NPS-AM-23-237


ACQUISITION RESEARCH PROGRAM
SPONSORED REPORT SERIES

# An Analysis of Procurement Acquisition Lead Time (PALT) and Acquisition Lead Time (ALT) in the Department of Defense (DoD)

June 2023

**Carlos A. Ortiz**
**Chengwen S. Fang**
**Gabriel G. Ledesma**

Thesis Advisors: Dr. Charles K. Pickar
Kiersten Johnson, NSWC, Carderock

Department of Defense Management

**Naval Postgraduate School**



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




ACQUISITION RESEARCH PROGRAM
DEPARTMENT OF DEFENSE MANAGEMENT
NAVAL POSTGRADUATE SCHOOL

The research presented in this report was supported by the Acquisition Research Program of the Department of Defense Management at the Naval Postgraduate School.

To request defense acquisition research, to become a research sponsor, or to print additional copies of reports, please contact the Acquisition Research Program (ARP) via email, arp@nps.edu or at 831-656-3793.


Acquisition Research Program
Department of Defense Management
Naval Postgraduate School

# ABSTRACT

We evaluate the Department of Defense (DOD) Procurement Acquisition Lead Time (PALT), as it produces a vital role toward the fielding weapon systems to support our warfighters at the speed of relevance. We examine the roles of the contracting processes and associated PALT by gaining knowledge based off previous topic-related research including but not limited to: peer-review articles, theses, governing regulations, and real-life PALT data provided by a Naval Surface Warfare Center. We discuss the impact on actual real-world situations such as political agendas and worldwide events similar to the pandemic, and how it plays a role on PALT today and the influence that may arise as a nation. We studied the acquisition professional's duties at the higher-level DOD Program Objective Memorandum (POM) and the Planning, Programming, Budgeting, and Execution (PPBE) process. From this analysis, we developed recommendations for acquisition professionals to effectively and efficiently navigate within the constraint of the POM and PPBE five-year cycle.

THIS PAGE INTENTIONALLY LEFT BLANK

# ACKNOWLEDGEMENTS

We would like to recognize and say thank you to all individuals that have supported us throughout this journey, from the beginning to the end. First, we send our gratitude to the Naval Postgraduate School and our organizations for believing in us and allowing us the opportunity to accept this challenge. Second, we want to say thank you to our advisors, Dr. Charles Pickar and Ms. Kiersten Johnson, who provided us the guidance and encouragement along the way. Your knowledge has kept us focused throughout the course and ensured we didn't get off track.

Lastly, we thank our wives and kids for being our backbone during this program, you were there during the entire duration of long days and nights of frustrations, concerns, and joyfulness. Without your inspiration and support, we would most likely not been able to succeed in completing this master's degree program.

THIS PAGE INTENTIONALLY LEFT BLANK

NPS-AM-23-237


ACQUISITION RESEARCH PROGRAM
SPONSORED REPORT SERIES

# An Analysis of Procurement Acquisition Lead Time (PALT) and Acquisition Lead Time (ALT) in the Department of Defense (DoD)

June 2023

**Carlos A. Ortiz**
**Chengwen S. Fang**
**Gabriel G. Ledesma**

Thesis Advisors: Dr. Charles K. Pickar
Kiersten Johnson, NSWC, Carderock

Department of Defense Management

**Naval Postgraduate School**



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




ACQUISITION RESEARCH PROGRAM
DEPARTMENT OF DEFENSE MANAGEMENT
NAVAL POSTGRADUATE SCHOOL

THIS PAGE INTENTIONALLY LEFT BLANK

# TABLE OF CONTENTS


I. INTRODUCTION....1
A. BACKGROUND....1
B. PURPOSE....2
C. RESEARCH QUESTIONS....3
1. Primary Question....3
2. Secondary Questions....3
D. SCOPE AND LIMITATIONS....3
E. ORGANIZATION OF THE STUDY....4

II. BACKGROUND....5
A. PPBE PROCESSES....5
B. SUMMARY....8

III. LITERATURE REVIEW....9
A. INTRODUCTION....9
B. ALTERNATIVE FACTS AND PERSPECTIVE OF PALT....9
1. Require Delivery Date....9
2. Total Acquisition Lead Time....10
3. Where Time Goes....12
4. Factors of PALT....13
C. POLITICAL ASPECTS....15
1. Data on MDAPS....15
2. Continuing Resolution....17
3. Behavioral Acquisition and Biases....19
D. REAL-LIFE EXAMPLES....21
1. Boeing 737 Max....21
2. Cyber Attacks....22
3. Unintended Consequences....23
4. F-35 Low Sortie Rate....24
5. TRANSDIGM....25
6. COVID-19 Pandemic....25
E. GOVERNING REGULATIONS....26
1. Federal Acquisition Regulation....26
2. Financial Management Regulation....27
3. OFPP PALT....27
4. Section 809 (Volume 3 of 3)....31
F. SUMMARY....34

