

REPORT DOCUMENTATION PAGE		FORM APPROVED - - - OMB NO. 0704-0188	
PUBLIC REPORTING BURDEN FOR THIS COLLECTION OF INFORMATION IS ESTIMATED TO AVERAGE 1 HOUR PER RESPONSE, INCLUDING THE TIME FOR REVIEWING INSTRUCTIONS, SEARCHING EXISTING DATA SOURCES, GATHERING AND MAINTAINING THE DATA NEEDED, AND COMPLETING AND REVIEWING THE COLLECTION OF INFORMATION. SEND COMMENTS REGARDING THIS BURDEN ESTIMATE OR ANY OTHER ASPECT OF THIS COLLECTION OF INFORMATION, INCLUDING SUGGESTIONS FOR REDUCING THIS BURDEN, TO WASHINGTON HEADQUARTERS SERVICES, DIRECTORATE FOR INFORMATION OPERATIONS AND REPORTS, 1215 JEFFERSON DAVIS HIGHWAY, SUITE 1204, ARLINGTON, VA 22202-4302, AND TO THE OFFICE OF MANAGEMENT AND BUDGET, PAPERWORK REDUCTION PROJECT (0704-0188) WASHINGTON, DC 20503			
1. AGENCY USE ONLY (LEAVE BLANK)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED <i>STUDENT RESEARCH PAPER</i>	
4. TITLE AND SUBTITLE THE DEFENSE ACQUISITIONS SYSTEM THROUGH THE EYES OF A MARINE CORPS PROJECT OFFICER: OBSERVATIONS, INEFFICIENCIES, AND PROPOSED SOLUTIONS		5. FUNDING NUMBERS <i>N/A</i>	
6. AUTHOR(S) Major Romeo P. Cubas, United States Marine Corps			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) <i>USMC COMMAND AND STAFF COLLEGE 2076 SOUTH STREET, MCCDC, QUANTICO, VA 22134-5068</i>		8. PERFORMING ORGANIZATION REPORT NUMBER <i>NONE</i>	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) <i>SAME AS #7.</i>		10. SPONSORING/MONITORING AGENCY REPORT NUMBER: <i>NONE</i>	
11. SUPPLEMENTARY NOTES <i>NONE</i>			
12A. DISTRIBUTION/AVAILABILITY STATEMENT <i>NO RESTRICTIONS</i>		12B. DISTRIBUTION CODE <i>N/A</i>	
ABSTRACT (MAXIMUM 200 WORDS) The success and efficiency of the defense acquisitions organization is grounded on sound business fundamentals, comprehensive requirements generation, and fiscal responsibility. The warfighter deserves to be supported by a competent workforce that understands the requirements process and can deliver a high performing product, at the best price, and in the least amount of time. A lack of accountability and leadership is at the heart of acquisitions inefficiency. Employees that lack a sense of urgency and that are not fully invested in delivering a quality product to the user, in a timely manner, are failing in their duties. Inadequate capabilities documents are also affecting efficiency within the defense acquisitions system, leading to rising costs and extending delivery schedules. The requirements generation process, especially at the ACAT IV and AAP levels, demands an increased level of detail and rigor. Finally, uncertainties in the budget cycle, fiscal benchmarks, and contracting inefficiencies contribute to a failure in successful execution of some military programs. The DOD has to radically change its mindset to solve the fiscal challenges that are within its control.			
14. SUBJECT TERMS (KEY WORDS ON WHICH TO PERFORM SEARCH) Defense Acquisitions, Program Management, Business Practices, Management Structure, Leadership, Accountability, Competency Alignment, Civilian Workforce, Meritocracy, Requirements Generation, Capabilities Documents, Fiscal Responsibility, Contracting Process, Budget Cycle, Congressional Benchmarks, Continuing Resolution, Marine Corps Systems Command, Acquisitions Commands, Efficiency, Business Fundamentals, Matrix, Product-Centric, Process-Centric, Capabilities Directorate, Bureaucracies, Cost, Schedule, Performance, Risk Averseness, End-of-Year Spending, Obligations, Expenditures, Inefficiencies		15. NUMBER OF PAGES: 55	
		16. PRICE CODE: <i>N/A</i>	
17. SECURITY CLASSIFICATION OF REPORT <i>UNCLASSIFIED</i>	18. SECURITY CLASSIFICATION OF THIS PAGE: <i>UNCLASSIFIED</i>	19. SECURITY CLASSIFICATION OF ABSTRACT <i>UNCLASSIFIED</i>	20. LIMITATION OF ABSTRACT

United States Marine Corps
Command and Staff College
Marine Corps University
2076 South Street
Marine Corps Combat Development Command
Quantico, Virginia 22134-5068

MASTER OF MILITARY STUDIES

**THE DEFENSE ACQUISITIONS SYSTEM THROUGH THE EYES OF A MARINE CORPS
PROJECT OFFICER: OBSERVATIONS, INEFFICIENCIES, AND PROPOSED SOLUTIONS**

SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF MILITARY STUDIES

MAJOR ROMEO P. CUBAS, USMC

AY 12-13

Mentor and Oral Defense Committee Member: Mark Jacobsen

Approved: Mark Jacobsen

Date: 3 April 2013

Oral Defense Committee Member: Anne Louise Antonoff

Approved: Anne Louise Antonoff

Date: 3 April 2013

TABLE OF CONTENTS

	Page
DISCLAIMER	iv
EXECUTIVE SUMMARY	v
PREFACE	vi
INTRODUCTION	1
BUSINESS FUNDAMENTALS	3
Management Structures and the Impacts of Competency Alignment	4
Leadership	7
Work Force Performance	10
Accountability	11
Summary	12
REQUIREMENTS GENERATION	14
The Importance of Collaboration and Communication	15
Summary	18
FISCAL RESPONSIBILITY	18
Unrealistic Benchmarks and an Uncooperative Budgetary Process	20
A Dysfunctional Contracting Process	22
Summary	25
CONCLUSION: THE WAY FORWARD	26
NOTES	32
APPENDIX A: Defense Acquisitions System Illustration	37
APPENDIX B: Acquisitions Workload at Marine Corps Systems Command FY06-11	38

APPENDIX C: Interview Statistics (Changes to Facilitate Contracting Process and Inefficiencies in the Defense Acquisitions System)	39
APPENDIX D: Department of Defense 2010 Better Business Practices	43
APPENDIX E: Acronym Glossary	44
BIBLIOGRAPHY	46

DISCLAIMER

THE OPINIONS AND CONCLUSIONS EXPRESSED HEREIN ARE THOSE OF THE INDIVIDUAL STUDENT AUTHOR AND DO NOT NECESSARILY REPRESENT THE VIEWS OF EITHER THE MARINE CORPS COMMAND AND STAFF COLLEGE OR ANY OTHER GOVERNMENT AGENCY.

REFERENCES TO THIS STUDY SHOULD INCLUDE THE FOREGOING STATEMENT.

QUOTATION FROM, ABSTRACTION FROM, OR REPRODUCTION OF ALL OR ANY PART OF THIS DOCUMENT IS PERMITTED PROVIDED PROPER ACKNOWLEDGMENT IS MADE.

EXECUTIVE SUMMARY

Title: The Defense Acquisitions System Through the Eyes of a Marine Corps Project Officer: Observations, Inefficiencies, and Proposed Solutions.

Author: Major Romeo P. Cubas, United States Marine Corps

Thesis: The success and efficiency of a defense acquisitions organization is predicated on sound business fundamentals, comprehensive requirements generation, and fiscal responsibility.

Discussion:

Inefficiencies continue to plague the Department of Defense (DOD) acquisitions system. Regardless of the intensity of congressional oversight or the number of DOD policies and regulations, the cycle of programmatic mismanagement continues while the taxpayer and warfighter feel the pain. Instead of reacting to the symptoms, responsible government officials need to identify and correct the true reasons for rising programmatic costs and pronounced schedule overruns.

A lack of accountability and leadership is at the heart of acquisitions inefficiency. Employees that lack a sense of urgency and that are not fully invested in delivering a quality product to the user, in a timely manner, are failing in their duties. Instead of concentrating on product delivery, organizations focus on processes and regulations. These bureaucrats claim that their actions are justified because transparency is necessary when dealing with public funds. The reality is that their behavior creates a culture of risk averseness and of value of self over that of the institution. These kinds of employees do little to contribute to supporting the warfighter.

In order for the DOD to effectively counter current and future threats, it has an obligation to equip the warfighter with quality products, in a timely manner, while being a good steward of the taxpayer's treasure. Military programs continue to experience cost increases and schedule delays because of poorly generated requirements documents. The requirements generation process demands a level of detail and rigor that properly guides a program office towards providing a material solution within cost, schedule, and performance parameters.

Uncertainties in the budget cycle, fiscal benchmarks, and contracting inefficiencies also impact a warfighter's needs. The DOD has to radically change its mindset to solve the fiscal challenges that are within its control. The current acquisitions workforce is programmed to believe that their organization's inability to obligate or expend its funding will mean cuts in next year's funding levels. This government culture fosters waste and forces employees to participate in processes of monetary gamesmanship.

Conclusion: The success and efficiency of a defense acquisitions organization is grounded on sound business fundamentals, comprehensive requirements generation, and fiscal responsibility. The warfighter deserves to be supported by a competent workforce that understands the requirements process and can deliver a high performing product, at the best price, and in the least amount of time. Leaders who instill a culture of accountability and fiscal responsibility can make great strides towards solving the challenges of the defense acquisitions system.

PREFACE

Volumes of comprehensive studies exist that analyze the defense acquisitions system, and they all offer different prescriptions for changes. This brief dissertation studies some of the main problems inherent to the current defense acquisitions system and offers suggestions to streamline the process. These observations and solutions are from the perspective of a Marine field grade officer with nearly 14 years experience in combat arms, supply, and acquisitions. I served the majority of my first 11 years as an Armor and Supply officer within Second Marine Division and Marine Corps Base Camp Lejeune, and I spent the last three years as a Project Officer and Team Lead in a program office within Marine Corps Systems Command (MCSC).

My research does not attempt to explore any particular major reform policy; instead, it delves into management structures, processes, and the organizational culture that is responsible for the development, procurement, and sustainment of products required by our service members. As part of my research, I interviewed 20 defense acquisitions professionals from the public and private defense sectors. These individuals included active-duty, retired, and civilian members from every branch of service; business development managers; program managers; logistics management specialists; and systems engineers. Their experiences and opinions were instrumental in the development of this dissertation. If you are in a position of responsibility directly related to government acquisitions, it is my hope that you consider any recommendations that I provide as you strive to remedy the acquisitions ills that unnecessarily burden our taxpayers, contribute to government inefficiency, and result in a mire of bureaucracy and over-regulation.

In completing this monograph, I wish to acknowledge the mentorship provided by Dr. Mark Jacobsen from the Marine Corps University's Command and Staff College. Throughout this

process, I have benefited from his wise counsel and sincere concern for my education. I'm also grateful for my relationships and experiences with the professionals at MCSC; Marine Corps Combat Development Command; Marine Corps Logistics Command; the Ground Combat Element Armor Advocate Office, Plans, Policies, and Operations, Headquarters Marine Corps; the Naval Surface Warfare Center, Dahlgren Division; U.S. Army Aberdeen Test Center; the U.S. Army Armament Research, Development, and Engineering Center, Picatinny Arsenal and Benet Labs; the U.S. Tank Automotive and Armaments Command, Program Executive Office (PEO), Heavy Brigade Combat Team; the PEO Ammunition, Program Manager Maneuver Ammunition Systems; the PEO for Simulation, Training, and Instrumentation; the Office of the Secretary of Defense Comparative Testing Office; and the domestic and international defense industry. The education received from the Defense Acquisitions University and the Naval Post Graduate School has also helped me gain an understanding of the acquisitions system and an appreciation for the dedicated experts of the acquisitions workforce. I would also like to acknowledge the special efforts of Lieutenant Colonel Wendell Leimbach, USMC, and Lieutenant Commander Elizabeth Hernandez, USN whose insight and advice helped shape this thesis.

