the ability to communicate effectively supports stronger stakeholder interactions and relationships through open discussion and problem solving. This observation greatly parallels those taken from the 2010 GAO Report linking strong leadership to stable weapon programs discussed in section 2.4.2 of this thesis.

The competencies identified from these research interviews include many of the same competencies previously noted as important from the review of literature. Appendix C, Table 1, includes a mapping between the results from this research and seven different literature sources on PM competencies.

Figure 37 -- PM Competencies Identified from All Interviews

<u>PM COMPETENCY</u>	<u># of Interviews</u> <u>Noting This</u> <u>Competency</u>
Understand Stakeholders (role and person)	15
Relationship Management / Strategic Partnerships / Teambuild	14
Problem Solving, Critical Thinking, Systems & Dialectic Thinking, Enterprise Aware -- Think Bigger than Program	11
Open to Ideas, Input, and Discussion	11
Vision & Strategy	10
Technically Capable & Competent	10
Credible & Knowledgeable (Face of the Program)	10
Ensure Effective Organizational Comms (Internal & External)	10
Good / Effective Communicator (Clear/Concise)	9
Delegate & Empower	9
Honesty	9
Know & Do What is Right / Audacious / Bold / Firm	8
Set Expectations / Includes 'Commander's Intent'	8
Ownership / Make Things Happen	8
Objective Advocacy -- Program Honest Broker	8
Respect People (Up-Down-Across) - Personable	8
Select Right Talent for Team	7
Know Your People & What They Can Do	7
Apply Interpersonal Skills	7
Coach and Mentor	7
Motivate & Inspire	6
Trustworthy	5
Humility	5
Confident	5
Entrepreneurial / Innovative	5
Integrity	4
Detach -- Don't Take Things Personally	4
Meet Commitments -- Follow-through	2
Good Processes	2
Patient & Calm	2

5.2.2.3 *Unique Observations*

The competency data gathered from the interviews is also analyzed by role and by aggregated leadership categories.

Comparisons By Role – Influence: The following observations are made based upon the first analysis, which is summarized in Table 2 of Appendix C. PMs appear to place greater emphasis on areas such as Openness, Technical Competence, being Credible & Knowledgeable, and Advocating Objectively for the program. Whereas the responses from KTRs noted these areas less frequently. This would appear to indicate PMs feel these skills are very important to accomplishing their role effectively and this is less apparent to the others. This variance is even more pronounced when comparing the aggregate Gov't response (PM & User) with that of the KTR. Government interviewees much more so than KTRs recognized Credibility, Honesty, and Objective Advocacy as critical for effective PMs. This does not indicate KTRs do not believe it to be important, rather it may be indicative that it is less obvious to them how it affects a PMs ability to be effective within the large acquisition bureaucracy.

These competencies would directly affect a PMs ability to be influential and effective in any kind of program issue negotiation. All of these skills map well into the elements of negotiation theory reviewed in section 3.3 of the thesis. By advocating objectively, a PM separates the people from the problem and focuses on interests rather than positions. Being technically competent, knowledgeable, open, honest, and credible, a PM can gather information and create options for mutual gain using objective criteria.

Comparison By Category – Leadership: The competency list was examined for similar themes or categories and what emerged are three separate 'bins' which centered around the Program, the People, and the PM as a person. Because of the nature of these competencies, and the very wide recognition of the role of the PM as a leader, the three identified categories are described as follows:

- **Program Leadership** – PM ability to perform a variety of programmatic actions
- **People Leadership** – ability of the PM to interact and deal with people
- **Personal Leadership** – includes personal PM values and elements of character

These categories are provided in Figure 38 and listed by the overall responses rate (as a percentage) by category.

Figure 38 -- PM Competencies By Leadership Category

INTERVIEWEES-> COMPETENCY	PM Sub-Totals		TOTALS BY ROLE			GRAND TOTAL
	Experts	Case Programs	PM	User	KTR	
PROGRAM LEADERSHIP	60%	63%	62%	51%	44%	54%
Understand Stakeholders (role and person)	4	4	8	3	4	15
Relationship Management / Strategic Partnerships / Teambuild	4	3	7	3	4	14
Problem Solving, Critical Thinking, Systems & Dialectic Thinking, Enterprise Aware --	3	3	6	2	3	11
Vision & Strategy	2	4	6	2	2	10
Technically Capable & Competent	3	4	7	1	2	10
Credible & Knowledgeable (Face of the Program)	3	4	7	2	1	10
Ensure Effective Organizational Comms	2	3	5	2	3	10
Good / Effective Communicator	2	2	4	2	3	9
Know & Do What is Right / Audacious / Bold / Firm	3	1	4	1	3	8
Set Expectations / Includes 'Commander's Intent'	2	2	4	2	2	8
Ownership / Make Things Happen	3	2	5	0	3	8
Objective Advocacy -- Program Honest Broker	3	3	6	2	0	8
Entrepreneurial / Innovative	2	1	3	1	1	5
Meet Commitments -- Follow-through	0	1	1	0	1	2
Good Processes	0	1	1	0	1	2
PEOPLE LEADERSHIP	50%	61%	55%	52%	26%	46%
Delegate & Empower	1	4	5	2	2	9
Respect People (Up-Down-Across) - Personable	3	2	5	1	2	8
Select Right Talent for Team	2	1	3	3	1	7
Know Your People & What They Can Do	1	3	4	2	1	7
Apply Interpersonal Skills	3	2	5	1	1	7
Coach and Mentor	3	2	5	1	1	7
Motivate & Inspire	1	3	4	1	1	6
PERSONAL LEADERSHIP	41%	41%	41%	38%	25%	35%
Open to Ideas, Input, and Discussion	4	3	7	2	2	11
Honesty	3	2	5	3	1	9
Trustworthy	0	1	1	1	3	5
Humility	2	2	4	1	0	5
Confident	1	2	3	1	1	5
Integrity	2	1	3	0	1	4
Detach -- Don't Take Things Personally	0	2	2	1	1	4
Patient & Calm	1	0	1	0	1	2
			Indicates noteworthy area of comparison			

There is a very consistent ordering of response rate across PMs, Users, and KTRs for these three leadership categories. The collective response rate for Program Leadership was more frequent than People Leadership, which was more frequent than Personal Leadership. Notably, the KTR response rate for the latter two categories was much lower than for the PM and User respondents. This could be because the majority of interaction between the PM and the KTR is at the Program level, and the importance of the Personal Leadership competencies may have been assumed within competencies in that leadership category. For instance, it would seem that for a PM to be an Credible, Honest Broker, who Does the Right Thing, the PM would also have to have some measure of Honesty, Integrity, and Trustworthiness.

Two additional noteworthy areas of comparison are flagged in Figure 38.

Leading People: First, there is an 11% difference between the Expert PMs and the Case Program PMs. This would appear to be driven by response rate differences in Delegate & Empower, Know Your People, and Motivate & Inspire, which are skills the Case Program PMs are likely using to a greater extent every day to be successful leading their large teams of people, as opposed to the PM Experts, who were mostly faculty.

PM – User “Ownership”: The second item of note is that the Ownership competency was not specifically noted by any of the Users. This could be another artifact of the hierarchical relationship model where the User views themselves atop the program structure as the ultimate customer and “Owner” of the program. Because of this possibility, it is important to make the distinction between having “Ownership of the Program” in order to provide the weapon system, for which the User has the “Ownership of the need for its capability.” The latter is arguably more important, but also less relevant if the capability never actually makes it to the field due to an absence of the former.

5.2.3 **Question #6: Can you think of examples of how members of the program team take on the characteristics of their leader?**

5.2.3.1 *Common Themes*

Most of those interviewed, across all three roles, were able to relate to the questions in a manner that indicates people on the program team do in fact tend to mirror their leadership. Many either had examples they personally experienced and others recounted examples they observed from a different vantage point. One PM even recounted how they developed in their

own way as a result of attempting to adopt attributes and abilities from leaders they respected and had observed. Other interview comments emphasized the importance of “Leading by example,” or how important it is to “walk the talk” in order to be effective. One interview included the comment, “you can’t fake sincerity.” The following two examples provide a negative and a positive vignette which are representative of several in the interviews.

Negative Leadership Vignette: An Expert PM recalled a recent ACAT I program where the PM was fired:

The biggest hallmark is that he believed he was the victim of circumstance. He was caught in a web of an undoable program and didn’t know how to lead the program out of trouble. He was the guy who felt that others let him down, when in fact, he was letting everyone else down. Senior program leadership finally had to replace him. As soon as he was gone and a more competent person put in place, the program turned around 180 degrees – it was a very stark contrast. There were no other differences on the program. It was simply a different person as the PM. Even the contractor team had suffered from the previous leader, and they too improved in performance quickly after the new leader was in place.

Positive Leadership Vignette: One of the case program lead Users recalled how one of his previous PM counterparts turned around the program climate upon his arrival:

There was longstanding mistrust between the User MAJCOM and the Program Office. The perception was that the User often changed the requirements and didn’t advocate for necessary program funding, even shifting it from this program to another in future budget proposals. The PM’s first word to me as the User was ‘we have to change the culture on the program.’ He convinced his team that the User did have an open mind. The User lead followed the PM’s lead and together they built more trust. Occasionally, the PM accepted misplaced blame in order to facilitate, and focus on a path for, moving forward. This culture freed up people to work more on the program rather than spend time on negative efforts, frustration, or bitterness. The PM also focused on the enterprise solution, not just what his people wanted. His people understood what he was doing and why, because he communicated this down to his team. If people disagreed, they still tended to give support because they at least understood the path the PM had identified and explained.

5.2.3.2 Unique Observations

Several of the comments indicated positive leader actions are more actively pursued by team members, whereas negative leadership aspects tend to be adopted more subconsciously.

This implies a counter-productive cloud of negativity hangs over the program. One of the KTRs referenced a PM who was indecisive, accepted zero risk, and frequently delayed decisions which others broadly felt could be made based on available data. The KTR stated this led to “trickle-down apathy” across the entire contractor and government program team. In short, it created a perpetuating vicious cycle.

Several of the KTRs recounted more positive examples where the contractor team fed off the energy and enthusiasm of the Government PM lead. The positive energy and optimism was contagious and adopted by members of the program office in their interactions with the contractor. The contractor team followed in turn. This led to more open and honest sharing of information across the program and improved problem solving. In short it created a perpetuating virtuous cycle.

5.2.4 Summary of Findings for the Government Program Manager

The major findings from the collective data and analysis of the questions focusing the Government PM are:

- 1) The primary role of the PM is that of Program Leader who also plays a central role as the Objective Program Advocate with external stakeholders, and the boundary spanner between the User and the KTR.
- 2) PMs must not only be leaders with Vision & Strategy, they also must have managerial and technical competence.
- 3) The PM-User-KTR triad members’ most commonly recognized Competencies of effective PMs include: Stakeholder and Relationship Management, Critical, Systems, & Dialectic Thinking and Problem Solving, Openness, and Effective Communication.
- 4) As Program Leaders, PMs can have far reaching positive and negative impact on program outcomes by establishing an enterprise culture which feeds virtuous or vicious cycles within the larger program team

5.3 Part III – Specific Case Study Programs – Relationship Observations

The third part of the analysis focuses on the three specific programs included in this research. The analysis is informed by the previous observations on the role and purpose of the DAS and the role and competencies of an effective PM. This section provides analysis on each of the cases’ dyadic and triadic relationships and how they contribute to program outcomes.

Particular attention is paid to the role of the PM in constructing, fostering, and influencing these relationships.

Confusion Tax: Each program overview includes a discussion of the “Confusion Tax” for that program. The idea of programmatic Confusion Tax was introduced in section 4.4.4 as part of the qualitative program success framework. For reference it is stated again here that Confusion Tax is a concept that takes value out of a program due to factors such as: Unclear Responsibilities, Authorities, and Accountabilities (RAAs), or Broad Stakeholder Misalignment that delays decisions or causes other program inefficiencies. For this research a subjective rating from Low to High is used to provide some context relative to program impact.

There are several important points with regard to the notion of a confusion tax. First, every program pays some form of confusion tax, but the amount varies based on the number and extent of the factors driving the ‘confusion.’ Second, the contention is not that the underlying issues driving the confusion tax are either trivial or simple to resolve. Rather, it is that because the confusion exists in the form of stakeholder or RAA misalignment, program resources must be expended to address the confusion, just like a tax must be paid. This tax is paid by the collective triad program team (PM-User-KTR), in the form of extra effort, actions, informational briefings, etc., to resolve issues and enable the program to move forward. Managing the confusion very well may warrant the attention of the program team and in fact, it may be paramount to the program. But if the program did not have to pay the effort ‘tax’ to manage the confusion, that same effort could be spent on other activities more directly related to program execution.