IV. METHODOLOGY AND DATA ANALYSIS ..... 35
A. METHODOLOGY ..... 35
1. Compare and Contrast ..... 35
2. Case Study Approach ..... 36
3. The Argument ..... 39
B. ANALYTICAL MEASURES ..... 41
1. Data Cleansing and Sanitation ..... 42
2. PALT Development ..... 42
3. Analytical Measures ..... 43
4. PRALT to Award Analysis ..... 43
C. FINDINGS ..... 45
1. PALT Statistic Distribution ..... 45
2. Statistics Requirement Impacted by FY Defense Budget ..... 46
3. Inconclusive Data Analysis ..... 48
D. SUMMARY ..... 48

V. CONCLUSIONS AND RECOMMENDATIONS ..... 49
A. ANSWERING RESEARCH QUESTIONS ..... 49
B. RECOMMENDATIONS ..... 52
C. SUMMARY ..... 57
D. FURTHER RESEARCH OPPORTUNITIES ..... 57

LIST OF REFERENCES ..... 61

# LIST OF FIGURES


Figure 1. U.S. DOD Procurement Outlays vs. PLA Procurement Value. Source: Politico (2021). ....2

Figure 2. PPBE Process Overview. Source: AcqNotes (2022). ....6

Figure 3. TALT Breakdown and Measurements. Source: Letterle et al. (2019).....11

Figure 4. Notional Depiction of Acquisition Planning Timeline. Source: Letterle et al. (2019).....11

Figure 5. RCO-SW Process Flow. Source: Letterle et al. (2019). ....12

Figure 6. Token Importance. Source: SYM-AM-21-096 (2021). ....14

Figure 7. IRS Shopping Cart Random Forest Model. Source: SYM-AM-21-096 (2021).....15

Figure 8. Cycle-times and Cycle-time Growth for Complete + Active MDAPs. Source: Dwyer et al. (2020). ....16

Figure 9. Cycle-times and Cycles of Acquisition Reform. Source: Dwyer et al. (2020).....16

Figure 10. Cycle-times Growth and Cycles of Acquisition Reform. Source: Dwyer et al. (2020). ....17

Figure 11. Distribution of Purchase Requests Initiated by Month. Source: NPS-AM-22-019 (2022).....18

Figure 12. Summary Statistics of PRALT Length and Total Price, Differentiated by Good/Service and Continuing Resolution Status. Source: NPS-AM-22-019 (2022). ....18

Figure 13. The Connection. Source: Mortlock (2021). ....20

Figure 14. TransDigm's Excess Profit. Source: Majority Staff (2019).....25

Figure 15. Contract Phases. Source: FAI (2022).....29

Figure 16. Four Acquisition Phases. Source: Wooten (2021). ....30

Figure 17. Acquisition Strategy Schedule – Actual. Source: Section 809 Panel (2019). ....33

Figure 18. Simplified Acquisition Threshold Values. Source: Source: (AcqNotes, 2021). ....42

Figure 19. FY 21 SAP PRs Created per Month/SAT. Adapted from NSWC (2022). ....44

Figure 20. PRs Created per Month. Adapted from NSWC (2022). ....47

Figure 21. Program's Expended Life-Cycle Cost and Locked-in Cost. Source: Principles of Acquisition and Program Mgmt MN3221 (2020). ....53

Figure 22. Nominal Life-Cycle Cost of Typical DOD Acquisition Program with a 30-Year Service Life. Source: DSMC (2022). ....53