INTRODUCTION

“It is both important and urgent that we start being the envy of the world for the efficiency at which we buy the best technologies and not just the size of our wallet.”¹

- Scott Reynolds, Professor of Program Management for the Defense Systems Management College at the Defense Acquisitions University

Decades of inefficiencies have plagued the Department of Defense (DOD) acquisitions system because its organizations continue to suffer from unsound business fundamentals, failures in requirements generation, and fiscal irresponsibility. The rising costs of technology and pronounced schedule overruns in today’s fiscally constrained environment demand that government officials address the inefficiencies that are at the root of the problem. It is understandable that a program may encounter occasional setbacks during development, production, or integration before achieving an acceptable level of performance, but course corrections are expected to bring the program back within its cost, schedule, and performance parameters. When product deliveries are delayed and costs begin to rise in search of the perfect material solution, Congress showers DOD officials with hundreds of inquiries. Optimistic and resilient acquisition professionals usually downplay their concerns and reply that any performance shortfall, cost increase, or breach in schedule is getting corrected.² Regardless of the intensity of Congressional oversight or the number of DOD policies and regulations, the cycle of programmatic mismanagement continues while the taxpayer and warfighter feel the pain.

A lack of accountability and leadership is at the heart of acquisitions inefficiency, partly due to a flawed civil service system that struggles to compete with a higher performing and more efficient private sector. Once hired, public sector employees will most likely get promoted or receive a step-increase, as long as they work for a specific number of years; whereas, their private sector counterparts abide by the high performance standards of a meritocracy where job

security serves as a powerful incentive. Government bureaucracy and union regulations make it difficult for those leaders who try to hold their subordinates accountable for substandard performance. Consequently, organizations fall into the stupor of mediocrity where employees who lack a sense of urgency and are not fully invested in delivering a quality product to the user, in a timely manner, still manage to retain their jobs. While this is certainly not the norm for every program office, the problem is prevalent enough throughout acquisition commands that it demands attention.

In 2008, Congress ordered the Defense Science Board (DSB) to investigate the DOD acquisitions system to identify problem areas and suggest necessary transformations to rapidly adapt to the twenty-first century. The report highlighted that the deficiencies in government management, policies, and processes were hindering the DOD's ability to effectively respond to national security requirements. Today's acquisition system actually encourages its employees to focus on processes and regulations instead of concentrating on product delivery as evidenced by the numerous procedures outlined in DOD Instruction (DoDI) 5000.02, *Operation of the Defense Acquisition System*.³ When employees are questioned about the effectiveness of this seemingly unproductive work philosophy, they justify their actions by referring to a multitude of policies that were created to provide transparency when dealing with public funds. The reality is that an obsession with regulation creates a culture of risk averseness and inflexibility where one must follow every prescriptive directive regardless of its relevance or added value. The investigation also concluded that the defense acquisitions workforce needed a drastic transformation "in terms of what is bought, how it is bought, who does the buying, and from who it is bought."⁴ In other words, any material solution requires a competent workforce that understands the requirements process and can deliver a high performing product, at the best price, and in the least amount of

time.⁵ These judgments are not unique to the DSB as illustrated by more than 27 major studies in acquisition reform over a 50 year period, dating back to 1960.⁶

This thesis does not delve into the details of any particular acquisitions policy nor argue the benefits of any specific reform initiative. Instead, it identifies three major challenges to the defense acquisition system and offers suggestions for improvements, from the vantage point of those professionals actually responsible for the development, procurement, and sustainment of military products. Simply stated, the success and efficiency of any defense acquisitions organization is predicated on sound business fundamentals, comprehensive requirements generation, and fiscal responsibility. True acquisitions reform within the DOD will only occur if its workforce is productive and proficient, held accountable by empowered leadership, and allowed to operate in an environment that fosters judiciousness and budgetary discipline.

BUSINESS FUNDAMENTALS: Management Structure, Leadership, Workforce Performance, and Accountability

Every business or Program Management Office (PMO) requires structure, leadership, workforce performance, and accountability in order to be successful. Management structures outline reporting chains of command, clarify working relationships, and facilitate communications, but they are only truly effective as long as there is accountability and strong leadership within a proficient workforce. An employee that lacks skill, commitment, and a sense of responsibility will weaken a program office regardless of the organizational framework. Leaders must consciously select a management structure based on their organization's intents and priorities, such as function specialization, product delivery timelines, or procedural divisions of labor.

Management Structures and the Impacts of Competency Alignment

A workforce may ultimately be aligned as a matrix or by professional disciplines, around a particular product or product line, centered around an acquisitions process, or in a hybrid model. Regardless of the chosen structure, proficiency, accountability, and strong leadership are critical to the effectiveness and efficiency of a command.

The Matrix Model

Many public and private sector acquisitions professionals prefer to organize their teams using a typical business matrix structure. This management approach segments an organization into professional disciplines such as program management, contracts, engineering, and logistics. Policy reduction and streamlining usually result from this arrangement because employees are encouraged to share equipment, knowledge, and common practices.⁷ The true benefit of a matrix structure becomes evident when each discipline is represented in the form of an Integrated Product Team (IPT) where each professional contributes his or her expertise for the overall benefit of the program.⁸

Proponents of a matrix organization argue that it is unhealthy for an organization to monopolize technical talent or stifle employee growth. A matrix structure enables professionals to expand their horizons by supporting a variety of PMOs and IPTs.⁹ Employees may also benefit from having more training opportunities and find it easier to follow a defined career path.¹⁰ On the other hand, when a competent individual is in general support of several PMOs or in direct support of a high priority program, he or she may be unavailable during another program's critical moment. A lack of personnel may force a certain organization towards a

matrix alignment, but the institution must first analyze the risks and manage expectations before implementing any changes in management structure.¹¹ A senior leader may find it challenging to effectively allocate personnel within the larger organization and will have to prioritize efforts when confronted with manpower shortages.¹² The subordinate PMOs sourcing the personnel will undoubtedly have problems executing their own programs with an undermanned and fluctuating workforce.¹³

The Product-Centric Model

Corporate and Government organizations like Northrop Grumman Laser Systems and Benet Labs have experimented with dedicated-product approaches because of the potential for reductions in product-development schedules and the opportunities for diversification and innovative product development.¹⁴ Under this structure, PMOs become intimately familiar with the development, procurement, and sustainment details of a particular product, and will usually have excellent communications with their user communities and private industry. Moreover, the dedicated or solid line reporting chain of a product-oriented approach reduces the likelihood of personnel reassignment, since the Program Manager (PM) controls his personnel and is their direct supervisor. Functional managers or Competency Leads (CLs) cannot reallocate personnel, since they are not direct supervisors. This methodology enhances a program's stability, reduces administrative tensions, and increases the probability of success.¹⁵

While this management structure can be effective, it does keep skill sets within the PMO and does not usually share them with the remainder of the command or across other product lines.¹⁶ Naturally, employees are fully invested and loyal to a particular product or community, even though the service's focus of effort may be on another program. This approach may also be

problematic when an organization, as a whole, is struggling with manning levels, especially as it pertains to programs that have suddenly increased in priority or new ones that have recently been introduced by an Urgent Universal Needs Statement (UUNS).

The Process Model

Organizing by process is yet another form of management structure that focuses on a particular portion of a product's life cycle like technology development, engineering manufacturing development, production and deployment, or operations and support. (Appendix A) Experts are brought from different professional disciplines to form a process team that can streamline procedures within self-contained divisions of labor. Focused relationships within the work unit may increase the overall level of accountability; however, relationships between the other processes must be handled carefully to prevent any assignment of blame among process teams.¹⁷

If management selects a process-oriented structure, leaders must be watchful of the inherent risks in transitioning between processes. Industry representatives may find it confusing or awkward to interface with an entirely new group of people as a product transitions through each stage. Inter-personal relationships and procedural efficiencies are founded on trust, and any significant disruptions must be minimized to enhance a program's opportunity for success.

A Hybrid Model: Competency Alignment

Approximately two years ago, Marine Corps Systems Command (MCSC) decided to embrace the hybrid management structure of competency alignment in order to comply with the

rest of the major acquisitions commands in the Department of the Navy. Under a typical matrix structure, competency members are moved out of their stovepipes and work directly for a PM. In a competency-aligned organization, individuals assigned to the PM answer to another authority, their CL. The PM has limited authority over PMO employees and has no direct control over their evaluations. Proponents of competency alignment believe that the approach allows for improved communications and an unbiased and independent assessment of a program's technological factors and overall health. It is also promoted as an economy of force and a diverse source of knowledge without the added burden of full-time staffing. Several programs can pool their unique manpower requirements in order to create a permanent demand for individuals' specialized skill sets.¹⁸

One of the problems with this approach is that it assumes that a communication problem exists amongst team members and that a PM may compromise the professional integrity of a particular competency for the sake of complying with cost, schedule, and performance commitments.¹⁹ In fact, under this structure, the PM is the only government employee that is responsible for cost, schedule, or performance. Members of other competencies have no real pressure to excel under a PM and can be unresponsive to deadlines or established metrics of program success. Competency Leads often wield more power than IPT leads or PMs and can dedicate personnel to a different set of work priorities that conflict with a team lead or the PM competency.²⁰ Some managers may believe that a competency-aligned structure is very similar and perhaps an offshoot of a matrix approach; in reality, it is a distortion.²¹

Leadership

An organization selects its management structure based on the value it places on function

specialization, product delivery timeliness, and procedural division of labor, but it cannot be successful unless it has a competent workforce guided by capable leaders. During a 2006 testimony to the House Armed Services Committee, recognized acquisitions expert, Terry Little, said that acquisitions is “not about contracts, testing, acquisitions strategies, plans, technology, finance, oversight, or any of the other things one can make rules about. It is about people.” These individuals are only successful if their leaders are empowered to do their jobs and can freely operate in an organization that values trust throughout the entire workforce.²² Unfortunately, the current acquisitions process is laden with gatekeepers who provide oppressive managerial oversight and make it difficult to accomplish even the simplest of tasks. This is a real problem, and it is one that seems impervious to change. Convincing a workforce to overcome these bureaucratic hurdles often requires persistent and strong leadership.²³

At MCSC, officers coming straight from the fleet usually serve as Project Officers or IPT Leaders. They are placed into those positions simply because they have potential to be effective leaders within the acquisitions workforce. These military professionals usually thrive in their new positions because of the leadership techniques they developed while being held accountable for the lives and performance of service members. Although they generally lack the business and corporate knowledge inherent to the acquisitions field, their determination, initiative, judgment, and leadership skills adequately mitigate any experience gaps. Additionally, the Defense Acquisition University (DAU) and fellow civilian employees ensure that military personnel are successful by educating them on the facts and policies of defense acquisitions.

Understanding the acquisitions framework and its associated regulations is important, but today’s civilian acquisition corps is focusing too much on the managerial aspects of business and neglecting the leadership side of the profession. Previous defense studies identified a deficiency

in acquisitions education within its workforce, and the DAU is making great strides towards closing this knowledge gap. However, while the DAU is teaching PMs how to become better managers, it is not necessarily preparing managers to become better leaders.²⁴ The defense acquisitions workforce is required to attain 80 hours of continuous learning points every two years and instructed on Information Awareness and Sexual Harassment, yet neglects one of the most critical elements of a highly productive team. Some people believe that leadership cannot be taught and that it is a natural born skill. Regardless of one's opinions concerning the nature versus nurture origins of leadership, the subject should be discussed and developed at the DAU and in the workplace.

Leadership, like acquisitions education, is something that must be sustained on a continuous basis and is critical to the everyday operations of a PMO. The work of the current acquisition workforce comes to a sudden halt when decisions are postponed because particular decision makers are absent, and the people acting in their place are not empowered to make decisions or unwilling to assume responsibility for their actions.²⁵ This behavior is completely unacceptable for those that have experience wearing the uniform because in their line of work initiative is expected and momentum may equal survival. Currently, civilian acquisitions managers do not receive formal leadership training, and this is hampering the effectiveness and efficiency of acquisitions commands. Formal leadership training should be a requirement for DOD's acquisitions managers, so that they can understand the abstract art of subordinate empowerment and delegation. The impact of judicious and relatively quick decision-making also has a ripple effect across all competencies and results in a more positive work environment where initiative is encouraged and a sense of urgency prospers.