Finally, there is no budget line item for “Confusion Tax,” yet it drains a program’s three most valuable resources; time, money, and people. While some could argue a PM’s “management reserve (MR)” is set aside for such things, MR is a constant target in the DoD’s increasingly constrained fiscal environment. Confusion Tax is also extremely hard to quantify, but on some programs it is conceivable that it could consume the entire program MR, leaving nothing to address other program risks. A relevant confusion tax example is captured in this recent *airforce-magazine.com* news item:

Procrastination is the New Norm: Air Force Acting Undersecretary Jamie Morin said the new norm of creeping right up to the edge of "various cliffs," such as pending government shutdowns or busted debt ceilings, is having a detrimental effect on the way the Defense Department conducts business. It's "deeply disruptive to the institutions,

drives costs to the taxpayers, and undermines the military capability we provide the nation," he said during an AFA-sponsored talk in Arlington, Va., on Jan. 15. Program managers have become so accustomed to operating under continuing resolutions that they are building delays into program schedules, he said. Although that ultimately leads to higher acquisition costs, Morin said it's something DOD has "quietly accepted." (McCullough 2013)¹⁷

5.3.1 Program A

Overview: This program began as a Technology Demonstration project and proved successful enough to continue to grow in scale, complexity, and risk¹⁸. Requirements for additional variants and quantities of the system increased the total program funding required and the effort quickly evolved into an ACAT I program. As it continued to prove out new technology and provide valuable state-of-the-art warfighting capability, the system and those working its development were called upon to provide support to operations in Iraq and Afghanistan. This weapon system has been heavily involved in multiple acquisition phases and activities in recent years, to include; development, production, modifications, and operations and sustainment. This program has also experienced substantial cost and schedule growth as part of its history.

Confusion Tax (High): Program A has two significant sources of confusion tax. The first source originates from Air Force leadership misalignment with members of the OSD staff relative to priorities for various aspects of the weapon system. The other source of confusion tax lies in the fact another weapon system performs many of the same types of missions and has some similar capabilities to the Program A weapon system. Stakeholders of the competing weapon system believe it to be the better solution for many overlapping capabilities. The collective misalignment of stakeholders drives competition for limited resources. Based on comments in the interviews, both sources of confusion tax have caused decision delays and other associated inefficiencies for Program A. They also have been a tremendous consumer of program office manpower and creative energy, which arguably could have been directed at issues related to making the baseline program successful. Of the three programs in this research, this program by far 'pays' the highest confusion tax.

¹⁷ Accessed January 16 Jan 13 at <http://www.airforce-magazine.com/Pages/HomePage.aspx>

¹⁸ Scale, complexity, and risk are the same three challenges discussed at length in chapter 1, section 1.2.2

5.3.1.1 *PM-User Dyad*

Both the PM and the User describe their relationship as one that is open and built on trust. They communicate frequently although this is often done in the evenings and on weekends due to the many other external stakeholders who require updates and information. The KTR perceives the PM-User relationship as weak, although this seems to be in reference to the PM connection with the larger operational user community more so than the specific lead User counterpart. Both the PM and User recognize they are frequently misaligned on program issues and priorities, which they acknowledge is a source of program inefficiency. This misalignment seems to be associated with the broader stakeholder community misalignment identified as part of the programmatic confusion tax.

The lead User strongly supports the PM's performance on the program and attributes much program success to the PM despite the challenges of external stakeholder misalignment and program cost growth. Multiple interviewee comments indicate the PM's success follows the *Incomplete Leader* model (Ancona et al 2007). The PM openly described self-awareness of several personal strengths and weaknesses. The PM knows and leverages personal strengths and compensates for other areas by enlisting support and assistance from functional area experts. The PM also used interpersonal skills to great advantage by turning OSD action officers from positions of non-support and resistance to willing participants who contributed to resolving program issues. This is extremely valuable on a program with 'high confusion tax' and contributes greatly to better program outcomes.

5.3.1.2 *PM-KTR Dyad*

The PM and the KTR lead have almost daily communication and both describe a strong, open relationship in which each is able to see and appreciate the perspective and challenges associated with their counterpart. Information flows freely between the two based on a high level of trust and mutual respect. The PM recalled times when information about the broader user community flowed more freely from the KTR than from the User lead. Another interviewee commented the PM-KTR relationship is so strong it has been looked at as a model for their company. The User expressed a perspective that PM-KTR relationships, 'can be dangerous if they get too close and they appear to be friends and colleagues on the same team. The PM needs to be able to separate out and go government-only.'

The KTR recalled a time on Program A when a wartime request necessitated rapid program action and the KTR team was able to generate cost estimates for the program office in two weeks versus the two months it takes now. The KTR desires to have the same responsiveness today, but recognizes the program climate is not conducive. KTR cost estimate delays are typically result when companies elevate the level at which the estimate must be approved by their own leadership before release to the government. Delays and higher level approvals can also indicate trust concerns based on government dissatisfaction with previous estimates ‘missing the mark’ compared to the final cost for the work. This type of expectation disconnect can be due to previous cost estimates being overly optimistic or insufficiently clear. They can also come from government misunderstanding or making invalid assumptions about the cost estimates. In either event, it does not indicate highly successful and streamlined communications between the two parties.

5.3.1.3 User-KTR Dyad

This relationship dyad is professional but very limited. The KTR interfaces much more frequently with operational users in the field than with the lead User at the MAJCOM. The lead User appreciates the KTR’s perspective on the program, but feels the MAJCOM spends a lot of time and resources addressing issues the KTR raises with external stakeholders. The collective sense of this relationship is that the KTR feels as though they have worked hard to develop and deliver the system to meet government needs given fluid requirements and multiple requests to support real-world operations at the expense of baseline program execution. The User feels there have been many individual program successes, but total program cost growth is the biggest issue and attributes some of this to the KTR over-promising, saying yes to every opportunity, and not being more realistic and forthright with the longer-term implications of near-term decisions. The intent of this observation is not to identify fault in either party, but rather to note the apparent disconnect in the relationship and how it affects the larger program performance.

5.3.1.4 Summary of the Program A “Iron-Triad”

Priorities: The stated priorities from all three members of the triad are not aligned and also each triad member has awareness of this fact. This reality suggests the collective use of program resources is more inefficient than optimal.

Triad Relationship: The triad does openly convene as a group at various program management reviews, which helps to facilitate information exchange. One triad member stated a desire to establish a weekly 30-minute PM-User-KTR phone call to stay better connected, but then suggested the relationship between the other two triad members was not strong enough to support this. Another comment suggested the program did not have a triangle because there “is a multi-point User interface.” Separate members of the triad acknowledged several occasions where they were highly effective, but the common galvanizing theme appeared to be crisis. There were two instances where a Crisis Action Team (CAT) was established with PM-User-KTR involvement. The CATs were viewed as very constructive and successful demonstration of teamwork to resolve critically important program issues. There were similar instances of strong and effective collaboration to rapidly field several systems in support of ongoing military operations.

Summary: There is clear evidence of pockets of success across the program due to specific actions of individual triad members and strong relationships. But on the whole the triad relationship appeared to be bruised from a significant program history of cost growth and mismatched expectations. A likely contributor to both of these issues is the program reliance on undefinitized contract actions (UCAs). This is a mechanism used to authorize a contractor to proceed with work before there is specific and detailed agreement on all the work tasks and their associated costs. While UCAs do expedite the initiation of contractor work, without proper discipline and expectation management among all triad members, they can lead to increased costs, distrust, and damaged relationships. One interviewee noted that at one point Program A had 18 open UCAs. Another interviewee stated Program A has no baseline and the team expends tremendous energy justifying and explaining cost estimates, assumptions, and budget change scenarios. This activity distracts the team from tackling issues associated with executing to a known program baseline. The interview data gathered suggests the triad was unable to establish the type of relationship and interaction that could define and achieve program success to the satisfaction of the broader external stakeholder community.

5.3.2 Program B

Overview: This program includes a mature ACAT I weapon system. Program B is engaged in multiple developmental modification and enhancement programs as well as

operations and sustainment of the fielded systems. The weapon system modifications include a mix of new technology developments and complex integration activities.

Confusion Tax (Low-Med): The primary source of confusion tax for Program B is a relatively recent Air Force reorganization which realigns the program under a new lead User MAJCOM. The new User staff continues to build proficiency for managing the annual budget and requirement prioritization process, whereas the previous MAJCOM and its staff has many years of experience performing this role. Furthermore, the weapon system performs missions which still fall under the purview of the previous MAJCOM. But the previous User is less inclined to advocate for Program B given other unfunded requirements across its portfolio of responsibility. This stakeholder misalignment requires resolution of program funding issues at senior levels of the Air Force. This delays some decisions and requires effort and attention from both the lead MAJCOM and the program office. Relative to other programs in this research the confusion tax is rated as Low-Medium.

5.3.2.1 PM-User Dyad

The PM-User relationship for Program B appears to be sufficiently strong and stable. The PM works mostly at the O-6 level, but is also able to interact at levels up to the MAJCOM Commander. There is no recurring PM-User meeting schedule, but rather interaction happens as needed. The User recognizes and appreciates the relationship dynamic where the User desires to get as much capability as possible with the program funding, while the PM is working to make sure the program is not over-extended and is actually able to deliver some capability. There is a much more narrow and focused User community for this weapon system compared to other weapon systems in the Air Force, which greatly reduces the ‘confusion tax.’ This likely simplifies the challenge of establishing an effective PM-User relationship.

5.3.2.2 PM-KTR Dyad

The interviews indicate a very effective and professional relationship between the PM and the KTR, which pays dividends to the program. The PM and KTR shared a 10-week acquisition training experience which is a significant factor in the strength, openness, and success of their relationship. The contractor believes the program draws the best people within their company and there is high satisfaction for those who work on the weapon system. Several comments indicate there have been more social and friendly relationships in the past between the

contractor and the program office, but that the current relationship is professional and very productive. The KTR believes the current arrangement actually makes them better by challenging them find value at every opportunity. This appears to be enabled by the PM providing a coherent program vision and strategy as well as holding the contractor team accountable for its performance.

The PM's efforts to establish and communicate a clear program vision and strategy have generated great value for the program. With this clear guidance in place, regular communication with the contractor is only a small fraction of the PM's time. The PM spends more time working with senior leadership in the Pentagon so they fully understand the program's current issues and forward strategy. This has been so successful that Pentagon leaders have been able to advocate on behalf of the program in a proactive manner rather than the PM and the program office constantly reacting to questions, taskers, and requests for information briefings. In a similar way, the PM's vision and strategy empowers the next level of PM leaders in the program office. This has a 'force multiplier' effect on the program. Members of the program office value the strong program leadership and indicate they really enjoy working for this PM.

5.3.2.3 User-KTR Dyad

Both members of the User-KTR dyad state the relationship is a strong one. The User trusts the contractor and indicated most User-KTR engagement happens in conjunction with the program office, who the User referred to as, "the solutions people." The KTR feels the new User MAJCOM has a clear vision and willingness to openly discuss technical requirements and performance tradeoffs. There was an open recognition on both sides of the relationship that there are 'growing pains' in the new User staff with how the contractor can best help the User MAJCOM advocate for program in the PPBE process.

5.3.2.4 Summary of the Program B "Iron-Triad"

Priorities: All three members of the triad have a similar list of program priorities. They are well aligned and share a common focus. There is no indication of wasted energy by the program office, contractor, or user community pursuing activities outside the common program priorities.

Triad Relationship: The relationship among the triad member appears to be very healthy, productive, and built on a foundation of trust and mutual respect. There is also a very good

understanding of what each role in the triad brings and how it can interact with the other triad members to most benefit program success. Semi-annual PMRs provide an opportunity for the triad to gather and interact with the broader community, but there appears to be greater value in the all of the program relationship interactions between the major program reviews.

Summary: Program B has won a number of respected awards in recent years, which are a testament to its success. The compelling aspect of this success appears to be the widely recognized strength and leadership of the Government PM. With the PM's vision and strategy the program has been able to innovatively solve problems and work through challenges within existing budget resources. This has earned the program a great deal of credibility and trust with external stakeholders. The PM has established a culture of trust, empowerment, and accountability within the entire program team, which is facilitating progress toward the vision.

5.3.3 Program C

Overview: Program C is unique in that it has been in a competitive environment for several years. An 18 month concept development phase initially involved three contractors. This was followed by a technology development phase involving two of those contractors, where they are competing to win the effort to fully develop and produce the system. The competitive environment creates some unique program and relationship dynamics. For instance, meetings with all parties are rare because the competitors tend to limit questions and discussions to protect their design strategy advantage in the future competition. Also, the government team must be very careful to give each contractor equal time throughout the competitive phase and diligently ensure neither side gains access to plans, designs, and technology strategies of the other side. There is general agreement across the PM-User-KTR triad that the program activities thus far have been successful in refining the User's requirements and demonstrating the technology necessary to make the system viable.

Confusion Tax (Low-Medium): The primary source of confusion tax for Program C is its organizational alignment. The program involves two separate Air Force product centers with different PEOs, and a program management organization at a third geographic location. This is due to several known reasons and it can affect the program in several ways. First, the geographically separated organizational layer of management exists as an artifact of a previous organizational structure and serves no apparent function. At best it adds minimal value, especially with regard to filling critical personnel vacancies on the program. At worst, it is

counterproductive and a source of inefficiency and overhead for the PM. Secondly, the PM and program office are at one product center and the PEO is at another. This makes it more difficult for the PM to have timely and personal access to the PEO. It also makes it harder to gain support from the local product center, for things like critical personnel vacancies, when the program is not in the local PEO's portfolio. The confusion tax for this program is assessed as Low-Medium.

5.3.3.1 PM-User Dyad

The PM-User relationship for Program C could be described as effective and constructive. The PM expressed a willingness and ability to elevate issues within the MAJCOM when necessary. The program coordinates most outside program requests as a joint response, which helps the program communicate with consistency and credibility to external stakeholders. The PM and User stay well connected and they do their best to keep each other 'in the loop' and extend open invitations to all meetings.

5.3.3.2 PM-KTR Dyad

Due to the ongoing competition between contractors, there are two separate PM-KTR relationships for Program C. All interviewees characterized these as open and constructive relationships. As a result, there has been a free flow of information, which has served the program well. The KTRs felt the PM successfully managed the relationships in a competitive environment by keeping both sides equally informed. The PM was known for being very results oriented and following through on commitments. The PM also worked to ensure both KTRs had sufficient access to the user community. This was very important to refine the requirements and evaluate viable technical trade-offs for the overall system.

5.3.3.3 User-KTR Dyad

The competitive environment on the program challenges both sides of the User-KTR relationship. The User must exercise caution in their interactions with each KTR to ensure the viability of the future competition. The previous phase of the program focused on the KTRs working to refine the user's requirements and demonstrate prototype technology. All interviewees indicated this was very successful. The effort removed technical risk from the program and yielded a much more specific and understandable set of requirements as a result.

The User was not able to connect the KTRs with the operational user community to the extent anyone desired. Operators are not usually available to spend a lot of time with multiple

KTRs to answer questions about current systems and new possibilities. As argued in chapter 4, this type of KTR interaction with system operators contributes to the transfer of important tacit knowledge. The interviews collectively recognized the importance of this interaction and that it will happen to a much greater extent in the next phase of the program when there is only one prime contractor. The User commented that the technology in the system could prove to be a huge success, but if the operational end users cannot extract the full benefit of the system to improve how they perform their mission the technology will be wasted.

5.3.3.4 Summary of the Program C “Iron-Triad”

Priorities: Program C is in a transition phase as it prepares to down-select to one prime contractor. The interviews indicate there is a common set of priorities shared by the PM and the KTRs, but the User offered a slightly different set of priorities.

Triad Relationship: There were ultimately two separate triad relationships because of the competition, but both appeared to be equally strong and effective. There were also times when all four parties convened and exchanged information. There was an overall sense of strong collaboration among all triad members. The collaboration centered on program success for this phase of the acquisition. In other words, if all parties were not successful in demonstrating the technology and refining the requirements for the next phase of the acquisition, then there would not be a next phase of acquisition. To the KTRs this means no opportunity to win the full system development and production, and to the Government PM and User this means a major delay in fielding a much needed new system.

Summary: The PM demonstrated strong leadership throughout this phase of the acquisition effort. To keep the program moving forward the PM quickly elevated issues to the PEO or the MAJCOM leadership to get action or a decision. This is particularly important within the organizational construct described as part of the ‘confusion tax.’ The PM also demonstrated a great deal of leadership to guide the requirements tradeoffs. The negotiations described in the interviews indicate the PM focused on interests more than positions and used objective criteria to inform the best alternatives. In the end, the program appears to have achieved a great deal of success, in large part due to the leadership of the PM and the constructive and effective relationships among the triad. All parties agree the program requirements are much more defined now and the technology demonstrations have even exceeded some expectations.

5.3.4 Summary Observations from Program Cases

The study of these three case programs provided numerous vignettes which were not detailed in the above descriptions, but that further supported the findings from section 5.2 relative to the role and attributes of an effective PM. Additional summary observations include:

- 1) Programs with a common shared vision and aligned priorities are more productive and achieve greater outcomes
- 2) Strong dyadic and triadic relationships enable more rapid and effective resolution of program issues
- 3) PM leadership is critical to establishing a shared program vision, common priorities, and strong relationships within the programmatic triad
- 4) Effective PM leadership triggers virtuous cycles within the program team by giving guidance to, and empowering members of the contractor and program office team
- 5) “Confusion Tax” is present to some degree on each program and PM leadership can reduce, but not entirely mitigate, its impact to the program

Chapter 6 – Conclusions

The analysis of the interview data and the acquisition literature provides substantial evidence to support how the theories reviewed in chapter 3 inform and contribute constructively to the acquisition system problem, which was framed in chapter 1. For reference the original research question is posed again here:

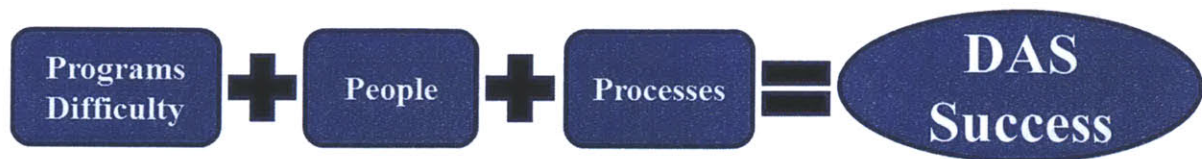
Research Question: *Given that the DAS is a large and bureaucratic enterprise, what can Government Program Managers (PMs) do within the system they are given, to be more productive with the resources provided, in order to deliver greater value to our national defense?*

This research indicates there are in fact many ways Government PMs can act within the current DAS to deliver greater value to our national defense in the form of improved program outcomes and a stronger, more sustainable, acquisition dynamic capability. To support this answer, the following four research conclusions are provided.

6.1 C1: Acquisition People are more important than acquisition Process.

Systems Thinking: This research has been informed greatly by systems thinking. The defense acquisition enterprise has been characterized as a system with PMs identified as, and in fact shown to be, essential elements in that system. Many studies of the acquisition system focus on improving processes and the policies that govern how to navigate those processes. It was argued that these studies are valuable and should continue, but ultimately Processes don't buy things, and Processes don't build things, People do. The research from both the literature review and the interviews indicates all people in the acquisition system make the difference and not just the PMs. Stakeholders are critical and they include both individuals and groups of people. They can be influenced both positively to enable program progress and negatively in a way that slows or even stops program progress. Recall from chapter 4 the "DAS Success Equation" shown again in Figure 39.

Figure 39 -- DAS Success Equation



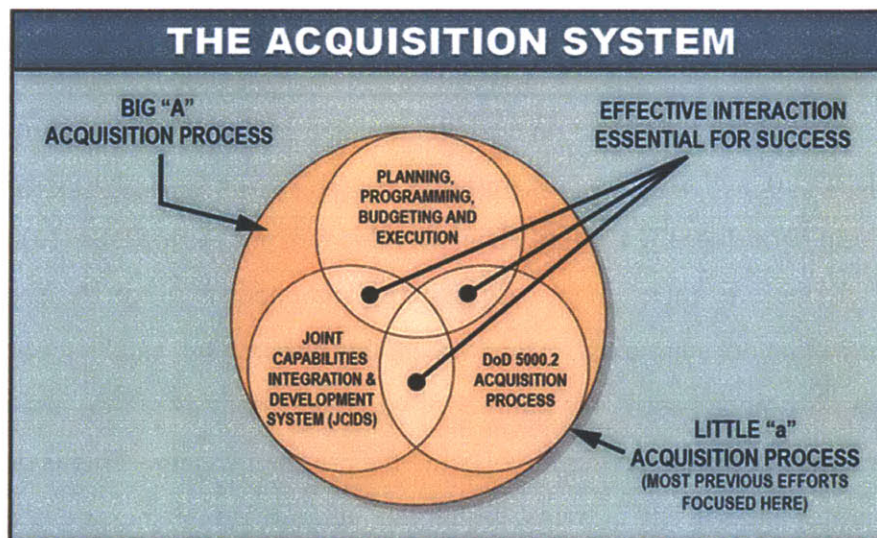
As long as the US continues to pursue new technologies in the form of Difficult Programs, greater DAS success will be a function of People and Process. But the more complex the process, the greater the need for more professional and qualified people. It has also been argued that complexity in Air Force aircraft acquisition has grown to the point on diminishing returns (Marticello 2012).

Dynamic Routines: The defense acquisition system is an elaborate, expansive, and mechanistic process. Recently the DoD revised and updated its Better Buying Power strategy, referring to it as BBP 2.0, and the only new initiative is entitled “Improve the Professionalism of the Total Acquisition Workforce.” It is not clear why this was not part of BBP 1.0. When studies and new policies over-focus on process changes, and under-focus on the people, it creates an illusion of control that does not exist. Many times, this research has established that every acquisition program is unique based on a number of variables. For this reason, the people in the acquisition system must tailor the process to execute the program wisely. This is done through organizational routines and activity systems, which the literature establishes are not static (Feldman 2000; Zott & Amit 2009). Rather, routines change over time in a positive way through the effort of good people. This creates an enterprise dynamic capability. Because acquisition is knowledge work, the human element is key and the PM leads the way by adapting to the local environment and the unique aspects of each program in its current environment. In this way, *People* (including PMs) trump *Process*.

JCIDS & PPBE -- Acquisition People: The 2006 DAPA report shed much light on the grander acquisition challenge by differentiating between Big “A” acquisition and Little “a” acquisition in the graphic included again in Figure 40. While this research did not interview PPBE personnel, the interviews did indicate a belief that JCIDS personnel do not always view themselves as part of the Acquisition System as shown. The interviews indicated a culture where requirements personnel distance themselves from acquisition, rather than embracing their critical role as a member of the Big “A” process. As the DAPA Report indicates, “effective interaction [is] essential for success.” But again, Processes don’t interact, People do. PPBE and JCIDS

personnel *are* Acquisition People, and they are critical to DAS efficiency and effectiveness. Interestingly, the “Total Acquisition Workforce” previously referenced in the BBP 2.0 initiative only includes the little “a” fraction of the Total Acquisition Workforce.¹⁹ JCIDS and PPBE members of the Total Acquisition Workforce have been left out. Initiatives promoting dialectic thinking can help members of all three systems work through discrepancies and contradictions. By seeking to understand the bigger system, members are better equipped to execute their own role in a way that best compliments the other roles in the interdependent system.

Figure 40 -- DAPA View of the Acquisition System



6.2 C2: Acquisition relationship management improves program outcomes.

Numerous acquisition studies have identified the need for effective relationships among acquisition team members, especially the PM, User, and KTR triad, which has been the focus of this research. Many of those studies, including DAPA, 2006; BBP 2.0, 2012; GAO, 2010; OSD 2009, and DBB 2011, were detailed as part of the acquisition literature review in chapter 2. This research has taken the next step to provide qualitative evidence on how those relationships can improve program outcomes. From the sixteen interviews conducted for this research, the most commonly recognized attributes of a highly effective PM include:

- Understanding Stakeholders, which includes both the role and the person in that role
- Relationship Management / Strategic Partnerships / Teambuilding

¹⁹ The designated lead for this BBP 2.0 initiative confirmed this point in a phone conversation on January 14, 2013

It is presumed that interviewees correlated their image of a highly effective PM with one who delivers better program results.

Shared Common Objectives: The interview data also validates the collaborative relationship “Iron-Triangle” model as a constructive way to view with the PM-User-KTR relationship. Program’s B & C both had strong triad relationships and common priorities, which the interviewees cited as a source of strength and value creation toward improved program outcomes. In contrast, the triad relationship on Program A was weaker, the program priorities were not well aligned, and the interviewees collectively recognized many program inefficiencies. All Program C triad members identified preserving the future viability of the weapons system competition as a shared common objective. By placing this “success” at the center of the program, and surrounding it with strong relationships, the triad was able to accomplish many cost – performance trade-offs. This yielded a much better set of requirements, a more cost effective solution, and significantly less technical risk. Similarly, Program B executed very successfully to a shared common vision, which aligned the program office, the MAJCOM, the contractor, and even external stakeholders. Negotiation theory further supports the collaborative relationship model by encouraging partners to move from “Us versus Them” positions, to finding shared common interests evaluated on objective criteria. This enables options for mutual gain, which in turn can improve program outcomes.

Mitigate Confusion Tax: It was argued that every program pays some amount of ‘confusion tax.’ The tax is hard to quantify and harder to include in a budget. There is no specific process to eliminate it, but leadership and strong relationships can mitigate some of its impact to the program. When external stakeholders are misaligned the associated ‘confusion’ can drive a wedge in the program and generate inefficiencies that lead to cost growth and schedule delays. A strong triad relationship can ensure each member is communicating a consistent message to achieve maximum effect for the program. When Congressional staffers were misaligned on funding for Program C, the program office and each contractor collaborated on a common message which would be consistent regardless of who it came from or to whom it was delivered. Staying aligned as a triad showed evidence of better outcomes through minimizing confusion tax impacts, whereas weaker and misaligned relationships proved detrimental to program outcomes.