Work Force Performance

The very nature of government employment and its associated bureaucracy directly affects the proficiency of a defense acquisitions organization. In the private sector, employees worry more about their jobs because their performance is linked to their company's profit margin, whereas civil servants do not have the same pressures and are not held as accountable as their industry counterparts. There is also a gap in business or technical proficiency between the private and public sector, which gives defense industry employees a competitive edge over their government colleagues.²⁶

A competent workforce that has a sense of urgency and is committed to delivering a worthy product to Marines is an essential part of an effective acquisitions system. As such, DOD acquisition leaders must hire the best and brightest employees and dispel any notions of serving as a jobs-program where there is little risk of getting a pink slip. Large and complex acquisitions projects are difficult to undertake without the right type of skilled people forming an IPT. Sometimes these individuals are found within a different branch or office of an organization, and other times, it is necessary to outsource the skill or augment the workforce.²⁷ When an institution decides to hire an employee, the decision inevitably impacts the entire workforce. Competent employees usually bear the brunt of any poor hiring decision, and they soon find themselves overtasked, having to postpone lower priority efforts, performing at substandard levels, or having to take shortcuts to meet timelines. High performing individuals eventually carry the load for the rest of the team, which only results in acquisitions leaders assuming that the work can be accomplished with the existing manpower levels.²⁸

In addition to hiring competent employees, commands should also place the right personnel within PMOs instead of relying simply on personal connections or long standing personal

relationships with familiar agencies. For example, if an engineering CL happens to originate from a particular Naval Surface Warfare Center, then it is highly likely that the personnel hired will be from that same agency regardless of the needs of the PMO. At MCSC, for example, there is a PMO that relies heavily on fire control systems, lasers, and thermal imagery, yet it lacks permanent assignment of these types of engineers. In an acquisitions system already fraught with bureaucracy and regulations, politics and favoritism seem to trump the wellbeing of the institution, ultimately impacting the performance, cost, and schedules of weapons systems.

Accountability

Inefficient management structures, failures in leadership, and underperforming employees handicap a defense acquisitions workforce that is already at a technical disadvantage from the start solely due to the nature of government bureaucracy and employment. To further complicate matters, the work associated with enforcing accountability and the bureaucracy of dealing with the American Federation of Government Employees (AFGE) often takes more time and effort than managers or CLs are usually willing to deal with. While it is common practice for effective leaders to evaluate their subordinates' performance on a regular basis and personally discuss their strengths and weaknesses with them, consistently assessing underperforming employees is a different matter altogether. Even though it may be obvious to a PM that one of his or her employees is not working out, laying-off a government employee is by no means an easy task.

Among military professionals, it is a common belief that two percent of a unit will consume 90 percent of a leader's time. Maintaining records of shortcomings, constantly counseling subordinates, preparing corrective action plans, and meetings with workforce representatives to discuss an agreeable path forward are examples of this disparity in time

consumption. These actions should not be the case if employees are properly screened prior to employment; however, they are required if a manager is entertaining dismissal. Consequently, supervisors will sometimes choose the easy alternative to dismissal by relocating their underperforming subordinates with the help of their management. Leaders become hesitant to hold their employees accountable and, in doing so, instill a feeling of complacency amongst their underachievers who realize that they cannot get fired.

In order to rid itself of this harmful attitude of employment invulnerability and improve workforce productivity, the DOD must reform its employment practices and embrace a system of meritocracy. The culture of government employment should emphasize results and foster an environment where employees adequately perform or run the risk of being dismissed. One possible solution is a rightward leaning performance bell-curve where the lowest five percent of performing employees are given one year to improve or they are dismissed.²⁹ This technique might seem draconian in today's growing environment of social welfare, but it could be very effective in gaining the business sector efficiencies sought by the DOD. Another solution to this problem of mediocrity might be to allow PMs, Product Managers, or Project Officers to be involved in the selection of new employees instead of relying too much on the opinion of a removed CL or senior supervisor. Regardless of the solution, DOD must reform its civilian employment practices if it wants to help its leaders with accountability and infuse a competitive attitude in its workforce.

Summary

Today's complex weapons platforms, endless regulations, and the procedural realities of the current acquisitions system require specialization of some sort. At a higher echelon, there is

some utility in taking advantage of a low-density skill set within a particular office in order to address an organization's higher priority program as is the case in a matrix or competency aligned structure.³⁰ A Commander may benefit from and enjoy this flexibility, but he or she must judiciously exercise the movement of personnel and realize the repercussions of these actions on the remainder of the organization.³¹ While certain management structures allow for the deployment of resources from a variety of projects to those with a particular need, it is important that the PM of the inheriting resources be in direct control of his team members.

Although it is not the sole determining factor for inefficiency, the hybrid model of competency alignment bears considerable responsibility. Under this management approach, there is a high propensity for a broken unity of command where the PM may have insufficient leverage and struggle to focus the efforts of an IPT.³² Competency alignment is a reflection of a counter-productive zero defects mentality that incentivizes not doing or fielding anything because it poses very little risk to the employee. Under this construct, CLs wish to have control over all the issues within a project to ensure that their competency representatives make no mistakes. If a product is not fielded, then it cannot suffer from any problems, modifications, or sustainment issues.³³ This is not a cynical characterization of the acquisition system, but merely serves to highlight a prevalent unhealthy attitude from the perspective of those that have served or are serving in the trenches of several PMOs.

It is necessary for a PM to have a general understanding of every discipline and maximize each team member's strengths in order to successfully develop, procure, or sustain a product. There are no guarantees that a change in management structure will have positive effects or that one particular approach is overwhelmingly better than the other. Leadership, proficiency, and accountability will have more of an impact on an organization and its workforce than any

particular management structure. The DAU and acquisitions commands are not doing enough to develop or sustain leadership among its workforce. Entirely too much focus is being given to process-centric approaches to business and in developing acquisitions savvy managers. Any attempts of true acquisitions reform must begin with attempts to develop and sustain leadership principles across the civil-military acquisition workforce.³⁴

Acquisitions commands must also not neglect the proficiency of its workforce. In addition to hiring the right and most competent employees, leaders must uphold performance standards. When a workforce is not held accountable for its lack of proficiency, government institutions begin to suffer from a culture of complacency. Empowering leaders to hold their subordinates accountable for their underperformance is intrinsically related to reforming civil service employment practices. A failing government employment system, underperforming employees, and weak leaders are killing defense acquisitions.

REQUIREMENTS GENERATION

The DOD has an obligation to counter current and future threats by equipping the warfighter with quality products, in a timely manner, while being a good steward of the taxpayer's treasure. The process begins when the user identifies a capability gap, and it makes its way to the service's Combat Development and Integration (CD&I) Requirements Officer (RO). In addition to promoting a program's importance to higher headquarters and influencing its priority on the overall service requirements list, this individual has the responsibility of creating a capabilities document that if poorly written will likely lead to future cost increases and schedule delays, regardless of the amount of DOD policy or congressional oversight.

The most expensive and highly visible major acquisition category (ACAT) programs like the Joint Strike Fighter and Littoral Combat Ship are required to go through the Joint Capabilities Integration Development System (JCIDS) and are scrutinized from every aspect since program inception to include requirements generation (Appendix A). The less expensive programs in terms of overall cost and those that require lesser decision authority are classified as ACAT level IV and Abbreviated Acquisitions Programs (AAPs). These programs are generally smaller, less complicated, and more abundant (Appendix B), yet they somehow tend to suffer from poorly generated requirements. The problem lies within the PMOs and the CD&I directorates who represent the users.³⁵ Their failure to collaborate and communicate in sufficient detail makes it difficult for acquisition professionals to ensure that products are developed and procured in a manner in keeping with the best interests of the taxpayer and warfighter.

Promoting a program requires little or no acquisitions experience, yet the requirements generation process requires more than just a superficial understanding. It is the RO's responsibility to translate a user's needs into a thorough and understandable capabilities document that can effectively guide the PMOs in the creation of a performance specification.³⁶ It is the PMO's responsibility to successfully fill a capabilities gap within cost, schedule, and performance parameters.

The Importance of Collaboration and Communication

In his 2010 "Better Buying Power" memorandum, current Deputy Secretary of Defense and former Under Secretary of Defense for Acquisitions, Technology, and Logistics (USD AT&L), Ashton B. Carter, expects PMs to treat affordability like a requirement as if it were a key performance parameter (KPP). Furthermore, at program designation, he calls for a systems

engineering trade off analysis that illustrates how design consideration and schedule parameters can be made less expensive without sacrificing an important capability.³⁷ Acquisitions professionals must always be mindful that it is their job to find a material solution that meets the parameters established in the capabilities document. Any cost saving measures such as phased increments must be discussed and concurred by the service's CD&I directorate.

Requirements documents should have the sufficient level of fidelity necessary to enable a PMO to appropriately address the development, procurement, and sustainment of a material solution. Otherwise, inadequate requirements documents could lead to gold plating, a redirection of resources from higher priority programs, higher costs, and extended delivery dates.³⁸ A former RO who worked at Marine Corps Combat Development Command (MCCDC) from 2001 to 2004 recalls that requirements generation was once a collaborative effort between the RO, the PMO, and the test agency. Whether from a change in philosophy, an overburdened workforce, or a product of recent contingencies, this is not universally the case anymore at the ACAT IV and AAP levels. The PMO does its part by offering subject matter experts from each professional discipline and makes a conscious effort to prevent any sort of requirements-creep into a capabilities document. However, this is only effective if the PMO is called upon to actively participate in a deliberate requirements generation process.³⁹

In the event that a PMO is involved in requirements generation, participation usually takes the form of an occasional meeting or a few phone calls and e-mails. The RO may even ask a member of the PMO to write a draft abbreviated capabilities document, known as a Statement of Need (SON), and submit it up to MCCDC for minor editing and signature. This backwards exchange corrupts the process, since it is possible that the document could be tailored to meet an existing product's specification. While it is clearly not their responsibility, some PMO personnel

may feel compelled to act as unwilling accomplices in order to move the documentation ball forward. The RO should work with the PMO and its different competencies to produce an adequate requirements document, but not in this manner. Collaboration is not synonymous with a few phone calls and sporadic engagements; instead, the RO should meet face-to-face continuously over a dedicated period lasting anywhere from a week to a few months.

Naval Air Systems Command (NAVAIR) has made efforts to bridge the communications gap between the fleet and the PMO by instituting a Fleet Introduction Team (FIT) at the tactical Wing level. The FIT is part of the requirements development and documentation office and is comprised of junior officers and senior enlisted with recent operational experience and basic acquisitions training who are empowered to speak on behalf of the fleet.⁴⁰ The Marine Corps uses a similar approach as NAVAIR with Majors, Captains, Master Gunnery Sergeants, Master Sergeants, and Gunnery Sergeants, but it places them in MCSC vice MCCDC. Although these officers and senior enlisted may offer their valuable operational experiences to their IPT, they are not the official voice of the warfighter.

Perhaps the best answer is a combination of the Navy and Marine Corps systems where sufficient officer and enlisted fleet representatives exist in both the requirements and program offices. The benefits of this solution include thoroughness in requirements generation, increased communication, improved expectation management between the two offices and the fleet, and a healthy pool of future acquisitions professionals. The challenge lies in the level of commitment from the fleet to supply the manpower required to properly outfit these offices while not affecting their primary tactical missions. The fleet must be committed to supplying both offices with the right personnel and market the assignments as desirable career enhancers.⁴¹ When

quality individuals serve in acquisitions positions, in adequate numbers, the users benefit from highly capable and sustainable platforms.