Example: A final note on the importance of relationships. In September of 2012, then Major General Christopher Bogdan, the Deputy Director of the F-35 Joint Strike Fighter program, had recently arrived on the program and gave an assessment. According to Bogdan, the relationship between the Government program office and the contractor Lockheed had soured to “the worst [he had] ever seen” (Capaccio 2012). Improving the relationship was a high priority and given that the F-35 is the largest defense acquisition program in US history, a better relationship will surely translate to finding options for mutual gain and improved program outcomes.

6.3 C3: Exceptional PMs are strong Dialectic Leaders with managerial and technical competence.

Leader, Manager, Technical Expert: This research has established a set of acquisition leadership competencies based on expert interviews. The conclusion supports similar research on PM leadership and management by Gadeken (1997, 2004, 2005), the GAO (2010), and Wood (2009, 2010). This research is unique in that it spans the perspectives of the PM-User-KTR triad. A redacted list of PM Leadership Competencies is included in Figure 41. This list includes those attributes that 50% or more of the interviewees identified as present in an exceptional PM. The competencies have been categorized into Program, People, and Personal Leadership, which emphasize just how critical leadership is for an effective PM. This even suggests the term Program Leader (PL) may be more appropriate than Program Manager (PM). The Air Force has adopted the term “Materiel Leader” for PMs who are selected for designated critical acquisition positions.

Figure 41 -- Competencies of Highly Effective PMs

<u>ACQUISITION LEADERSHIP COMPETENCIES</u>	<u># of Responses</u>
PROGRAM LEADERSHIP	
Understand Stakeholders (role and person)	15
Relationship Management / Strategic Partnerships / Teambuild	14
Problem Solving, Critical Thinking, Systems & Dialectic Thinking, Enterprise Aware -- Think Bigger than Program	11
Vision & Strategy	10
Technically Capable & Competent	10
Credible & Knowledgeable (Face of the Program)	10
Ensure Effective Organizational Comms (Internal & External)	10
Good / Effective Communicator (Clear/Concise)	9
Know & Do What is Right / Audacious / Bold / Firm	8
Set Expectations / Includes 'Commander's Intent'	8
Ownership / Make Things Happen	8
Objective Advocacy -- Program Honest Broker	8
PEOPLE LEADERSHIP	
Delegate & Empower	9
Respect People (Up-Down-Across) - Personable	8
PERSONAL LEADERSHIP	
Open to Ideas, Input, and Discussion	11
Honesty	9

This emphasis on leadership is not meant to undervalue managerial and technical competence, which were also had high response rates in the interviews. The following three attributes on the list indicate exceptional PMs are: Technically Capable & Competent, Credible & Knowledgeable, and Know and Do What is Right. Technical competence speaks for itself, but Managerial competence certainly requires credibility and being knowledgeable, as well as knowing what to do and doing what is right. Together, the identified competencies and the program case studies soundly support the conclusion that an exceptional PM is a strong leader who also has sufficient managerial and technical competence.

Incomplete Leader: The notion that good PMs have a blend of leadership, management, and technical competence is not new. The literature is extensive and some lean towards claiming leadership is most important (Gadeken 2004), while others claim leadership is over-emphasized and that leadership alone is insufficient for effective PMs (DAU 2009). The balance of PM Hard and Soft Skills has also been examined (Wood 2010). This research finds the Incomplete Leader

model (Ancona et al 2007) helpful to this debate. The Incomplete Leader is one who recognizes their own strengths and augments their limitations with assistance from others. The success generated by the PM from the case Program A provided a good example. PMs who are weaker in strategy, can solicit input from respected strategists. PMs who lack proficiency in contracting skills can establish and leverage a close and trusting relationship with their contracting officer.

The contention here is that incomplete leaders can compensate for some weaknesses in managerial technical competence. To be clear, the interview data was very consistent that a base level of managerial and technical competence is essential for PM success. A pure “born leader” with minimal practical acquisition managerial or technical competence and experience will be at a significant disadvantage on an ACAT I program. Likewise, having more competence in these areas is indeed beneficial to PMs.

But the reason acquisition leadership competencies are the ‘difference makers’ for exceptional PMs is because many of them are difficult, if not impossible, to compensate for with the help of other’s. An exceptional PM cannot enlist others to be honest, trustworthy, open, or respectful of people on his behalf. A PM cannot fake sincerity or humility. These all fall under the categories of People and Personal Leadership and they are competencies the PM must possess on her own to be successful. They also happen to be the competencies others tend to want to follow, and which motivate a willingness to augment the PMs weaknesses for the benefit of the program and its outcomes.

Dialectic Program Management: This term was introduced in section 2.3 of the thesis and emerges from the data and analysis as a key element of exceptional PMs. Dialectic thinking was third on the list in total interviewee responses, as it was coupled to critical thinking, systems thinking, problem solving, and being able to think bigger than the program. But also, the ability to understand and relate to other’s views is essential to building stakeholder relationships and strategic partnerships. Recall stakeholders and relationship management together garnered the highest number of interviewee responses in defining exceptional PMs. The incomplete leader model strongly suggests outside input is crucial for any effective leader. Two suggested ways to build relationships, include: “Spend time trying to understand others’ perspectives, listening with an open mind and without judgment” and “Before expressing your ideas, try to anticipate how others will react to them and how you might best explain them.” (Ancona et al 2007, p.96)

Other leadership competencies in Figure 41 support the importance of dialectic program management, including being Open to Ideas, Input, and Discussion; being an Objective Advocate for the program; having Honesty; and Treating People with Respect. One PM interview discussed frequently having to deal with “multiple agendas” on many program issues. The only way the PM is able to navigate them successfully and yield better program outcomes, is through the use of objective criteria and data gathering to, “make sure there are no lies, and get the facts across in order to reveal the truth.” This is an excellent example of dialectic program management.

6.4 C4: Strong PMs build acquisition “dynamic capabilities” in the Small and the Large, which provide important contributions to US national security

PMs who cultivate and grow the competencies outlined in the previous conclusions, either through attending formal training or engaging in personal development, create a tremendous force-multiplying effect. PMs have been established as Program Leaders and they play a key role in the stability and successful interaction of the “Iron-Triad.” Also, the research found how Program Manager/Leaders can have far reaching positive and negative impact on program outcomes by establishing an enterprise culture which feeds virtuous or vicious cycles within the larger program team. This culture generation in the program transforms routines over time into dynamic capabilities. This works to great affect “in the small” on any specific program, but also “in the large” for the entire DAS.

In the Small: Effective PMs lead their teams and establish a culture of dialectic thinking that spreads beyond just their own actions, to the thinking and actions of the members of their program office and to others with whom the program team interacts. By establishing relationships and growing this dialectic culture with the other triad leaders, the sphere of influence grows across the program. This has been substantiated in the research conducted for this thesis, in particular the findings from question #6 of the interview. Over time, the program team embraces greater innovation and creativity, which provides greater program outcomes and contributions through the collective organizational learning and refinement of routines and activity systems. This is acquisition dynamic capability in the small.

In the Large: As discussed, the DAS is large, complex, bureaucratic, and mechanistic. Yet in many ways, the DAU trains the workforce through means of non-mechanistic compliance.

Common DAU solution descriptions include phrases like, “it depends” and “tailoring the process.” Likewise, in a recent article, Mr. Kendall, the USD (AT&L) answers the question, ‘What is the Optimal Program Structure?’ The answer is that, “either: (A) There is none, or (B) There are an infinite number.” (Kendall 2012b, p.3) The point is that every program is unique and PMs must be adept at structuring a program in the way that best manages the many unique variables and circumstances associated with that program. The Defense Acquisition Executive concludes his article with this expectation.

What I’m looking for fundamentally is the evidence that the program’s leaders have thought carefully about all of the factors that I’ve mentioned—and many others. I look for that evidence in the nature of the product the program is acquiring and in the structure the program’s leaders have chosen to use. The thinking (and the supporting data) that went into determining that specific and often unique structure is what I expect to see in an acquisition strategy, and it is what I expect our leaders to be able to explain when they present their program plans. (Kendall 2012b, p.3)

By striving for this culture of thoughtful program leadership across the entire Defense Acquisition Enterprise, Kendall is striving to achieve a dynamic capability in the large. It is paramount for the future of US national security to have an acquisition system which can most effectively and efficiently deliver military capability to our combat forces. The ability to do continue to do this decade upon decade requires more than just DoD 5000 process refinement, it takes dialectic leaders across the entire Big “A” Total Acquisition Workforce, not just PMs doing little “a” acquisition process. When the US achieves this goal, it will have a national strategic Dynamic Capability that is at least equal to, if not greater than, any single military capability the acquisition system has ever delivered.

6.5 Conclusions Summary – Support for Hypothesis:

The four conclusions from this research are provided here for ease of reference and in support of the original three hypotheses.

- C1: Acquisition People are more important than acquisition Process
- C2: Acquisition relationship management improves program outcomes
- C3: Exceptional PMs are strong Dialectic Leaders with managerial and technical competence
- C4: Strong PMs build acquisition “dynamic capabilities” in the Small and the Large, which provide important contributions to US national security

Collectively, the four conclusions described in this chapter provide support all three hypotheses. A specific mapping of conclusions (C1-C4) to hypotheses (H1-H3) is provided in Figure 42.

Figure 42 -- Conclusions Mapped to Hypotheses

	H1	H2	H3
C1	X	X	
C2		X	
C3	X	X	
C4			X

Chapter 7 – Recommendations

The research findings and conclusions presented in the previous chapters provide an opportunity to focus attention on some meaningful ways to improve defense acquisition program outcomes. Toward this end, the following recommendations are provided. They are offered for anyone seeking to achieve greater value delivery from the large, complex, bureaucratic defense acquisition enterprise. This is the enterprise that must continue to ensure our warfighters have the capability advantage necessary to perform their missions successfully and return home safely.

The original focus of this research was aimed at the Government Program Manager and what the PM could do to improve program outcomes. For this reason, the recommendations begin at the level of the PM, then zoom out to broader DoD policy recommendations, before ending with future research opportunities. An overview of these four major categories follows:

Category 1: PM Self-Improvement

Category 2: Efforts to Professionalize PMs

Category 3: Moving Towards a Holistic Acquisition Enterprise

Category 4: Future Research Opportunities

7.1 Category 1 – PM Self-Improvement (for PMs at all Levels)

R1: Question everything and ask “Why?” Time is too precious to be spent on things that have minimal value and the acquisition environment is too complex to miss any opportunities to learn. At best, the PM avoids unnecessary work (saving time and money), and at worst, the PM gains new knowledge that feeds future innovation, creativity, and understanding. Seeking reason and understanding is the first step in the application of systems, and dialectic thinking.

R2: Study leadership and seek ways to apply it in the acquisition program environment.

The best PMs are leaders, and leadership takes time to develop and mature. Anyone aspiring to a position of greater responsibility can learn, explore, and practice leadership competencies. Build a leadership library of books, artifacts, and examples that personally resonate with exceptional leadership.

R3: Learn to be an objective advocate for the program. Practice the art of detaching emotionally from the program and advocating for it as if conducting a truly independent investigation of options. This builds valuable credibility with program stakeholders who have far more interest in the best option, than the option to which the PM has grown closest. Let the facts tell the truth.

R4: Seek and embrace feedback at every opportunity. This includes feedback such as 360-degree assessments from supervisors, peers, and subordinates. All PMs are human and no one has all the answers. Actively listening to input from others opens up perspectives, builds trust, and provides a great way to validate strengths and identify weaknesses. That last point is particularly important for the “Incomplete Leader.”

R5: Examine critical relationships, for frequency of communication, trust, and openness. Work with key stakeholders to find mutually satisfactory ways to improve relationships through communication and building trust. The process will reveal deeper understanding on both sides of the relationship, and pay dividends in the future.

R6: ‘Pay it forward’ to other acquisition professionals. Mentor and coach the workforce. Create and embrace opportunities for knowledge transfer to feed the ‘dynamic capability engine’ in the program environment.

7.2 Category 2 – Efforts to Professionalize PMs

R7: Include acquisition Leadership at every level of Program Management curriculum.

This research provides the latest evidence in an already compelling case that exceptional PMs are also strong Leaders. Yet the DAU curriculum falls woefully short on developing Acquisition Leadership Competencies, especially beginning at the lowest levels. The acquisition professional development program (APDP) curriculum for PMs should have a consistent thread of PM leadership development through every PM course at every level. To be clear, this is different than courses like ACQ (450), ACQ (451), and ACQ (453),²⁰ which are designed for providing acquisition training to those who are in leadership positions.

²⁰ These three senior acquisition courses are described in Appendix 1 of the FY2009 DOD Civilian Strategic Human Capital Plan Update The Defense Acquisition Workforce Plan (p. 1-9)

Relying solely on separate military leadership development for PMs is flawed for two reasons. First, there are many qualified civilian PMs who are exposed to far less professional military education (PME) than their military PM counterparts. The civilians would benefit greatly from a leadership component in their acquisition training. Second, acquisition leadership differs from military operational leadership in several important ways. For officer grades O-1 to O-3, military operational leadership involves 18-22 year-old soldiers, sailors, marines, and airmen in operational or combat settings. This is much different than the acquisition environment. Program management offices usually have a hybrid of military, civilians, support contractors (many who are retired military), special technical experts (i.e. rocket scientists), and a multitude of functional disciplines.

Many of these folks are quite a bit senior to a young military officer or civilian PM. Learning to balance technical proficiency and leadership development in that environment is difficult to do entirely on one's own. Not only can some specific tailored leadership training help, it also begins to set the expectation for what will be expected of PMs well in advance of when they inherit a multi-billion dollar ACAT I program.

Leadership training should be tailored to the appropriate context, based on PM experience level, and in a technical field like defense weapon system acquisition, it cannot start too early. The Gordon-MIT Engineering Leadership (GEL) Program at the Massachusetts Institute of Technology (MIT) begins working with sophomore year engineering students who aspire to be leaders in the technology environment. This author knows this first hand as a volunteer who played the role of a senior stakeholder in one particular GEL program exercise.

R8: Adopt greater use of experiential learning techniques for PM training. Many of the leadership competencies are difficult to develop through didactic learning. Greater use of experiential learning such as case reviews, discussion, and even role play scenarios can provide great benefit through 'learning by doing.' Competencies particularly suited for this type of learning include Stakeholder Analysis, Negotiation, Influence, and Complex Problem Solving. Having recently completed a graduate level "Power & Negotiation" course, the author has personally witnessed how experiential learning improves negotiation skills. Using cases and role play gives students real experience with how they can work with other negotiation parties to find 'options for mutual gain' and improved outcomes for all involved.

R9: ‘Change of Charter’ Ceremonies. Every DoD component with acquisition programs should adopt a model similar to the Army’s ‘Change of Charter’ ceremony. This ceremony is used to establish a clear transition of authority for an acquisition activity from one PM leader to another. The Air Force was performing Change of Command ceremonies for several years prior to 2009 when they reorganized and moved away from materiel Wings, Groups, and Squadrons. While the Wing/Group/Squadron organizational construct was removed deliberately for several valid reasons, having a clear and public transfer of responsibility was not one of them. Demonstrating the transfer of RAAs from one acquisition leader to another, at a specific moment in time, carries symbolic significance for the outgoing leader, the incoming leader, and those who work to support them both. Not only does it clearly establish the new PM leader, it also instills in the PM, the expectation and role they must live up to as they serve the interests of the program mission and the team responsible for its execution. Anyone who has ever had the honor and privilege to command, as this author has, understands explicitly the idea of servant leadership.

R10: DoD components should ensure PMs have sufficient acquisition experience prior to placing them in a significant role. The Air Force is the only Service that has a dedicated acquisition officer career field. Army & Navy officers tend to spend 10-14 years in operational assignments prior to transitioning into the Program Management. There is no question that having operational military experience provides valuable insights and leadership development for anyone transitioning into the role of leading an acquisition program. But mid-career officers coming from the field hit a very steep learning curve. They are at a significant disadvantage trying to make up for 10-14 years away from learning the very complex acquisition system and the skills that enable success as a PM. Others (Teece and Pisano 1994) have concluded that building dynamic capabilities in firms, for which PMs certainly play a critical role, can take years or decades. In several interviews for this research, PM experts expressed this concern based on their knowledge of the students passing through the PMT-401 Program Managers course. It can take most of a career to make a great PM. It takes years to become proficient in acquisition strategy development, the art of making technology cost trades, and hard PM skills in areas like budgets, schedules, earned value, and contracting. Over time, one learns to navigate DAS policies, ‘beat the bureaucracy’, understand stakeholders, and hone their influence and negotiation skills that are vital to interacting with others not in their direct command.

Indeed, this thesis emphasizes leadership, but not at the expense of sufficient managerial and technical competence. Given the types of competencies exceptional PMs must have across the leadership, managerial, and technical spectrum, and the complexity of the three decision making systems (JCIDS, PPBE, and the DoD 5000) they must learn, it is hard to imagine successfully building a highly competent ACAT I PM to lead a multi-billion dollar program in anything less than 15 years of acquisition experience. The OSD Study on PM Training and Experience (DAU 2009) also emphasized these points. Also, for comparison, it is rare that a Government PM finds themselves working with a younger contractor counterpart. What is more common is interacting with someone who is very senior in their company who has ten or more years of additional engineering and project experience, compared to the Government PM.

7.3 Category 3 – Moving Towards a Holistic Defense Acquisition Enterprise

7.3.1 Move Beyond Big “A” and Little “a” and Define the Enterprise

The DoD does not have a universally adopted definition for its “Acquisition System.” After analyzing 128 previous defense acquisition studies, the DAPA project (2006) took great care to articulate its findings by first defining the Acquisition System using the now familiar graphic in Figure 43. That is to say, the bigger “Acquisition System” *includes* Requirements and PPBE. In contrast, both the “JCIDS View” and the “DAU View” are provided in Figures 44 and 45 below.

Figure 43-- DAPA's View of "The Acquisition System"

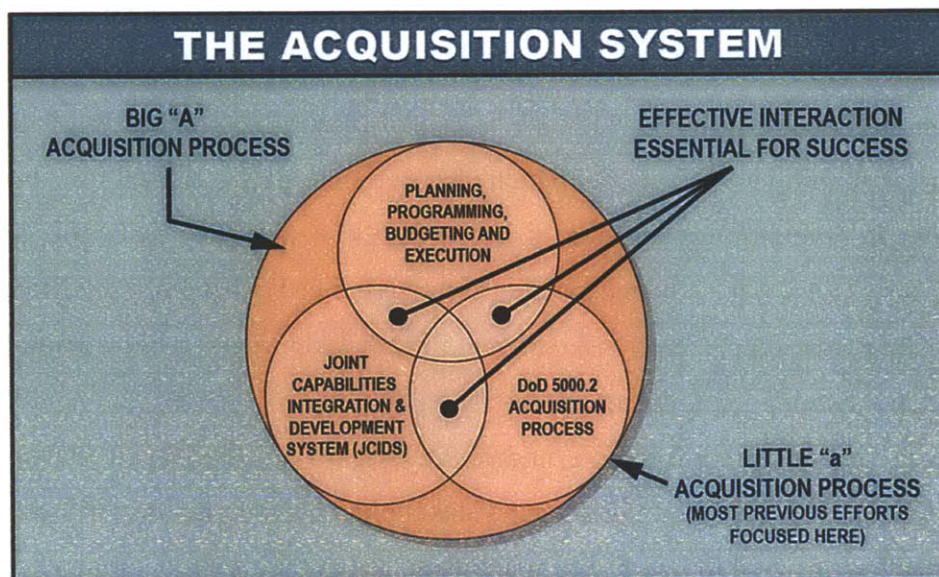
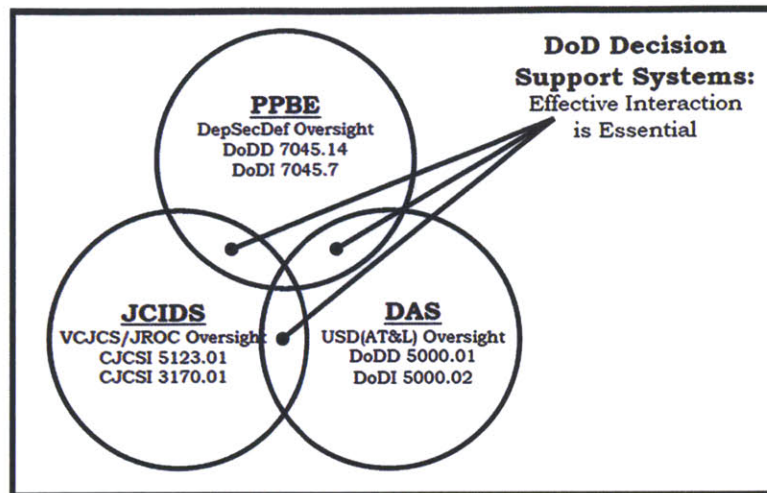
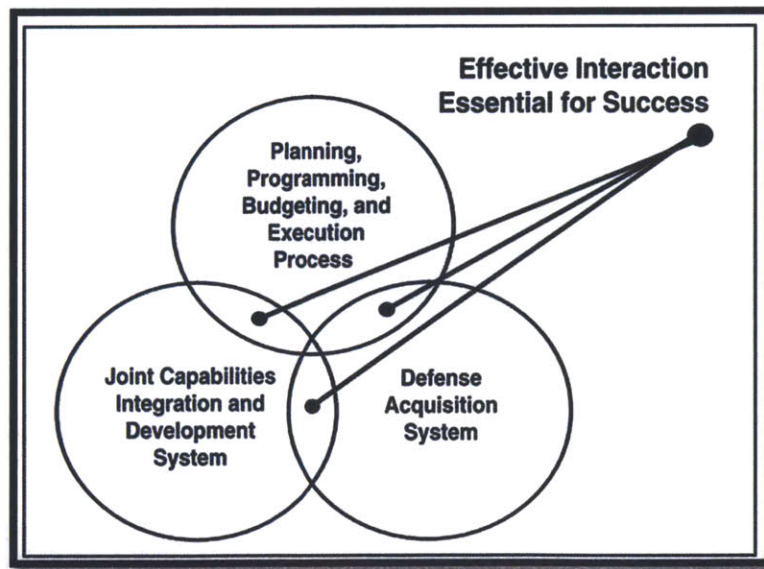


Figure 44 -- JCIDS View of “Three Critical Interacting Processes”



Source: Gortney 2012, CJCSI 3170.01H, p. A-5

Figure 45 -- DAU View of “Three Major Decision-Support Systems”



Source: Brown 2010, p. 18

Here is what is *common* across all three “Views”:

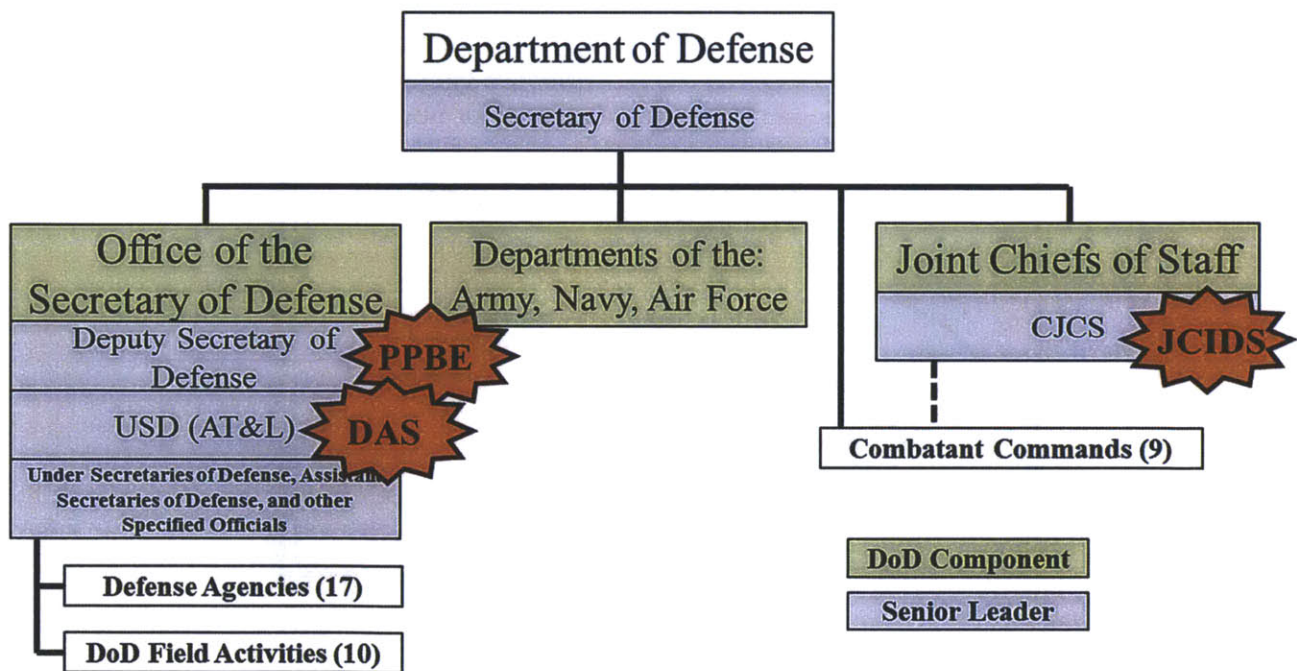
- Three overlapping circles, with PPBE at the top, JCIDS on the left, and a circle with the word “acquisition” on the right
- All three make this point relative to the three circles: “effective interaction is essential for success”

Here is what is *different* across the three “Views”:

- DAPA draws a larger circle around the three smaller circles and calls it the Big “A” Acquisition Process, which differs from the Little “a” DoD 5000 acquisition process in the lower right circle
- DAPA refers to all three together as “The [Defense] Acquisition System,” whereas the JCIDS and DAU views put the DAS in the lower right circle.