Summary

An unrealistic capabilities document will result from a general misunderstanding of what is achievable with the available technology. Technical expertise and dedication from all invested personnel are critical elements to the success of requirements generation.⁴² Without an appropriate capabilities document, the PMOs are left to interpret nuances that may significantly shape the outcome of a product.⁴³ The details are extremely important, since PMOs worry about significant aspects such as sub-component obsolescence, software and hardware compatibility, and the feasibility of long-term sustainment.

The PMO has to translate the user wants into realistic requirements that account for manufacturability, maintainability, and sustainability. A realistic solution also means that a system's optimal performance must fit within feasible cost and schedule parameters.⁴⁴ The RO must lead a deliberate requirements generation process in a fully integrated manner with the PMO. The appropriate involvement from operationally and technically proficient user representatives further facilitates the creation of a legitimate requirements document.

FISCAL RESPONSIBILITY

In a 2008 testimony to the House Armed Services Committee, the former USD AT&L, John Young, recognized a growing trend in unrealistic requirements that exceed technology capabilities, as well as established cost and schedule parameters. Unpredictable and inadequate budgets coupled with additional technical certifications compromised a program's affordability

and led to schedule slip.⁴⁵ In the same testimony, Katherine Schinasi, former Government Accountability Office (GAO) Managing Director of Acquisitions and Sourcing Management, declared that the acquisitions process was dysfunctional because the DOD lacked a coherent and prioritized procurement strategy that valued joint needs instead of individual service interests. She also noted that requirements revolved around assessments that focused on defeating potential enemy threats vice achieving overmatch over current enemy capabilities, needlessly increasing cost and extending schedules.⁴⁶ One only has to look at the characteristics of any number of weapon systems, aircraft, ground vehicles, navy vessels, or command and control systems and ask whether or not platforms have unnecessary features, questionable service uniqueness, or an overkill in capability.

The Army's development of the 120 mm Advanced Multipurpose (AMP) tank round is a perfect example of this service redundancy and programmatic gold plating. Among its few characteristics, the (AMP) round will have the ability to arm as it leaves the tank's gun-tube, have more than three modes of detonation, and be able to detonate in airburst mode with incredible precision. It is hard to imagine a target inches or perhaps a few feet away from the front of the tank that cannot be suppressed or destroyed with machine gun fire, a gunner having the time to select more than three modes of detonation, or an airburst detonation that requires extraordinary accuracy. This program is especially difficult to comprehend given that the Marine tank community began a similar program in 2006 and fielded its Multipurpose High Explosive (MP-HE) round to a tank company in Afghanistan, in 2011. Proven in combat, the round has a point-detonate, delay, and airburst capability, meets approximately 90 percent of the Army's requirements, and costs less than what it is estimated the AMP round will cost when it is fielded in 2016, at the earliest.

However, program success is not defined by efficiency, performance, or timeliness, as was the case with the Marine Corps' MP-HE round; instead, as briefed by Ms. Schinasi, success has been improperly defined as the receipt of funding and eventual program initiation. Acquisitions stakeholders such as the DOD workforce, congressional sponsors, and the defense industry are complicit actors of this failed system because the current culture does not provide tangible incentives for efficient and timely product delivery. In the end, the warfighter and taxpayer are both left dealing with the consequences of mismanaged programs and wasted funds.⁴⁷

Unrealistic Benchmarks and an Uncooperative Budgetary Process

Formalized acquisitions training suggests that PMs are graded on whether their programs meet cost, schedule, and performance parameters. However, the unwritten rule in an acquisitions command states that PMs are evaluated on how effectively they can obligate and expend funds while meeting benchmarks prescribed by the Office of the Secretary of Defense (OSD). If a DOD organization saves operating costs, the Comptroller will take the agency's funds, the following year, in the hopes that it doesn't have negative consequences. The Comptroller, USD Robert Hale, confesses that while this approach might seem problematic, he has not found a better approach and recommends that the DOD continue looking for incentives.⁴⁸

In addition to the wasteful game of obligation and expenditures, congressional funding profiles and a Continuing Resolution (CR) significantly impact the defense acquisitions system. Contracts, test schedules, and delivery schedules are among a few of the programmatic events that cannot get properly executed unless there is a reasonable amount of predictability. Service headquarters prepare their Program Objective Memorandum (POM) initiatives outlining their fiscal needs for the next six years, but it seems rather irrelevant when the entire budget process is

subject to change from year to year due to fiscal instability, political discord, and a lack of a signed budget. Unfortunately, a PM has to plan for these eventualities and factor in considerable lag time into the program schedule or seek performance trade space in case future funds are eliminated.⁴⁹ In recent years, PMs have learned that the most realistic contract award date is during a fiscal year's third quarter due to the high likelihood of a CR. A PMO may be ready to execute a procurement contract award in the first quarter, but there is far less chance of a schedule slip if significant events are planned between April and June.

Although a CR may cause an activity to receive funds in January, PMs still have to meet OSD mandated obligation and expenditure benchmarks. For example, a program's Research, Development, Test, and Evaluation (RDT&E) funds have an 80 percent expenditure benchmark by the end of the first fiscal year in which they were assigned. This unrealistic constraint forces a PM to find ways around the system in order to expeditiously obligate the funds, and it makes it almost impossible for test agencies to expend their funds in an appropriate amount of time. Acquisitions commands often place additional funding constraints upon themselves in order to monitor obligation and expenditure rates. Some of these self-imposed limitations have adverse effects such as when a PMO mandates that procurement funds be obligated in one year vice its normal three-year window for the sole purpose of achieving a quick obligation rate. These budget controls make it more difficult to use prior year funds, even though it is perfectly acceptable under federal fiscal code. For instance, when a PMO lacks sufficient funds, an aircraft or weapons platform may not receive the appropriate modifications. This complicates configuration control and reduces capabilities levels.⁵⁰

In a 2012 memorandum concerning the management of unobligated funds and obligation rates, USD AT&L, Frank Kendall, rightly concludes that acquisition leaders should rethink their

metrics for programmatic success. Instead of focusing on benchmark execution and worrying about the threat of funds being taken away, acquisition leaders should concentrate on changing the culture to incentivize savings and the judicious obligation of funds.⁵¹ An individual's performance might also need to be evaluated by the amount of funding that is returned to the US Treasury. Regardless of the incentives used to prevent fiscal gamesmanship, USD Hale believes that the real impetus for changes has to come from the top levels of leadership.⁵²

A Dysfunctional Contracting Process

While some acquisitions professionals may think that the slow contracting process is really a symptom of a Congressionally controlled budgetary problem, the process is further delayed by an inherent nature of risk aversion and an incessant fear of making mistakes.⁵³ Some Contracting Officers (KOs) excessively agonize over Federal Acquisitions Regulations (FAR) interpretations, legal reviews, peer reviews, policies, and prolonged contractual language editing periods to ensure that a request for proposal (RFP) or a contract is completely defensible against industry protests or against allegations of fiscal irresponsibility. It is not uncommon for an ACAT IV or AAP contract to take anywhere from nine to fourteen months from contract initiation to contract award. Fiscal responsibility is an obvious necessity, but over-analysis and excessive caution inevitably leads to inefficiency or inaction.

Aside from budgetary challenges and a culture of risk aversion, the contracting process also suffers from manpower problems and procedural inefficiencies (Appendix C). Many good KOs are not incentivized to stay in government and are recruited by industry with promises of more pay and greater career progression. Any remaining good KO is in high demand and overworked by several PMOs that generally prefer to do best value contracts.⁵⁴ An increased workload on

the KO demands that a PM rely more on the office's Contract Specialist. Both competencies must ensure that the Contract Specialist is an equal member of a program IPT and involved in key conversations and significant events. While not quite as effective as having a readily available KO, the integration of a Contract Specialist results in the contracting competency having an increased understanding of the project's cost, schedule, and technical risks.⁵⁵ The back-and-forth of administrative changes in documentation and mundane programmatic questions can be avoided with an available contracting representative. Furthermore, if KOs empower Contracting Specialists to make decisions and recommend strategies, they can work more independently and better support the PM.⁵⁶

Influenced by a variety of factors such as a heavy workload, a necessity for frugality, the looming expiration of funds, drawn out legal reviews, and fears of industry protests, KOs generally prefer to expedite the contracting process and award lowest-price-technically-acceptable (LCTA) contracts. The irony is that most PMs desire a best value contract in order to maximize the opportunities of achieving the best solution at the best price. A contract that focuses on lowest cost may work for well-established technologies, but it can prove disastrous for a project that requires development or integration.⁵⁷ This philosophical difference can be problematic during a source selection process. Although not responsible for cost, schedule, or performance, the KO will sometimes serve as a Source Selection Authority (SSA) and decide which vendor to select. The SSA is briefed by the Source Selection Chairman, but is under no obligation to accept his recommendation. In today's fiscal environment there is an increasing tendency to select a vendor whose price is more palatable even in best value solicitations. For this reason, KOs should not be assigned as SSAs, since they do not share the same level of accountability as members of the program management competency.

The subject of full and open competitions and limited or sole source contracting exemplifies a fundamental difference in how some PMs and KOs view the importance of cost. The FAR lists some exceptions where limited or sole source contracting is a viable option; however, some KOs are hesitant to exercise these exceptions because they do not want their thriftiness or devotion to fiscal transparency to ever come into question. The truth is that product delivery timeliness and the amount of effort a staff invests in scouring the market place to find any semblance of a potential competitor also has an associated cost.⁵⁸ For the sake of the user, practical decision-making must trump a misplaced loyalty to frugality. The FAR, DOD policies, and US Code require full and open competition to the fullest degree possible, but as Under Secretary of the Air Force, Erin Conaton states, “it’s not the right solution for all acquisitions.”⁵⁹

Proposal development leading to a contract award can also be an onerous process for a KO and a PMO. The preparation and staffing of documents is an extremely time consuming phase, and even with the additional oversight by CLs, important details are still left out that may have serious repercussions to a product’s future life cycle costs. Miscommunications and programmatic mistakes can be avoided months before responding to a Request for Proposal (RFP) if a vendor takes advantage of a government sponsored industry day. A PMO uses an industry day as an opportunity, in an open forum, to relay its need for a material solution, immediately answer contractor questions, and introduce key program personnel. These occasions should not be rushed or limited in scope, since they can potentially remove incapable vendors or encourage very competent ones.⁶⁰ An oral presentation is another opportunity to improve communications between the PMO and defense industry. An oral presentation reduces vendors’ RPF costs and enables them to brief their proposal in an interactive manner. This streamlined process significantly reduces industry’s response time in the event that the PMO has

a pressing question regarding a proposal.⁶¹ Industry days and oral presentations significantly improve communications between PMOs and vendors and ensure that details do not get overlooked.

In its present form, the contracting process is hamstrung by a compilation of factors that affect a PMO's ability to deliver a material solution while staying within cost, performance, and schedule constraints. Congressional budgetary issues, a culture fearful of mistakes, manpower shortages, a lack of communication, and fundamental differences of what is in the best interest of the taxpayer have a significant impact on the efficiency of the process. All these issues are not necessarily under the control of any particular organization; however, it is incumbent on acquisitions professionals to address most of these challenges with sound business practices, leadership, and accountability.

Summary

Uncertainties in the budget cycle and adherence to fiscal benchmarks are some of the contributing factors that lead to financial irresponsibility and mismanagement within defense acquisitions. The DOD has to radically change its mindset to solve those fiscal challenges that are within its control. The acquisitions workforce is programmed to believe that their organization's inability to obligate or expend its funding will mean cuts in next year's funding levels. This government culture fosters wasteful tendencies and forces employees to participate in a process of monetary gamesmanship.

Within the acquisitions disciplines, particularly the program management and contracting functions, there is a fundamental difference of what is truly of best value or a judicious use of taxpayers' dollars. A PM is guided by a requirements document that lists a system's KPPs and

has to ensure delivery of a capability within prescribed cost, performance, and schedule parameters. Meanwhile, a KO wrestles with manpower limitations, FAR interpretations, legal opinions, threats of industry protests, and a product's cost. A PM and KO may be at odds because of various external pressures and differing levels of accountability. Consequently, the warfighter risks not receiving a capable system in a timely manner.

Congressional funding delays further complicate the contracting process. A PMO might receive funds as late as January and will start feeling significant pressure to obligate or expend funds in July or risk losing them to a higher priority within the organization. Funding delays, pressures to meet benchmarks, and threats of funding reallocation effectively shorten a fiscal year to seven months. A compressed timeline puts a PMO and a KO in a predicament, since contracts will likely be awarded without the necessary attention to detail, eventually affecting product quantities, performance, and overall cost. Availability of funds, established benchmarks, and schedule commitments may also help determine whether to award an LCTA or best value contract, and influence the level of industry competition (full and open, limited, or sole source).⁶²

CONCLUSION: THE WAY FORWARD

It is naïve to think that a defense program will not experience failures along the way. Acquisitions professionals want to execute their programs within cost, schedule, and performance, but inefficient government processes and cumbersome bureaucracies usually frustrate their efforts.⁶³ Leadership failures and a lack of accountability are usually the reasons for most acquisitions dilemmas. If left unresolved, these problems will affect workforce productivity, product performance, budgetary processes, and defense contracting. An efficient

and successful acquisitions organization is one that is able to follow solid business fundamentals, properly generate requirements documents, and judiciously execute its fiscal responsibilities.

An organization's bid for success begins with its selection of a management structure, since it will define chains of command, clarify working relationships, facilitate communications, and help a team cope with risk, especially in the current environment of changing priorities and diminishing resources.⁶⁴ A matrix, product-centric, or process-oriented management structure will not guarantee programmatic success; however, a competency-aligned approach does guarantee inefficiency and will likely fall short of meeting cost, schedule, and performance parameters. This management structure is especially controversial among many military personnel because its unity of effort methodology allows employees to work in a PMO while reporting to a CL. The PM has limited authority over each team member, yet he or she is the only one in the office responsible for cost, schedule, or performance.⁶⁵ Proponents of this approach argue that professionals from across an organization can come together to find the optimal solution. Often times, however, even the most competent professionals cannot align themselves to focus on a common goal due to conflicting loyalties and personal interests. Effectiveness and success within cost, schedule, and performance parameters becomes impossible.⁶⁶ Acquisitions commands should avoid operating under a competency-aligned management structure because it lacks accountability and shared responsibility for mission accomplishment.

The success of a program should depend on competent team members, efficient processes and procedures, and a positive organizational culture, irrespective of management structure.⁶⁷ However, the nature of government acquisitions indicates that efficiency and effectiveness can be better achieved if commands choose a structure that values unity of command over unity of

effort. Members of different disciplines need to remember that they exist to support programs and that a team works best when its representatives share a common vision and work towards mission accomplishment.⁶⁸

There is not a “once size fits all” solution to programmatic efficiency; after all, there are valid reasons to select a matrix, product-centric, or process-oriented structure. Nevertheless, the size of an organization or project may play a factor in determining the ideal management structure. Smaller activities or PMOs can be more effective with direct reporting channels offered by vertical management or functional structures that depend on a traditional command concept. In contrast, a large program may be multilayered and complex, and its members may be quickly overwhelmed or technically unprepared. In this case, a matrix organization (where control still remains with the PM) may be better suited, since the program can benefit from the expertise of professionals within a particular competency.⁶⁹

Regardless of the selected management approach, it is undeniable that an organization’s effectiveness is directly related to the quality of its leadership and its willingness to hold its workforce accountable for its performance. When people are empowered to do their jobs and held to a standard of excellence, an environment of trust, effectiveness, and efficiency prospers throughout the institution.⁷⁰ An employee that is trusted, valued, and respected as an important team member is also more likely to put forth extra effort. Strong leadership sets the tone and creates an effective and efficient work environment.⁷¹

Unfortunately, the current acquisitions community seems to value management skills over leadership qualities. The defense acquisitions education establishment creates highly informed managers that are able to understand best business practices, regulations, and processes; however, the DAU and the workplace neglects to teach, nurture, and sustain leadership qualities.

Leadership conferences, training seminars, and mentorship programs need to be developed within each command. Additionally, PM and supervisory selection boards should screen military and civilian performance evaluations and resumes for indications of proven leadership qualities. Leadership must be given at least equal weight as acquisitions acumen when deciding whether to assign a person to a position of increased responsibility.

An organization's productivity is also enhanced by proficiency and accountability of its workforce. The DOD must remove complacency and mediocrity from its ranks by embracing a business-like system of meritocracy. A possible solution would guarantee employment for the top 95 percent of government employees while the bottom five percent of workers would need to improve within one year or be dismissed.⁷² This results oriented culture emphasizes constant organizational improvement and gives the taxpayer an adequate return on investments.

As part of a results-oriented culture, acquisitions leaders must identify and hold accountable those employees who are reluctant to act. Employees who suddenly come down with a severe case of risk aversion or "cover-my-six" syndrome plague many organizations. They hide behind policy and regulations simply because they do not want to be responsible for the results of their decisions. These individuals may justify their behavior by invoking a higher purpose such as ensuring transparency in the execution of taxpayer funds. Fiscal responsibility is an obvious necessity, but over-analysis and excessive caution inevitably leads to inefficiency or inaction.

Even in an environment with leadership and accountability, a proficient workforce is only able to successfully develop, procure, or sustain a program if its capabilities document has a sufficient level of fidelity. Smaller ACAT IVs and AAPs are not benefiting from thorough requirements generation. A cooperative dialogue between the program and requirements offices in the early stages of the acquisitions process creates a more realistic expectation of a program's

cost and schedule.⁷³ It is incumbent on the RO and PM to follow a collaborative and rigorous process when developing a thorough capabilities document, since inadequate documents lead to unnecessary capabilities, higher costs, and extended delivery dates.⁷⁴ To facilitate this practice, a sufficient number of capable fleet representatives need to work with a community's requirements and program offices.

Fiscal challenges are harder to solve than deficiencies in business practices or requirements generation. The timeliness of budgets, a culture risk aversion, an obsession with obligations and expenditure benchmarks, manpower shortages, a lack of communication, and philosophical differences of what is in the best interest of the taxpayer collectively impact the fiscal efficiencies of the defense acquisitions system. All these issues are not necessarily under the control of an acquisitions command; however, it is incumbent on acquisitions professionals to address most of these challenges with sound business practices, leadership, and accountability.

Instead of focusing on judiciously executing the taxpayers' funds, acquisitions officials worry about protecting their yearly budgets for fear of future cuts. A change in culture that incentivizes government employees for saving money rather than focusing on an end of year spending spree is critical to promoting conscientious and conservative fiscal decision-making.⁷⁵ Focusing on being fiscally responsible does not imply that the user will receive a less than capable system. The user's needs are still met through a rigorous requirements generation process and a competent workforce. Government contracting should support this effort and be held accountable when a program is delayed or fails due to inadequate and inefficient contracting. Additional hires and retention of competent KOs through monetary or career enhancing incentives will do much to solve the competency's manpower challenges.

The success and efficiency of a defense acquisitions organization is grounded on sound business fundamentals, comprehensive requirements generation, and fiscal responsibility (Appendix D). The warfighter deserves to be supported by a competent workforce that understands the requirements process and can deliver a high performing product, at the best price, and in the least amount of time.⁷⁶ Leaders who instill a culture of accountability and fiscal responsibility can make great strides towards solving the challenges of the defense acquisitions system.

¹ Scott Reynolds, “Let’s Fix It: A Five Step Plan for Improving Acquisitions,” *Defense AT&L*, November – December 2009, 20.

² J. Ronald Fox, *Defense Acquisition Reform 1960 – 2009: An Elusive Goal* (Washington, D.C.: U.S. Army Center of Military History, 2011), 11.

³ Department of Defense, *Department of Defense Instruction 5000.02, December 8, 2008*, DTIC Online, accessed 19 February 2013, <http://www.dtic.mil/whs/directives/corres/pdf/500002p.pdf>.

⁴ Jacques S. Gansler, *Democracy’s Arsenal: Creating a Twenty First Century Defense Industry* (Cambridge, MA: The MIT Press, 2011), 344-5.

⁵ Gansler, 347.

⁶ Fox, xi-xii.

⁷ Hynes, Michael V. Hynes, et. al., *Transitioning NAVSEA to the Future* (Santa Monica, CA: RAND, 2002), 147.

⁸ Jeffrey McNaboe (Program Manager, Engineer, and Team Lead, US Army Program Executive Office Ammunition), interview by Maj Romeo P. Cubas, 19 November 2012.

⁹ Bradley Bates (Professor of Program Management at the Defense Acquisitions University), interview by Maj Romeo P. Cubas, 10 October 2012.

¹⁰ Anonymous (Naval Air Systems Command (PMA-231), Avionics Systems Contractor Support for Acquisitions Management), interview by Maj Romeo P. Cubas, 27 November 2012.

¹¹ Anonymous.

¹² CDR Jean M. Leblance (Integrated Product Team Lead, PMA-265, F/A 18 & EA-18G Program Office, NAVAIR Systems Command), interview by Maj Romeo P. Cubas, 3 October 2012.

¹³ McNaboe.

¹⁴ Hynes, 149-50; Joseph Smith (Program Manager, Northrop Grumman Laser Systems), interview by Maj Romeo P. Cubas, 31 October 2012.

¹⁵ Joseph Smith.

¹⁶ Hynes, 149-50.

¹⁷ Hynes, 151.

¹⁸ LCDR Elizabeth Hernandez, USN (Naval Air Systems Command (PMA-231) Avionics Systems Project Officer), interview by Maj Romeo P. Cubas, 27 November 2012.

¹⁹ LCDR Dwight K. Roberson (Mechanical Engineer, Fire Support Systems, Marine Corps Systems Command), interview by Maj Romeo P. Cubas, 17 October 2012.

²⁰ Hernandez.

²¹ LtCol Wendell Leimbach, USMC (SECDEF Corporate Fellow), interview by Maj Romeo P. Cubas, 16 October 2012.

²² Scott Reynolds, "Let's Fix It: A Five Step Plan for Improving Acquisitions," *Defense AT&L*, November – December 2009, 22.

²³ Leimbach.

²⁴ Leimbach.

²⁵ Hernandez.

²⁶ Roberson.

²⁷ Dave Smith (Project Leader, Engineer, and Project Officer at Benet Labs, U.S. Army Research, Development, and Engineering Command), interview by Maj Romeo P. Cubas, 9 October 2012.

²⁸ Hernandez.

²⁹ Leimbach.

³⁰ Jeffrey Barber (Logistics Management Specialist, Product Manager M1A1 Tank Systems, Marine Corps Systems Command), interview by Maj Romeo P. Cubas, 14 November 2012.

³¹ Leimbach.

³² Leimbach.

³³ Leimbach.

³⁴ Leimbach.

³⁵ Hernandez.

³⁶ Hernandez.

³⁷ HON. Ashton B. Carter, Office of the Under Secretary of Defense, Under Secretary of Defense for Acquisition, Technology, and Logistics to Acquisition Professionals, “Better Buying Power: Guidance for Obtaining Greater Efficiency and Productivity in Defense Spending,” Memorandum, 14 September 2010.

³⁸ LCDR Dwight K. Roberson (Mechanical Engineer, Fire Support Systems, Marine Corps Systems Command), interview by Maj Romeo P. Cubas, 17 October 2012.

³⁹ Jeffrey Barber (Logistics Management Specialist, Product Manager M1A1 Tank Systems, Marine Corps Systems Command), interview by Maj Romeo P. Cubas, 14 November 2012.

⁴⁰ LCDR Elizabeth Hernandez, USN (Naval Air Systems Command (PMA-231) Avionics Systems Project Officer), interview by Maj Romeo P. Cubas, 27 November 2012.

⁴¹ Hernandez.

⁴² Barber.

⁴³ Hernandez.

⁴⁴ Simone Albano (Program Manager MV-22 Fleet Support Team), interview by Maj Romeo P. Cubas, 25 October 2012.

⁴⁵ Senate Armed Services Committee on *The Acquisitions of Major Weapons Systems by the Department of Defense*, 110th Cong., 2008, 10.