To understand these different perspectives one only needs to examine the DoD’s organizational construct in Figure 46 (Note: this is a redacted version of a more complete DoD organization included in Appendix D). Only at the level of the Secretary of Defense do all three organizational owners, of the three decision support-systems, come together. The Joint Chiefs of Staff “own” JCIDS, the Deputy SECDEF “owns” the PPBE process, and the USD (AT&L) “owns” the DAS, or DoD 5000 series defined process.

Figure 46 -- DoD Organizational Owners of PPBE - JCIDS - DAS



The DAPA tasking memorandum from the acting Deputy Secretary of Defense (2005) authorized, “an integrated acquisition assessment to consider every aspect of acquisition,

including requirements.”²¹ Clearly DoD views Requirements as *part of* the larger Acquisition System, and not just a separate process that interacts with the acquisition system. This is consistent with the vast majority of the experts interviewed for this research. As one expert PM stated, “JCIDS does not exist to conduct air-land warfare. It exists to help buy stuff.” Also recall the acquisition literature review in chapter 2 which noted a very consistent theme of the need to improve system interactions between the PM and the User to refine and trade-off requirements. To be absolutely clear, moving JCIDS to be the purview of the USD (AT&L) or vice versa is Not the argument being made here.

This point may appear trivial, but in fact is quite profound. To understand and improve any system, there must be a common understanding of that system and its boundaries. To this end, DAPA coined the terms Big “A” and Little “a”, which are informative of the challenges, but ultimately untenable in training and practice. The terms ‘Big A’, ‘Little a’, and ‘DAS’ are not used consistently, which only further obfuscates the important and effective interactions of the supporting systems. It is cumbersome in the acquisition setting to stop mid-sentence and clarify if the previous use of the word “acquisition” had a capital “A” on it or not. Human interactions are at the core of people-powered system interactions such as those in JCIDS, PPBE, and the DoD 5000 series. People need to see themselves as part of the larger Defense Acquisition Enterprise in order to minimize system inefficiencies. Big A / Little a terminology is unwieldy, ineffective, and the DoD must do better.

R11: DoD must adopt a consistent and holistic definition of its Acquisition Enterprise

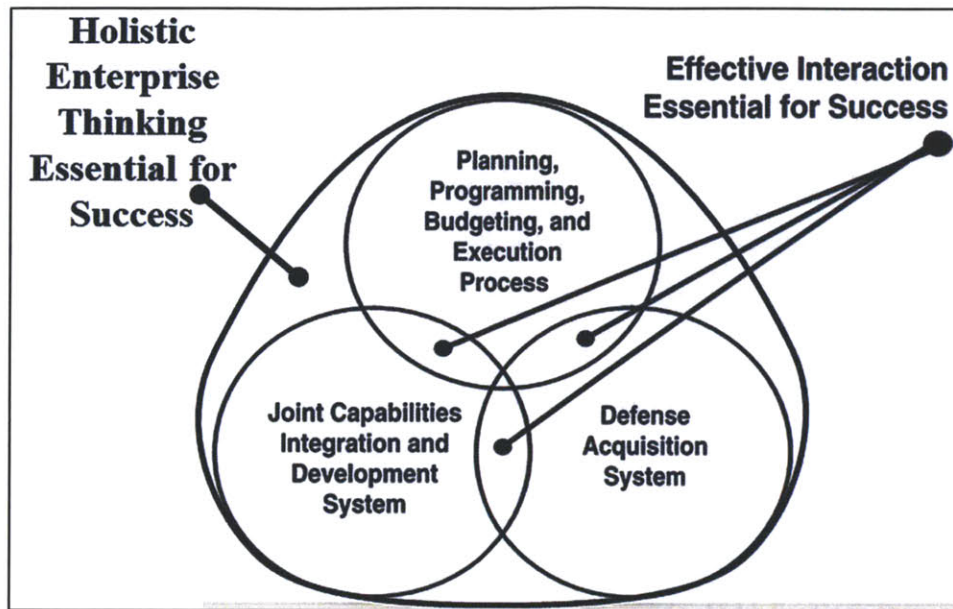
One possible construct is shown in Figure 47 and described as follows:

Defense Acquisition Enterprise: The virtual organizational construct for the LCMS, which includes the DAS, nearly all of JCIDS, and the PPBE process when it is functioning in support of the Enterprise.

Defense Acquisition System: Refers to system of management as governed by the DoD 5000 series documents. This system is on the same tier as the other two decision-support systems of PPBE and JCIDS.

²¹ Emphasis added -- Tasking memorandum included in DAPA Executive Summary (Kadish 2005)

Figure 47 -- Thesis View of Defense Acquisition Enterprise



The benefit of this differentiation is that it brings clarity to the level at which one is investigating, learning, or executing acquisition. Future studies can be more clear at which level the study is targeted and also who is accountable and responsible for findings and recommendations. The USD (AT&L) led BBP 2.0 strategy provides the most recent example in its new initiative entitled, “Improve the Professionalism of the Total Acquisition Workforce.” Here the word “Total” might imply the total acquisition *enterprise* workforce, but in actuality it only refers to the DAS workforce. BBP 2.0 makes no attempt to improve the professionalism of the rest of the DoD workforce involved in acquisition (i.e. JCIDS or PPBE) even though it has been universally accepted that their “effective interactions are essential for success.” This point leads directly into the next recommendation.

R12: Professionalize the Defense Acquisition Enterprise Workforce: Nearly all acquisition professionalism and training is targeted at the DAS workforce. This does not mean PPBE and JCIDS personnel do not receive training about their own systems, or even about how they interact with other decision-support systems. Indeed they do receive such training. More to the point, if our operational forces strive to “Train as they Fight,” why shouldn’t the acquisition enterprise workforce “Train as they Buy?”

A view of the DoD workforce is provided in a complex graphic included at APPENDIX E. This view clearly draws the line of the acquisition workforce at the DAS level versus the Enterprise level. The graphic comes from The Defense Acquisition Workforce Improvement Strategy, which is a 329-page plan that includes not one instance of the term JCIDS. Similarly, PPBE is only referenced with regard to interfacing with it to ensure proper budgeting for training courses. The DoD can do more to professionalize all members of the Defense Acquisition Enterprise by adopting these additional recommendations:

R12-1: Expand DAU to become the “DAEU”: There is no need for a new academic center with responsibility for holistic acquisition enterprise training. Rather, expand the DAU to become the Defense Acquisition Enterprise University to include training for JCIDS and aspects of PPBE that support Acquisition. If necessary, move the expanded DAU to report to the Deputy Secretary of Defense rather than the USD (AT&L). But do not lose the benefits of integrated training and curriculum development simply because of “box and wire diagram” limitations on organizational charts.

R12-2: Create JCIDS and PPBE related APDP Codes: Every other acquisition functional category has been included in APDP. It is time to add JCIDS (Requirements) and PPBE (Programing) specific training and experience requirements, and certification criteria.

R12-3: Train the Way We Buy: There is already great value demonstrated with integrated training. PMT-401 typically includes a small number of industry partners in each class which provides tremendous value to the learning experience for all students. In a holistic “DAEU” training construct, there would be ample opportunity to include programmers and requirements personnel in DAS classes, and vice versa. Again, Train as We Buy.

R12-4: Utilize all Training Opportunities: With a holistic approach to the Defense Acquisition Enterprise there is the opportunity to introduce Acquisition into other cross-discipline training opportunities. One example of this is the Air Command & Staff College, which educates mid-career Air Force officers, along with equivalent officer grades from other Services and nations, as well as a smaller number of civilians. Many ACSC students arrive from operational assignments and upon graduation, they enter various staff roles that interface with, or support, the Acquisition Enterprise. Similar to exposing everyone in these training environments

to broad DoD concepts like Joint Campaign Planning, students can begin to understand how to facilitate an efficient and effective acquisition enterprise.

R12 Summary: Efficient and effective execution of defense acquisition programs is important. Mistakes can cost millions, or even billions of tax dollars. Acquisition involves many people outside of the ‘traditional’ acquisition workforce. There should be a more holistic and concerted effort aimed at helping all Acquisition personnel contribute in the best way, to enable the greatest success, through performing their own role and interacting optimally with other acquisition personnel.

7.4 Future Research Opportunities

7.4.1 Dissect the Careers of the ‘Elite PMs’

If better PMs yield better program outcomes, and the best PMs yield the best program outcomes, then how do we identify, develop, and grow the best PMs? At least for Air Force acquisition officers, with a dedicated career track, one could ask if it is luck or a deliberate path that balances a recipe of assignments and experiences given to those who demonstrate early aptitude. By first identifying approximately 50 superlative Air Force PMs (either still active or retired), one could do a detailed content analysis of all of the annual officer performance reports (OPRs) for that set of officers to help get at this question. An Air Force acquisition officer can spend a career preparing to lead an MDAP. Along the way, the PM could serve in a variety of research labs, product centers, test centers, and logistics centers. They may have career broadening assignments like Education with Industry (EWI) or an operational exchange tour, in addition to time away from acquisition jobs for professional military education. This proposed research could start to identify patterns of developmental and experiential assignments for the best PMs. Also, by doing content analysis of OPRs, the language used to describe the PM over a 20-30 year career time could be mapped to the acquisition leadership competencies identified in this or similar research.

7.4.2 Study Program Success as Much as Failure:

This research focuses on value creation as a means to improve program outcomes. More often studies focus on how mistakes contribute to program failures. There should be a greater effort to gain insight from successful acquisition programs. The GAO Report from 2010

provided key factors to stable acquisition programs. But the DoD’s response to the report indicated less than full support for the GAO’s findings by stating, “They are based upon small, less costly and less complicated programs and may not scale to large, software intensive systems.”²² If meeting or exceeding C-S-P targets is the only measure for building a sample set of “successful ACAT I programs” to study, then a study of success may never happen.

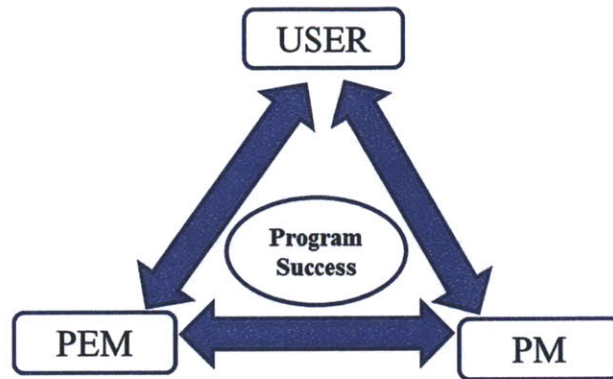
This research thesis took great care to discuss the challenges associated with defining and measuring acquisition success, which proved to be an elusive term. Surely those who care about improving acquisition could agree on a set of ACAT I programs to analyze for meaningful observations that might further validate or refute the GAO’s findings. Three suggestions include, 1) targeting a set of large ACAT I programs that have the lowest percentage cost and schedule variances, or 2) survey Service and OSD acquisition staff to develop a set of program success criteria, or 3) simply use the same survey approach to identify a set of programs based on the staff’s own knowledge of programs they believe to be successful. Either way, there are sure to be valuable insights from such programs as to how they succeeded in overcoming programmatic challenges and delivered critical military capability.

7.4.3 Expand the Application of the Collaborative Relationship Model

This research identified the programmatic “Iron-Triangle” of super-salient stakeholders as PM-User-KTR. The collaborative relationship model proved to be a constructive way to examine improved program outcomes when program success is moved to the center and surrounded by strong triad relationships. Over the course of this research it became apparent there is another triad relationship that is very important for any program. This is referred to as the Government “Iron-Triangle” and its members are PM-User-PEM. The Program Element Monitor (PEM) is on the Secretary of the Air Force Staff, and their main function is to monitor and engage the PPBE process for their program, which is identified by a unique program element code. This triad represents the three decision support systems in the DAPA Big “A” Acquisition System and is shown in Figure 48. A research effort similar to this thesis could focus on the Government Triangle to find value creation and improved program outcomes based on a shared common vision for program success and strong triadic relationships.