⁴⁶ SASC, Acquisitions, 22.

⁴⁷ SASC, Acquisitions, 22.

⁴⁸ Senate Armed Services Committee on *Department of Defense Efficiencies Initiatives*, 112th Cong., 2011, 25.

⁴⁹ Hernandez.

⁵⁰ Hernandez.

⁵¹ HON Frank Kendall and HON Robert F. Hale, Office of the Secretary of Defense, Under Secretary of Defense for Acquisition, Technology, and Logistics, and Under Secretary of Defense Comptroller, “Department of Defense Management of Unobligated Funds; Obligation Rate Tenets,” Memorandum, 10 September 2012.

⁵² SASC, Efficiencies, 26.

⁵³ LtCol Wendell Leimbach, USMC (SECDEF Corporate Fellow), interview by Maj Romeo P. Cubas, 16 October 2012.

⁵⁴ Leimbach.

⁵⁵ LCDR Elizabeth Hernandez, USN (Naval Air Systems Command (PMA-231) Avionics Systems Project Officer), interview by Maj Romeo P. Cubas, 27 November 2012.

⁵⁶ Hernandez.

⁵⁷ Leimbach.

⁵⁸ Senate Armed Services Committee on *Department of Defense Efficiencies Initiatives*, 112th Cong., 2011, 76.

⁵⁹ SASC, *Efficiencies*, 76.

⁶⁰ Christopher H. Hanks, et. al., *Reexamining Military Acquisition Reform: Are We There Yet?* (Santa Monica, CA: RAND, 2005), 91.

⁶¹ Hanks, 91.

⁶² SASC, *Efficiencies* 27.

⁶³ Peter Modigliani, “WSARA: Baselining Programs Early Compounds the Problems,” *Defense AT&L*, July – August 2010, 14.

⁶⁴ Andy Bailey (Program Manager for R&D Projects at Northrop Grumman Corporation), interview by Maj Romeo P. Cubas, 9 October 2012.

⁶⁵ Hernandez.

⁶⁶ Dr. Martin Weispfenning (Director, Development of Laser Devices, Cassidian Optronics), interview by Maj Romeo P. Cubas, 17 October 2012.

⁶⁷ Rick Bartz (Director of Sales and Marketing for Tactical Missile and Gun Turret Actuation Control Systems, Woodward HRT), interview by Maj Romeo P. Cubas, 31 October 2012.

⁶⁸ Bradley Bates (Professor of Program Management at the Defense Acquisitions University), interview by Maj Romeo P. Cubas, 10 October 2012.

⁶⁹ Colin Smith (Director, Vertronics Applications General Dynamics Canada), interview by Maj Romeo P. Cubas, 15 October 2012.

⁷⁰ Scott Reynolds, “Let’s Fix It: A Five Step Plan for Improving Acquisitions,” *Defense AT&L*, November – December 2009, 22.

⁷¹ Clayton F. Hill (Electronics Engineer, Communications-Electronics Research, Development, and Engineering Center, Night Vision and Electronics Sensors Directorate), interview by Maj Romeo P. Cubas, 9 October 2012.

⁷² LtCol Wendell Leimbach, USMC (SECDEF Corporate Fellow), interview by Maj Romeo P. Cubas, 16 October 2012.

⁷³ Thomas H. Miller, “Does MRAP Provide a Model for Acquisition Reform?” *Defense AT&L*, July – August 2010, 19.

⁷⁴ LCDR Dwight K. Roberson (Mechanical Engineer, Fire Support Systems, Marine Corps Systems Command), interview by Maj Romeo P. Cubas, 17 October 2012.

⁷⁵ Leimbach.

⁷⁶ Jacques S. Gansler, *Democracy’s Arsenal: Creating a Twenty First Century Defense Industry* (Cambridge, MA: The MIT Press, 2011), 347.

Appendix A: The Defense Acquisitions System

This simplified illustration depicts a top-level structure of the Defense Acquisitions System. Program designation can occur at any milestone; however, official program initiation usually occurs at Milestone B. Contracts may be awarded at any phase of the process. Details of the five major phases of the defense acquisitions process are found in DoDD 5000.01, The Defense Acquisition System, and DoDI 5000.02, Operation of the Defense Acquisition System.

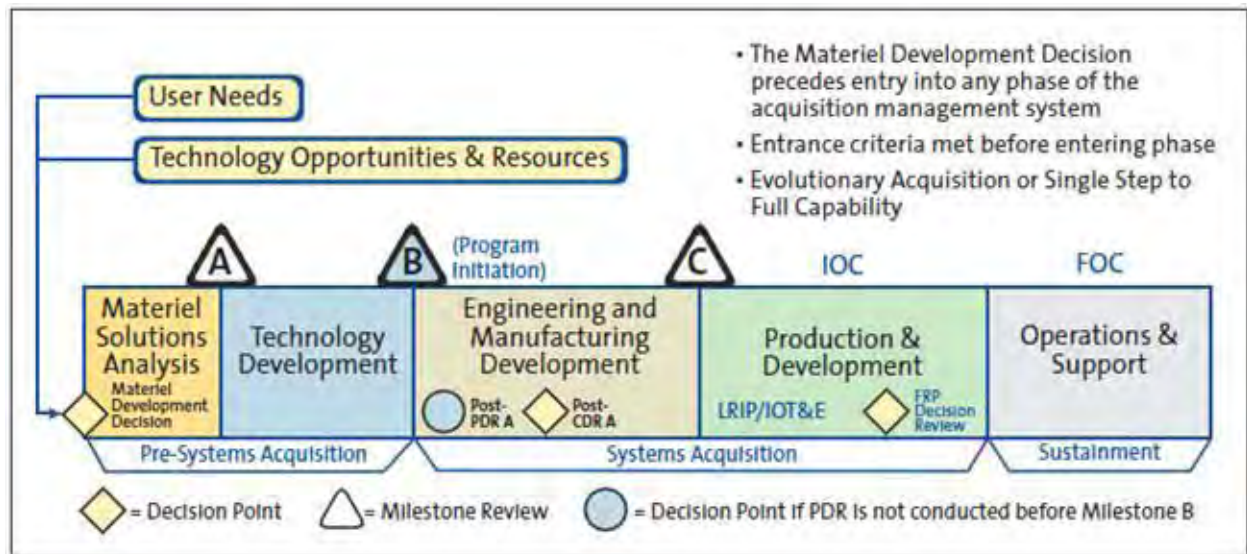


Figure 1: Overview of the Defense Acquisitions System

Source: Defense Acquisition University, Acquisition Community Connection, "Acquisition Process," acc.dau.mil, accessed on 10 Jan 13, <https://acc.dau.mil/CommunityBrowser.aspx?id=497391>.

Appendix B: Acquisitions Workload at Marine Corps Systems Command FY06-11

The bar graph below captures the number of the different types of programs at Marine Corps Systems Command that are not considered in the Operations and Support phase of the Defense Acquisitions System.

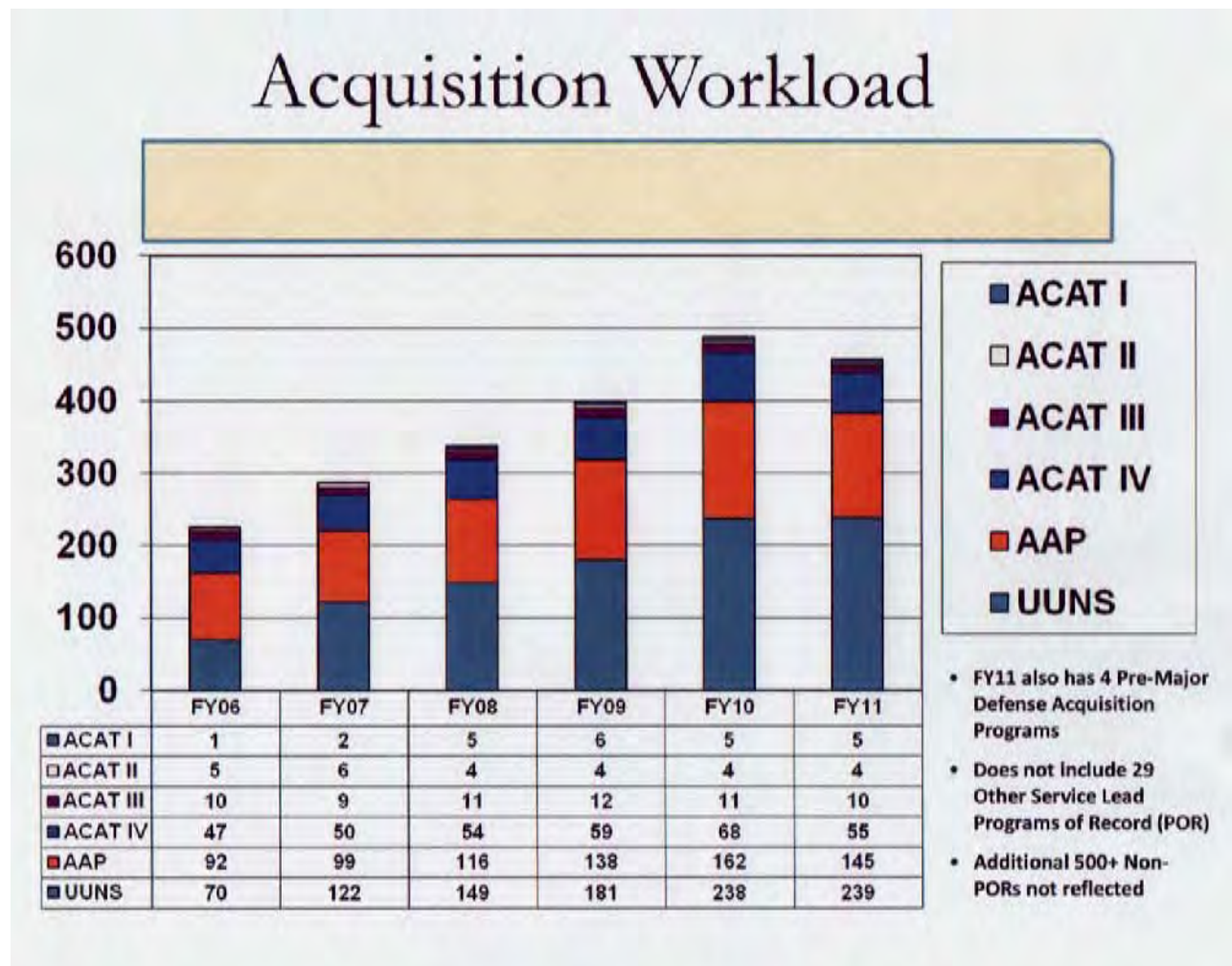


Figure 2: MCSC Programs not in the Operations and Support Phase FY 06 to FY 11

Source: Steve Zoric (Acquisitions Programs Assessment Team Lead, Marine Corps Systems Command), e-mail correspondence from Steve Zoric, 18 October 2012.

Appendix C: Interview Statistics (1 of 4)

The Bibliography includes the list of those individuals surveyed.