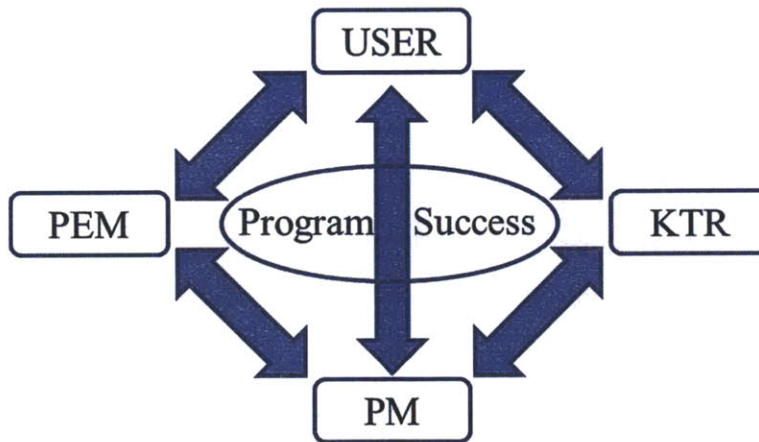
²² DoD memorandum to the GAO commenting on the draft 2010 GAO Report is included as Appendix II of the final GAO report (Sullivan 2010, p. 40)

Figure 48 -- Government "Iron-Triangle"



This proposed research could be further extended by merging the Government and Programmatic relationship triangles and analyzing relationship interactions at multiple levels within the DAS. First, both the Government and the Program Triangles share a common relationship between the PM & User. By merging these two important collaborative relationship triangles along the PM-User dyad, the result is a collaborative diamond relationship model as shown in Figure 49.

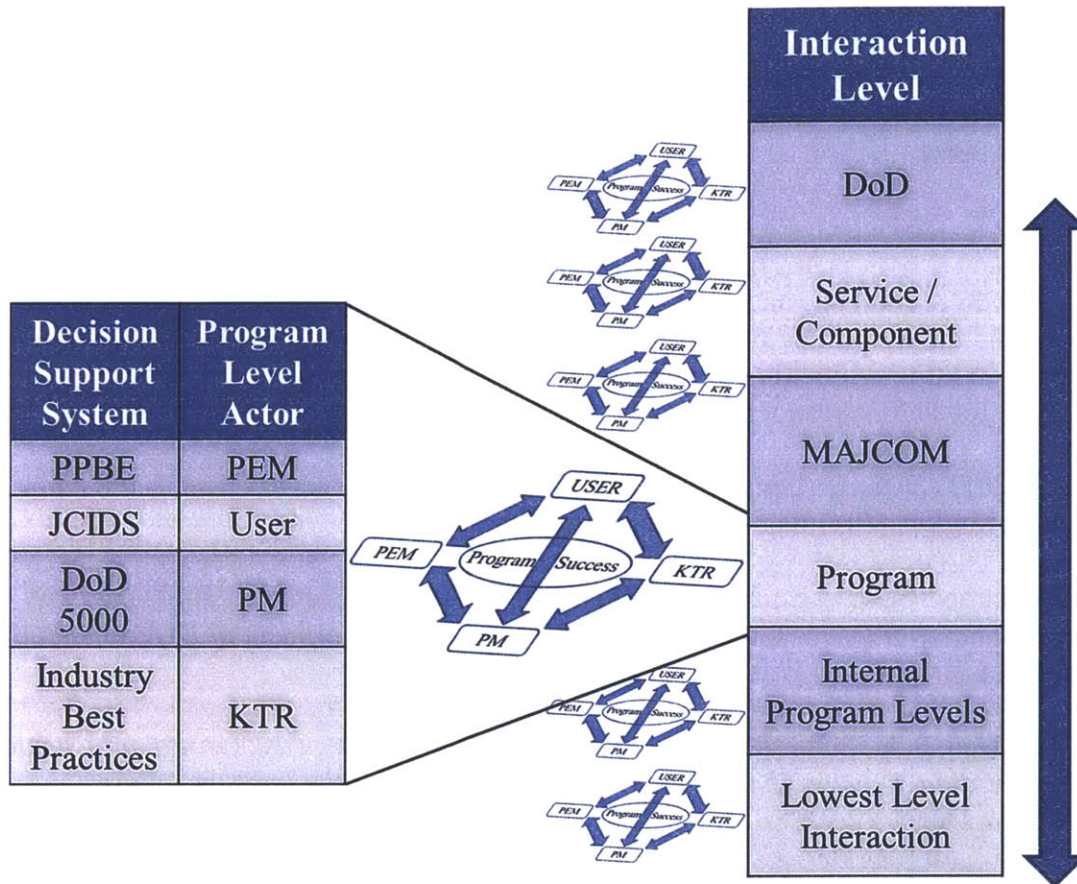
Figure 49 -- Collaborative Diamond Program Relationship Model



Second, it is noted that the four stakeholders in this diamond represents four separate decision support systems, which are identified as JCIDS, PPBE, DoD 5000, and Industry Best Practices. In every program, these four decision support systems, and their stakeholder lead, constitute a recurring interaction pattern at multiple levels in the DoD. Interactions span a hierarchy from the lowest level program interactions (e.g. government engineer, contractor

engineer, and user & PEM staff representative) to the highest level interactions among the most senior DoD and Industry leaders. This is shown below in Figure 50.

Figure 50 -- Recurring Program Relationship Interactions



This graphical representation of the many key relationship interactions at multiple levels of a defense acquisition program provides a framework of analysis that is much greater than what was performed in this thesis. By analyzing both successful and failed programs, at multiple levels, an investigation could attempt to find those levels, or specific dyadic relationships, which most contributed to the associated success or demise of a program.

Ultimately, all of these future research opportunities are directed at a common goal of understanding how the defense acquisition system can best achieve the status of a superb US National Security Dynamic Capability.

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APPENDIX A – PM Competency Data Tables from CNA 2008 Study

Technical Competency Units: Frequency, Criticality, and Proficiency

Unit of Competence	Frequency	Criticality	Proficiency	Average Frequency & Criticality
Unit 4: Managing Programs and People	3.36	3.37	3.25	3.36
Unit 2: Overseeing the Contracting Process	2.89	3.19	3.04	3.04
Unit 5: Process Management	3.01	3.05	3.09	3.03
Unit 7: Technical Management Process	2.87	3.04	2.89	2.95
Unit 8: Identify and Protect Technologies	2.52	2.83	2.40	2.67
Unit 3: Life-Cycle Planning and Production	2.45	2.74	2.77	2.60
Unit 6: Life-Cycle Budgeting and Financial Planning	2.41	2.67	2.49	2.54
Unit 9: International/Joint/Inter-Agency Program Management	2.39	2.54	2.36	2.47
Unit 1: Information Management (IM), Information Technology (IT) And Software Management	2.32	2.58	2.52	2.45

Source: Tregor et al 2008, Table 27, p. 37

Professional Competencies: Frequency, Criticality, and Proficiency

Competency	Frequency	Criticality	Proficiency	Average Frequency and Criticality
Interpersonal Skills	4.63	4.34	4.11	4.49
Team Building	4.36	4.24	4.00	4.30
Accountability	4.32	4.16	4.02	4.24
Problem Solving	4.25	4.17	4.01	4.21
Flexibility	4.29	4.12	3.98	4.21
Oral Communication	4.17	4.16	3.93	4.17
Decisiveness	4.16	4.13	3.94	4.15
Resilience	4.13	4.04	3.92	4.09
Influencing and Negotiating	4.10	3.96	3.81	4.03
Partnering	4.01	3.95	3.77	3.98

Source: Tregor et al 2008, Table 31, p. 41

APPENDIX B – Pre-Interview Information Summary

Interviewer: Lt Col B. Marc Baumann, USAF

Purpose: Research Thesis data gathering for Master's Degree in System Design & Management

Interview Candidates: ACAT I Gov't Program Managers (PM) and their leader counterparts for both the prime contractor (KTR) and the operational requirements (USER).

Overview of Research: The thesis research focuses on the ways in which the Government PM can affect greater value delivery for his/her program by functioning as both a program leader and as a boundary spanner. It is assumed the PM has a solid foundation of program management "hard skills" as a prerequisite for the position, and thus, the research focuses on areas for greater program success (Value Delivery) through other means. Of primary importance to the research is how alignment of priorities and strength of the relationships between USER-PM-KTR contribute to increased value delivery, and in turn, how misalignment on priorities and weak relationships can decrease program value delivery.

Time Requirement: Est. 1 hour w/ possible follow up to correct notes or amplify key themes

Question Set: 10 questions in 3 Sections

SECTION I – Focus on High-Level Acquisition System Context and Success Definition

- 1) What is the Role and Purpose of the Acquisition System?
- 2) How do you describe the Acquisition System? What is part of, vs. outside of the system?
- 3) How do You define success in the acquisition world?

SECTION II – Focus on Government Program Manager

- 4) What is the Role of the Government PM?
- 5) Think of an exceptional PM you know. One who has succeeded and is recognized as a guy/gal who really knew the job well. What made that PM really good?
- 6) Can you think of examples of how members of the program team take on the characteristics of their leader?

SECTION III – Focus on Relationships among Super-Salient Stakeholders (PM-USER-KTR)

- 7) Do you believe your program is well aligned on top priorities?
- 8) Describe your relationship with the Lead _____ (Pick One: User, KTR, Gov't PM)
- 9) Describe your relationship with the Lead _____ (Pick Other: User, KTR, Gov't PM)
- 10) How does PM-USER-KTR triad for your program interact?

APPENDIX C – PM Competency Tables

Table 1-- Thesis Research Mapped to PM Competency Literature

<u>PM COMPETENCY</u>	<u>THESIS RANK</u> Based on Frequency	<u>PM COMPETENCY LITERATURE</u>							<u>RANK</u> Based on Frequency
		<u>DSMC</u> (1990)	<u>Lumb</u> (1991)	<u>NPS</u> (1995)	<u>Gadeken</u> (2004)	<u>CNA</u> (2008)	<u>Wood</u> (2010)	<u>PM Toolkit</u> (2011)	
Understand Stakeholders (role and person)	1	X		X		X		X	2nd
Relationship Management / Strategic Partnerships / Teambuild	2	X	X	X	X	X	X	X	1st
Problem Solving, Critical Thinking, Systems & Dialectic Thinking, Enterprise Aware --	3	X	X	X		X	X	X	1st
Open to Ideas, Input, and Discussion	4	X		X		X	X		2nd
Vision & Strategy	5	X		X	X		X	X	2nd
Technically Capable & Competent	6	X	X	X	X		X	X	1st
Credible & Knowledgeable (Face of the Program)	7	X		X					3rd
Ensure Effective Organizational Comms (Internal & External)	8				X	X	X	X	2nd
Good / Effective Communicator (Clear/Concise)	9		X		X	X	X	X	2nd
Delegate & Empower	10	X		X	X	X		X	2nd
Honesty	11	X		X					3rd
Know & Do What is Right / Audacious / Bold / Firm	12	X		X	X	X	X	X	1st
Set Expectations / Includes 'Commander's Intent'	13					X	X	X	2nd
Ownership / Make Things Happen	14	X		X		X	X	X	2nd

<u>PM COMPETENCY</u> (Continued)	THESIS RANK Based on Frequency	<u>PM COMPETENCY LITERATURE</u>								
		<u>DSMC</u> (1990)	<u>Lumb</u> (1991)	<u>NPS</u> (1995)	<u>Gadeken</u> (2004)	<u>CNA</u> (2008)	<u>Wood</u> (2010)	<u>PM</u> <u>Toolkit</u> (2011)	<u>RANK</u> Based on Frequency	
Objective Advocacy -- Program Honest Broker	15	X		X					3rd	
Respect People (Up-Down-Across) - Personable	16		X	X	X	X	X	X	1st	
Select Right Talent for Team	17	X				X			3rd	
Know Your People & What They Can Do	18	X		X		X			2nd	
Apply Interpersonal Skills	19	X	X	X	X	X		X	1st	
Coach and Mentor	20			X	X	X	X		2nd	
Motivate & Inspire	21		X		X	X		X	2nd	
Trustworthy	22		X		X		X		2nd	
Humility	23								3rd	
Confident	24	X	X						3rd	
Entrepreneurial / Innovative	25	X		X					3rd	
Integrity	26		X		X			X	2nd	
Detach -- Don't Take Things Personally	27					X			3rd	
Meet Commitments -- Follow-through	28					X	X		3rd	
Good Processes	29								3rd	
Patient & Calm	30			X					3rd	
					Yellow Box indicates a competency of particular importance in that study					

Table 2 -- Competency Comparison by Role

INTERVIEWEES-> COMPETENCY	PM Experts				SUB-TOTAL	Program Case PMs				SUB-TOTAL	TOTALS		Users			User TOTAL	GOVT TOTAL		KTR's					KTR TOTAL	GRAND TOTAL	
	1	2	3	4		1	2	3	4		PMs	User & KTR	1	2	3		1	2	3	4	5					
Understand Stakeholders (role and person)	X	X	X	X	4	X	X	X	X	4	8	7	X	X	X	3	11	100%	X	X	X	X	4	80%	15	
Relationship Management / Strategic Partnerships / Teambuild	X	X	X	X	4	X	X	X		3	7	7	X	X	X	3	10	91%	X	X		X	X	4	80%	14
Problem Solving, Critical Thinking, Systems & Dialectic Thinking, Enterprise Aware --	X	X	X		3		X	X	X	3	6	5		X	X	2	8	73%		X	X		X	3	60%	11
Open to Ideas, Input, and Discussion	X	X	X	X	4	X	X	X		3	7	4	X	X		2	9	82%	X				X	2	40%	11
Vision & Strategy		X	X		2	X	X	X	X	4	6	4		X	X	2	8	73%		X		X		2	40%	10
Technically Capable & Competent		X	X	X	3	X	X	X	X	4	7	3			X	1	8	73%			X	X		2	40%	10
Credible & Knowledgeable (Face of the Program)	X	X		X	3	X	X	X	X	4	7	3	X		X	2	9	82%			X			1	20%	10
Ensure Effective Organizational Comms (Internal & External)	X	X			2	X		X	X	3	5	5	X	X		2	7	64%		X		X	X	3	60%	10
Good / Effective Communicator (Clear/Concise)		X	X		2			X	X	2	4	5	X	X		2	6	55%		X		X	X	3	60%	9
Delegate & Empower			X		1	X	X	X	X	4	5	4	X		X	2	7	64%		X		X		2	40%	9
Honesty	X	X		X	3	X	X			2	5	4	X	X	X	3	8	73%	X					1	20%	9
Know & Do What is Right / Audacious / Bold / Firm	X		X	X	3				X	1	4	4			X	1	5	45%	X	X	X			3	60%	8
Set Expectations / Includes 'Commander's Intent'	X		X		2	X		X		2	4	4	X	X		2	6	55%	X	X				2	40%	8
Ownership / Make Things Happen		X	X	X	3	X	X			2	5	3				0	5	45%	X	X	X			3	60%	8
Objective Advocacy -- Program Honest Broker		X	X	X	3		X	X	X	3	6	2	X	X		2	8	73%						0	0%	8

INTERVIEWEES-> COMPETENCY (Continued)	PM Experts				Program Case PMs				TOTALS		Users			User			GOVT		KTR's					KTR TOTAL	GRAND TOTAL	
	1	2	3	4	SUB-TOTAL				PMs	User & KTR	1	2	3	TOTAL			TOTAL		1	2	3	4	5			
Respect People (Up-Down-Across) - Personable	X		X	X	3	X		X	2	5	3			X	1	6	55%				X	X	2	40%	8	
Select Right Talent for Team	X		X		2	X			1	3	4	X	X	X	3	6	55%		X				1	20%	7	
Know Your People & What They Can Do			X		1	X	X	X	3	4	3	X	X		2	6	55%			X			1	20%	7	
Apply Interpersonal Skills	X		X	X	3	X		X	2	5	2			X	1	6	55%		X				1	20%	7	
Coach and Mentor		X	X	X	3		X	X	2	5	2	X			1	6	55%			X			1	20%	7	
Motivate & Inspire			X		1	X	X	X	3	4	2	X			1	5	45%			X			1	20%	6	
Trustworthy					0		X		1	1	4	X			1	2	18%			X	X	X	3	60%	5	
Humility	X			X	2	X		X	2	4	1		X		1	5	45%						0	0%	5	
Confident			X		1		X	X	2	3	2	X			1	4	36%	X					1	20%	5	
Entrepreneurial / Innovative		X		X	2		X		1	3	2	X			1	4	36%	X					1	20%	5	
Integrity	X	X			2			X	1	3	1				0	3	27%		X				1	20%	4	
Detach -- Don't Take Things Personally					0			X	X	2	2	2	X			1	3	27%	X					1	20%	4
Meet Commitments -- Follow-through					0		X		1	1	1				0	1	9%				X		1	20%	2	
Good Processes					0			X	1	1	1				0	1	9%				X		1	20%	2	
Patient & Calm			X		1				0	1	1				0	1	9%				X		1	20%	2	

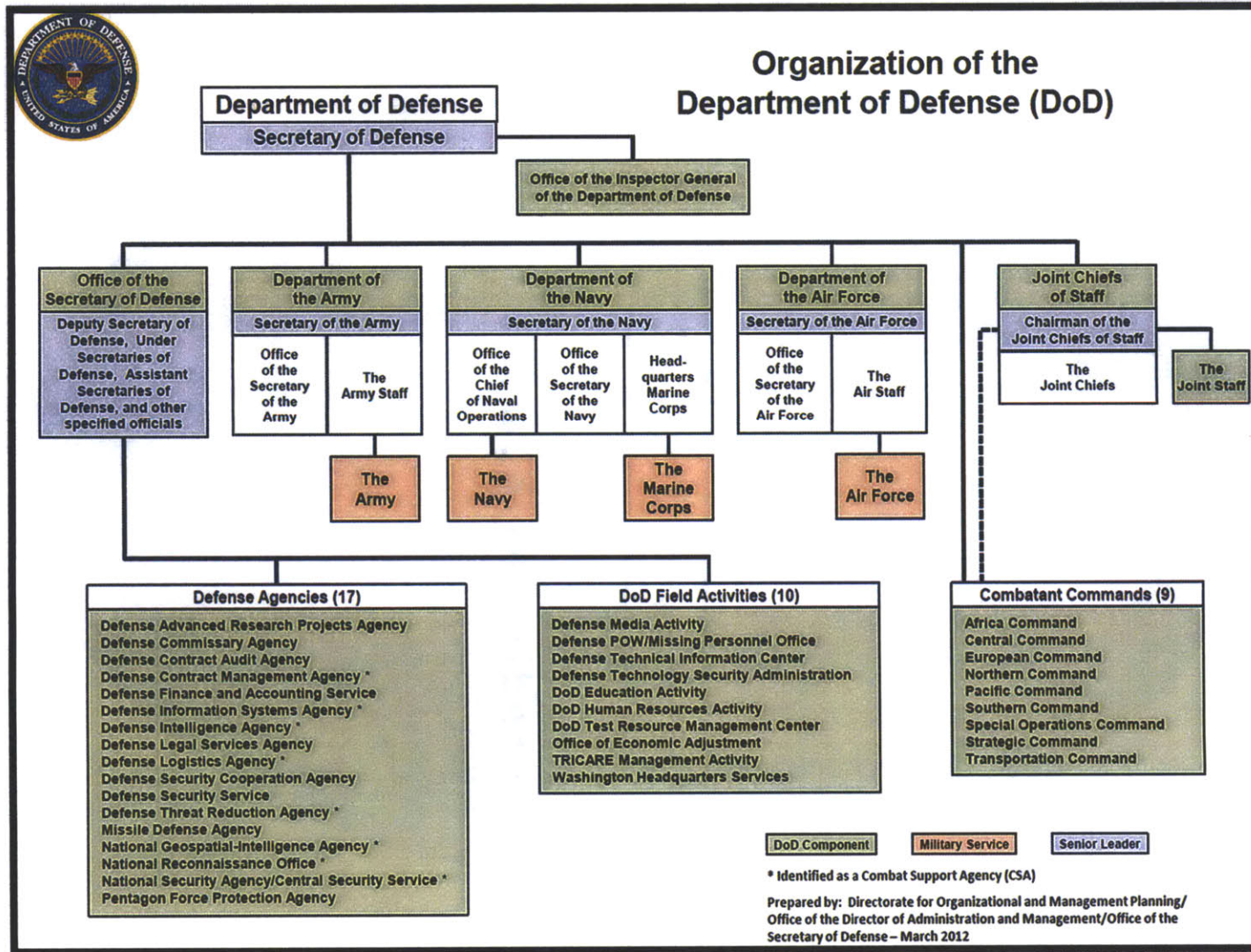
Indicates item of note between PMs and (User & KTR)

Indicates item of note between Gov't & KTRs

Comparisons By Role – Influence: The following observations are made based upon the analysis summarized in Table 2 of Appendix C. PMs appear to place greater emphasis on areas such as Openness, Technical Competence, being Credible & Knowledgeable, and Advocating Objectively for the program. Whereas the responses from KTRs noted these areas less frequently. This would appear to indicate PMs feel these skills are very important to accomplishing their role effectively and this is less apparent to the others. This variance is even more pronounced when comparing the aggregate Gov't response (PM & User) with that of the KTR. Government interviewees much more so than KTRs recognized Credibility, Honesty, and Objective Advocacy as critical for effective PMs. This does not indicate KTRs do not believe it to be important, rather it may be indicative that it is less obvious to them how it affects a PMs ability to be effective within the large acquisition bureaucracy.

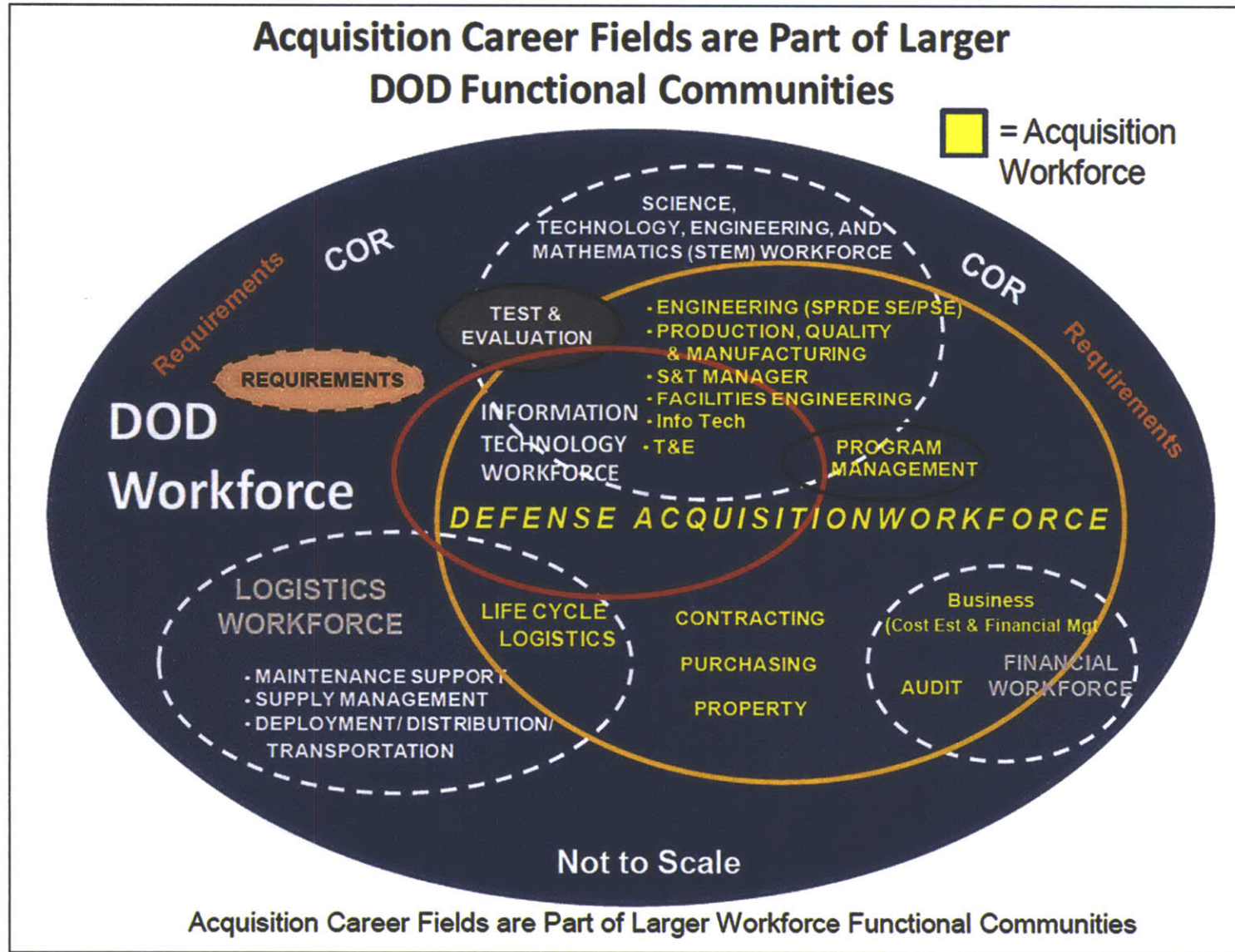
These competencies would directly affect a PMs ability to be influential and effective in any kind of program issue negotiation. All of these skills map well into the elements of negotiation theory reviewed in section 3.3 of the thesis. By advocating objectively, a PM separates the people from the problem and focuses on interests rather than positions. Being technically competent, knowledgeable, open, honest, and credible, a PM can gather information and create options for mutual gain using objective criteria.

APPENDIX D – DoD Organization



Source: Accessed January 18, 2013 from:
[http://odam.defense.gov/omp/Library/DoD Organizational Charts/DoD Organization March 2012.pdf](http://odam.defense.gov/omp/Library/DoD%20Organizational%20Charts/DoD%20Organization%20March%202012.pdf)

APPENDIX E – View of the Defense Acquisition Workforce within the DoD Workforce



Source: Appendix 1 of the FY2009 DOD Civilian Strategic Human Capital Plan Update The Defense Acquisition Workforce Plan (p. 2-6)