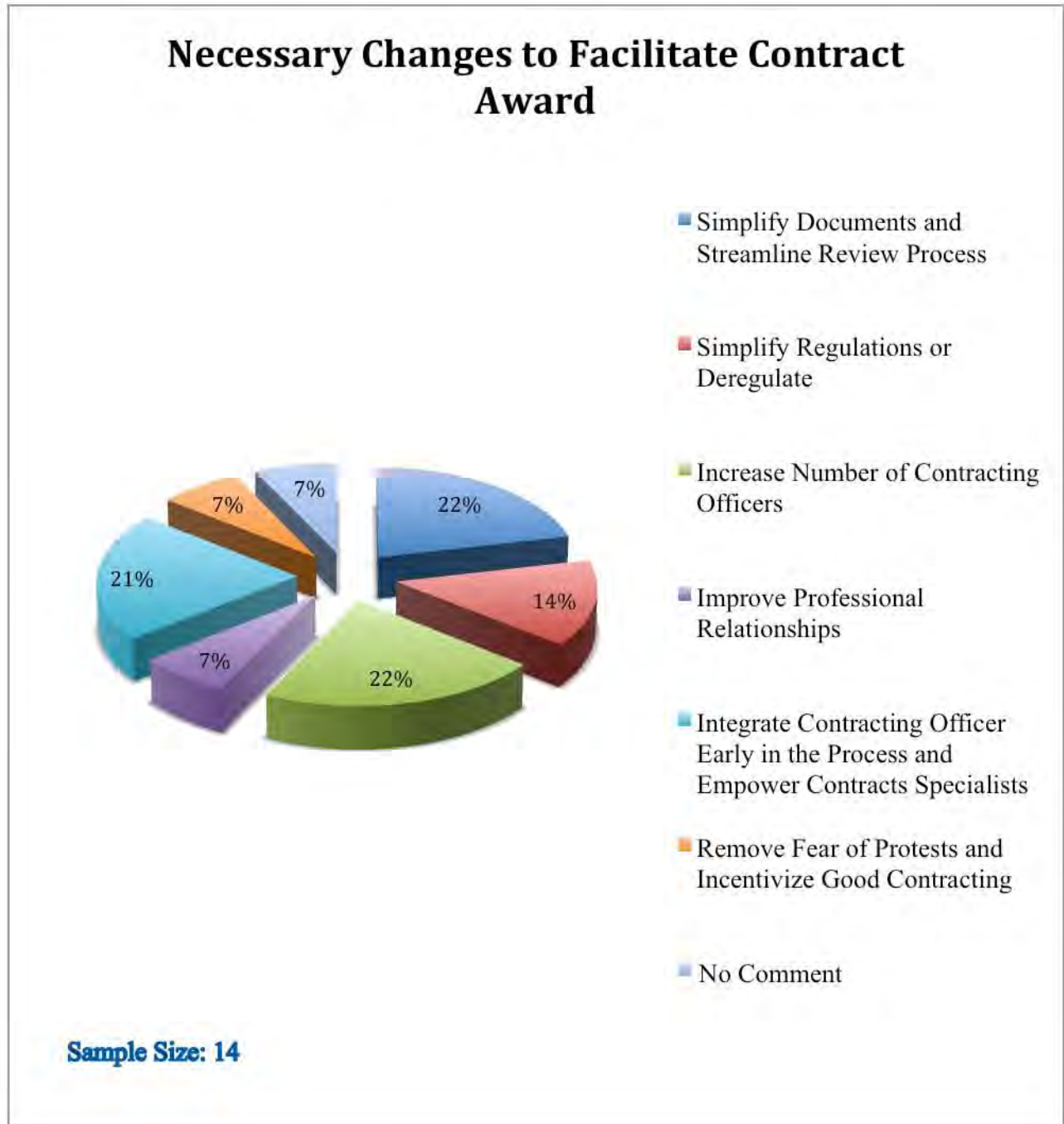


Figure 3: Recommendations Provided by DOD Employees to Facilitate Contract Award

Appendix C: Interview Statistics (2 of 4)

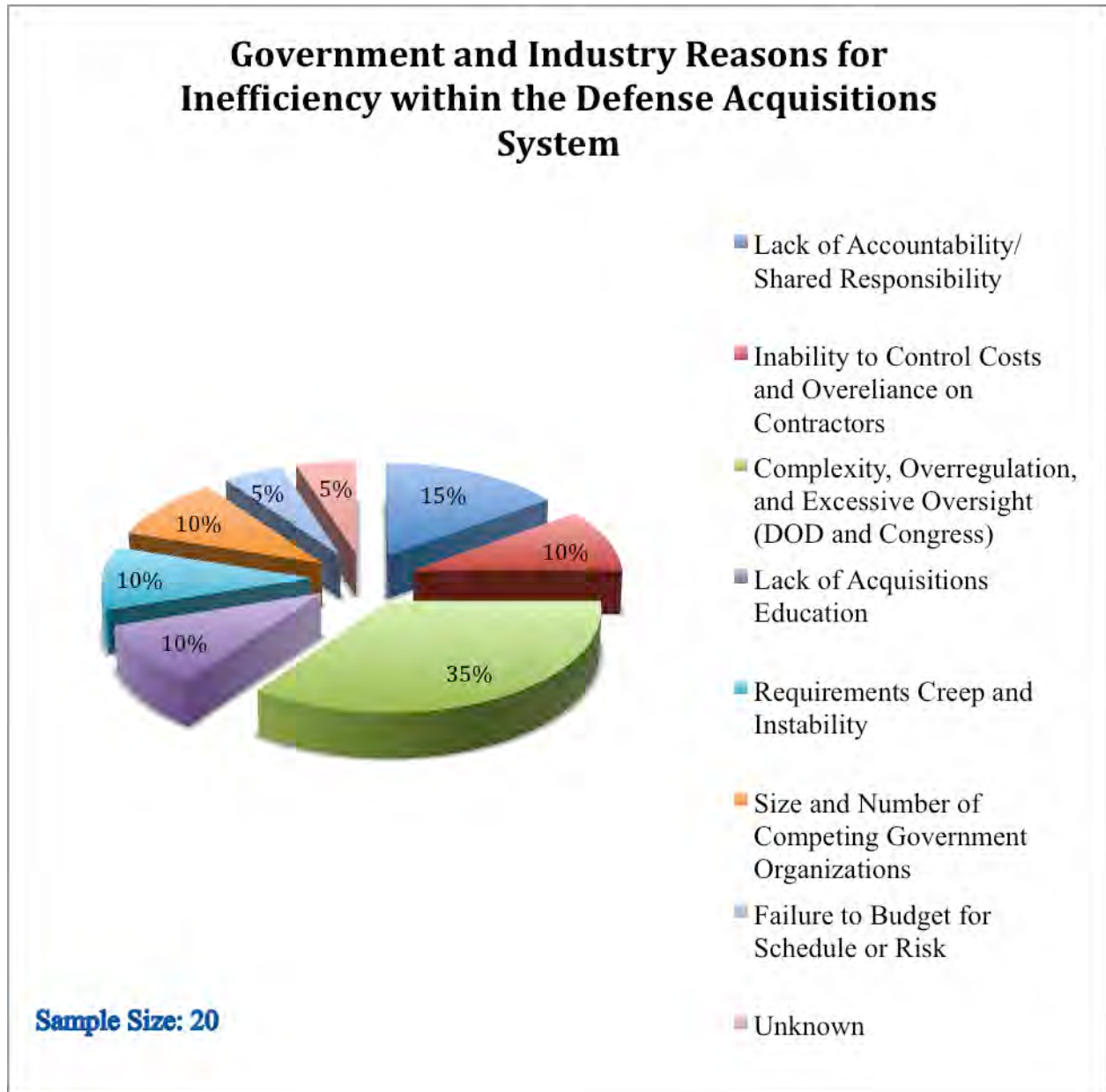


Figure 4: Reasons Provided by DOD and Defense Industry Employees for Inefficiencies within the Defense Acquisitions System

Appendix C: Interview Statistics (3 of 4)

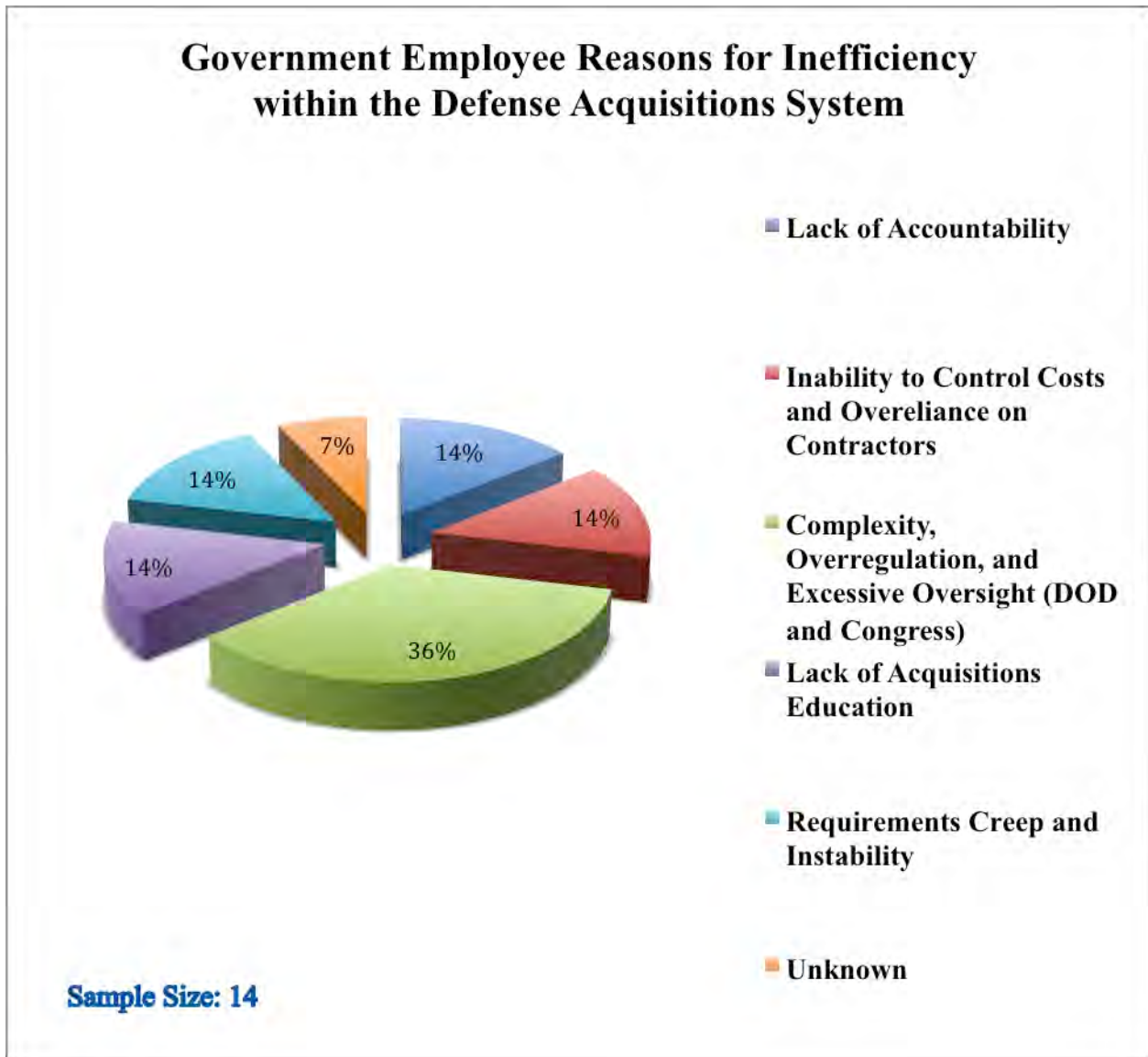


Figure 5: Reasons Provided by DOD Employees for Inefficiencies within the Defense Acquisitions System

Appendix C: Interview Statistics (4 of 4)

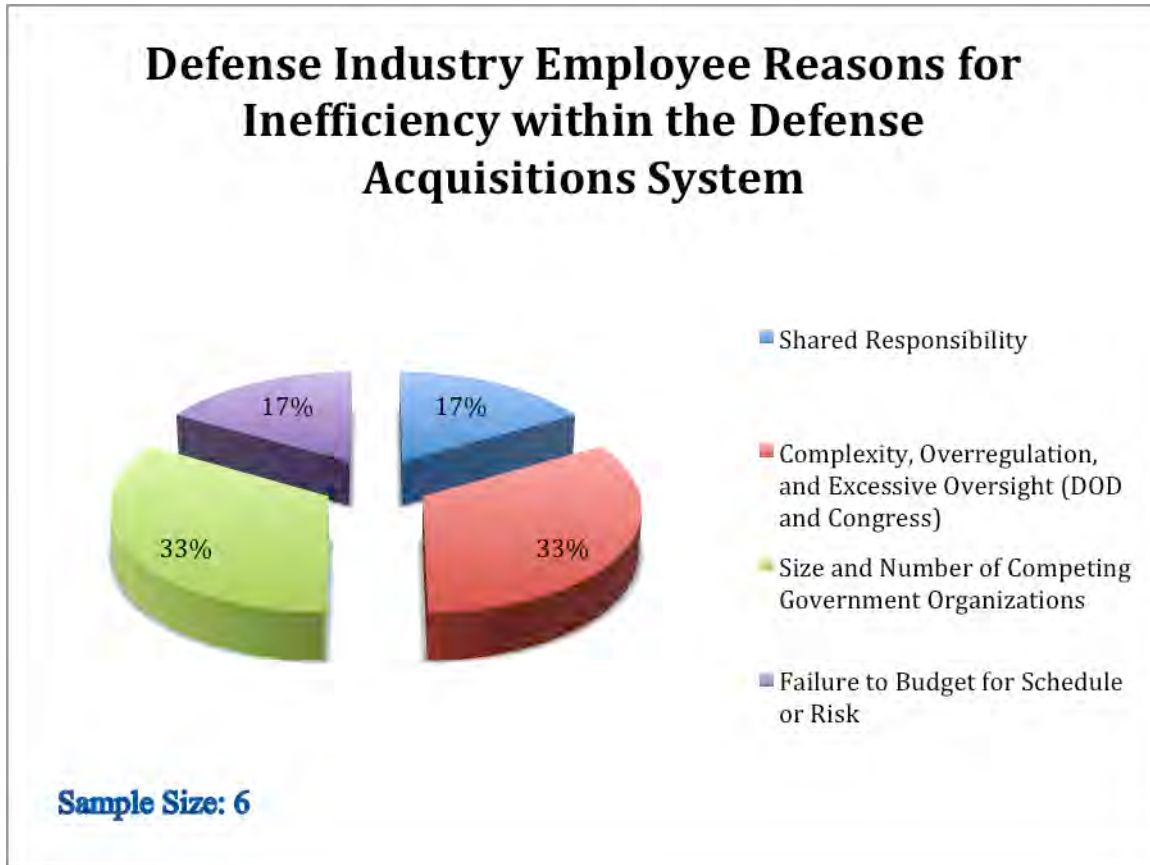


Figure 6: Reasons Provided by Defense Industry Employees for Inefficiencies within the Defense Acquisitions System

Appendix D: Department of Defense 2010 Better Business Practices

In 2010, the DOD conducted an analysis that identified \$100B in efficiencies. Each military department was asked to identify and classify their efforts into four categories: reorganizations, better business practices, program reductions and terminations, or reductions of lower priority programs. Instead of focusing on any particular program or dollar amount, the list below captures the major efforts that directly pertain to streamlined business initiatives.¹

Reorganizations

- Reduction of civilian and military manning due to restructuring (USA and USAF)
- Reductions and reassignments of manpower and elimination of duplication (USN)
- Efficient utilization of personnel and examination of policies and practices (USN)
- Streamlined installation support (USA and USAF)

Better Business Practices

- Program management and administration efficiencies (consolidation of email infrastructure and data centers) (USA and USAF)
- Reductions of acquisitions contractor staffs (USA and USAF)
- Streamlined logistics sustainment (USA and USAF)
- Reductions and improvements in processes (depot/supply chain) (USA and USAF)
- Increased multi-year procurement contracts and acquisition support strategies (Navy)
- Realignment of spares and a reduction in research and development testing and overhead (USN)
- Training efficiencies (USA, USN, and USAF)

¹ Senate Armed Services Committee on *Department of Defense Efficiencies Initiatives*, 112th Cong., 2011, 19-20.

Appendix E: Acronym Glossary (1 of 2)

AAP: Abbreviated Acquisitions Program

ACAT: Acquisitions Category

AMP: Advanced Multipurpose

AFGE: American Federation of Government Employees

AT&L: Acquisitions Technology and Logistics

CD&I: Combat Development and Integration

CL: Competency Lead

CR: Continuing Resolution

DAU: Defense Acquisitions University

DOD: Department of Defense

FAR: Federal Acquisitions Regulations

FIT: Fleet Introduction Team

GAO: Government Accountability Office

HASC: House Armed Services Committee

IPT: Integrated Product Team

JCIDS: Joint Capabilities Integration Development System

KO: Contracting Officer

KPP: Key Performance Parameters

LCTA: Lowest Cost Technically Acceptable

MCCDC: Marine Corps Combat Development Command

MCSC: Marine Corps Systems Command

Appendix E: Acronym Glossary (2 of 2)

MP-HE: Multipurpose High Explosive

NAVAIR: Naval Air Systems Command

OSD: Office of the Secretary of Defense

PEO: Program Executive Office

PM: Program Manager

PMO: Program Management Office

RDT&E: Research, Development, Test, and Evaluation

RFP: Request for Proposal

RO: Requirements Officer

SASC: Senate Armed Services Committee

SON: Statement of Need

SSA: Source Selection Authority

USD: Under Secretary of Defense

BIBLIOGRAPHY

- Albano, Simone (Program Manager MV-22 Fleet Support Team). "An Interview with Simone Albano." By Maj Romeo P. Cubas, 25 October 2012.
- Albrecht, Jeff (Supervisor and Systems Engineer at Benet Labs, U.S. Army Research, Development, and Engineering Command). "An Interview with Jeff Albrecht." By Maj Romeo P. Cubas, 9 October 2012.
- Anonymous (Naval Air Systems Command (PMA-231) Avionics Systems Contractor Support for Acquisitions Management). "An Interview with a NAVAIR employee." By Maj Romeo P. Cubas, 27 November 2012.
- Bailey, Andy (Program Manager for R&D Projects at Northrop Grumman Corporation). "An Interview with Andy Bailey." By Maj Romeo P. Cubas, 9 October 2012.
- Barber, Jeffrey (Logistics Management Specialist, Product Manager M1A1 Tank Systems, Marine Corps Systems Command). "An Interview with Jeff Barber." By Maj Romeo P. Cubas, 14 November 2012.
- Bartz, Rick (Director of Sales and Marketing for Tactical Missile and Gun Turret Actuation Control Systems, Woodward HRT). "An Interview with Rick Bartz." By Maj Romeo P. Cubas, 31 October 2012.
- Bates, Bradley (Professor of Program Management at the Defense Acquisitions University). "An Interview with Brad Bates." By Maj Romeo P. Cubas, 10 October 2012.
- Carter, HON. Ashton B., Office of the Under Secretary of Defense. Under Secretary of Defense for Acquisition, Technology, and Logistics to Acquisition Professionals. "Better Buying Power: Guidance for Obtaining Greater Efficiency and Productivity in Defense Spending." Memorandum, 14 September 2010.
- Defense Acquisition University. Acquisition Community Connection. "Acquisition Process," [acc.dau.mil. https://acc.dau.mil/CommunityBrowser.aspx?id=497391](https://acc.dau.mil/CommunityBrowser.aspx?id=497391).
- Department of Defense. *Department of Defense Instruction 5000.02, December 8, 2008*. DTIC Online, accessed 19 February 2013. <http://www.dtic.mil/whs/directives/corres/pdf/500002p.pdf>.
- Fox, J. Ronald. *Defense Acquisition Reform 1960 – 2009: An Elusive Goal*. Washington, D.C.: U.S. Army Center of Military History, 2011.

Gansler, Jacques S. *Democracy's Arsenal: Creating a Twenty First Century Defense Industry*. Cambridge, MA: The MIT Press, 2011.

Hanks, Christopher H., Elliot I. Axelband, Shuna Lindsay, Mohammed Rehan Malik, and Brett D. Steele. *Reexamining Military Acquisition Reform: Are We There Yet?* Santa Monica, CA: RAND, 2005.

Hernandez, Elizabeth, LCDR, USN. (Naval Air Systems Command (PMA-231) Avionics Systems Project Officer). "An Interview with LCDR Hernandez." By Maj Romeo P. Cubas, 27 November 2012.

Hill, Clayton F. (Electronics Engineer, Communications-Electronics Research, Development, and Engineering Center, Night Vision and Electronics Sensors Directorate). "An Interview with Clayton Hill." By Maj Romeo P. Cubas, 9 October 2012.

Hynes, Michael V., Harry J. Thie, John E. Peters, Elwyn D. Harris, Robert M. Emmerichs, Brian Nichiporuk, Malcolm MacKinnon, Denis Rushworth, Maurice Eisenstein, Jennifer Sloan, Charles Lindenblatt, and Charles Cannon. *Transitioning NAVSEA to the Future*. Santa Monica, CA: RAND, 2002.

Kendall, HON Frank, and HON Robert F. Hale, Office of the Secretary of Defense. Under Secretary of Defense for Acquisition, Technology, and Logistics, and Under Secretary of Defense Comptroller. "Department of Defense Management of Unobligated Funds; Obligation Rate Tenets." Memorandum. 10 September 2012.

Leblanc, CDR Jean M. (Integrated Product Team Lead, PMA-265, F/A 18 & EA-18G Program Office, NAVAIR Systems Command). "An Interview with CDR Jean Leblanc." By Maj Romeo P. Cubas, 3 October 2012.

Leimbach, LtCol Wendell (SECDEF Corporate Fellow). "An Interview with LtCol Wendell Leimbach." By Maj Romeo P. Cubas, 16 October 2012.

McNaboe, Jeffrey (Program Manager, Engineer, and Team Lead, US Army Program Executive Office Ammunition). "An Interview with Jeff McNaboe." By Maj Romeo P. Cubas, 19 November 2012.

McNeal, CDR Cedric (Deputy Technical, Navy Ship Acquisition Program Office). "An Interview with CDR Cedric McNeal." By Maj Romeo P. Cubas, 20 October 2012.

Miller, Thomas H. "Does MRAP Provide a Model for Acquisition Reform?" *Defense AT&L* (July – August 2010): 16 – 20.

Modigliani, Peter. "WSARA: Baseline Programs Early Compounds the Problems." *Defense AT&L* (July – August 2010): 12 – 14.

Reynolds, Scott. “Let’s Fix It: A Five Step Plan for Improving Acquisitions.” *Defense AT&L* (November – December 2009): 18 – 23.

Roberson, LCDR Dwight K. (Mechanical Engineer, Fire Support Systems, Marine Corps Systems Command). “An Interview with Dwight Roberson.” By Maj Romeo P. Cubas, 17 October 2012.

Sandau, Fredy (Business Developer and Program Manager, Rheinmetall Waffe Munition GmbH). “An Interview with Fredy Sandau.” By Maj Romeo P. Cubas, 30 September 2012.

Smith, Colin (Director, Vertronics Applications General Dynamics Canada). “An Interview with Colin Smith.” By Maj Romeo P. Cubas, 15 October 2012.

Smith, Dave (Project Leader, Engineer, and Project Officer at Benet Labs, U.S. Army Research, Development, and Engineering Command). “An Interview with Dave Smith.” By Maj Romeo P. Cubas, 9 October 2012.

Smith, Joseph (Program Manager, Northrop Grumman Laser Systems). “An Interview with Joe Smith.” By Maj Romeo P. Cubas, 31 October 2012.

U.S. Congress. Senate. *The Acquisition of Major Weapons Systems by the Department of Defense: Hearing before the Committee on Armed Services*, 110th Cong., 2008.

U.S. Congress. Senate. *Department of Defense Efficiencies Initiatives: Hearing before the Committee on Armed Services*, 112th Cong., 2011.

Warner, Mark (Engineering Consultant to Program Executive Office Heavy Brigade Combat Team). “An Interview with Mark Warner.” By Maj Romeo P. Cubas, 25 October 2012.

Weispfenning, Dr. Martin (Director, Development of Laser Devices, Cassidian Optronics). “An Interview with Dr. Martin Weispfenning.” By Maj Romeo P. Cubas, 17 October 2012.

Zoric, Steve (Acquisitions Programs Assessment Team Lead, Marine Corps Systems Command). E-mail correspondence between Maj Romeo P. Cubas and Steve Zoric. 18 October 2012.