Figure 23. WSS Contract Competition. Source: Adjei and Hendricks (2021)....55

Figure 24. Geri's game. Source: Disney (n.d.). ....58

# LIST OF TABLES

Table 1. Quality and Cycle Time Statistics. Adapted from NSWC (2022). .....43

Table 2. FY 21 PRs Created per Month/SAT. Adapted from NSWC (2022).....44

Table 3. SAP PALT Statistic Day to Award. Adapted from NSWC (2022). .....46

Table 4. PRs Created per Month. Adapted from NSWC (2022). .....47

THIS PAGE INTENTIONALLY LEFT BLANK

# LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| AMS | Acquisition Management System |
| CAO | Contract Activity Office |
| CMTS | Contract Management Tracking System |
| COR | Contracting Officer Representative |
| CR | Continuing Resolution |
| DAU | Defense Acquisition University |
| DCMA | Defense Contract Management Agency |
| DMSMS | Diminishing Manufacturing Source and Material Shortages |
| DOD | Department of Defense |
| FAR | Federal Acquisition Regulation |
| FPDS-NG | Federal Procurement Data System – Next Generation |
| FY | Fiscal Year |
| GAO | Government Accountability Office |
| GLM | Generalized Linear Model |
| IPT | Integrated Product Team |
| IQR | Interquartile Range |
| JEDI | Joint Enterprise Defense Infrastructure |
| JWCC | Joint Warfighter Cloud Capability |
| LRIP | Low-Rate Initial Production |
| MCAS | Maneuvering Characteristics Augmentation System |
| MDAP | Major Defense Acquisition Program |
| MRAP | Mine-Resistant Ambush Protected |
| NSWC | Naval Surface Warfare Center |
| O&S | Operation and Sustainment |
| ODIN | Operational Data Integrated Network |
| OFPP | Office of Federal Procurement Policy |
| PALT | Procurement Acquisition Lead Time |
| PCO | Procuring Contracting Officer |
| PEO | Program Executive Officer |
| PERT | Program Review Evaluation Technique |

| | |
|---|---|
| PLA | People's Liberation Army |
| PM | Project/Program Manager |
| POM | Program Objective Memorandum |
| POP | Period of Performance |
| PPBE | Planning, Programming, Budgeting, and Execution |
| PR | Purchase Request |
| PRALT | Purchase Request Acceptance Lead Time |
| RDD | Required Delivery Date |
| RFP | Request for Proposal |
| SAP | Simplified Acquisition Procurement |
| SAT | Simplified Acquisition Threshold |
| SECDEF | Secretary of Defense |
| TALT | Total Acquisition Lead Time |
| UCA | Undefinitized Contract Actions |
| USN | United States Navy |
| WHO | World Health Organizations |

# I. INTRODUCTION

The objective for this report is to expand on the timely value and productivity of goods and services acquired through contract action, by examining if the Department of Defense (DOD) Procurement Acquisition Lead Time (PALT) is effective enough to support our warfighters and what actions are needed for a quicker process if required. This chapter delivers the necessary knowledge to understand the study and defines the specific questions we expect to answer during the assignment, scope and limitations, and how the research was concluded.

## A. BACKGROUND

Addressed in an official memo by Wooten (2021), the appointed Office of Federal Procurement Policy (OFPP) Administrator stated to the Chief Acquisition Officers - Senior Procurement Executives that "the hallmark of a world-class acquisition system is timely delivery of products and services with good value and customer satisfaction" (Wooten, 2021, para 1). Whether you're a government contractor, government employee, or even a taxpayer, PALT should be acknowledged by everyone. Without an effective PALT, issues may occur at all levels when the requirements are not being satisfied. Besides the OFPP MEMO that was presented by Mr. Wooten, many drastic efforts have taken place by the federal government to enhance PALT and bring awareness. Another example includes the Section 809 Panel; these Advisory Panel Members were carefully selected to make "a number of recommendations to reduce procurement timelines and enhance DOD's use of best-in-class contracts" (Rossin, 2019, para. 1). However, we cannot automatically assume speeding up the PALT will make the process entirely better. We also need to consider the effects of accelerating the PALT on the iron triangle (cost, schedule, and performance). Compared to a three-legged stool, it is very rare to gain the benefits from all three costs, schedules, and performances without negatively affecting the others. In this situation, costs and performances are most likely to be affected by the PALT (schedule).

## B. PURPOSE

The purpose of this study is to analyze the DOD PALT process by reviewing the facts provided by previous research along with our own analytical measurements given by one of the Naval Surface Warfare Centers (NSWCs) under the Naval Sea Systems Command enterprise.

As previously mentioned, there has been many controversies surrounding PALT in recent years. Whether you're purchasing a $15k set of office furniture or a $300M weapons system, they have one thing in common, you have to wait a period of time between the requirements and purchase order (award).

This can be challenging for many organizations, no matter the size of the goods/ services being acquired. In fact, it is strongly believed that an extensive PALT can lead to National Security concerns. Figure 1 displays China People's Liberation Army (PLA) is projected to exceed the U.S. military's annual procurement value by 2024 and "by 2030 the U.S. will no longer boast the world's most advanced fighting force in total inventory value" (Deal, 2021, para. 6).

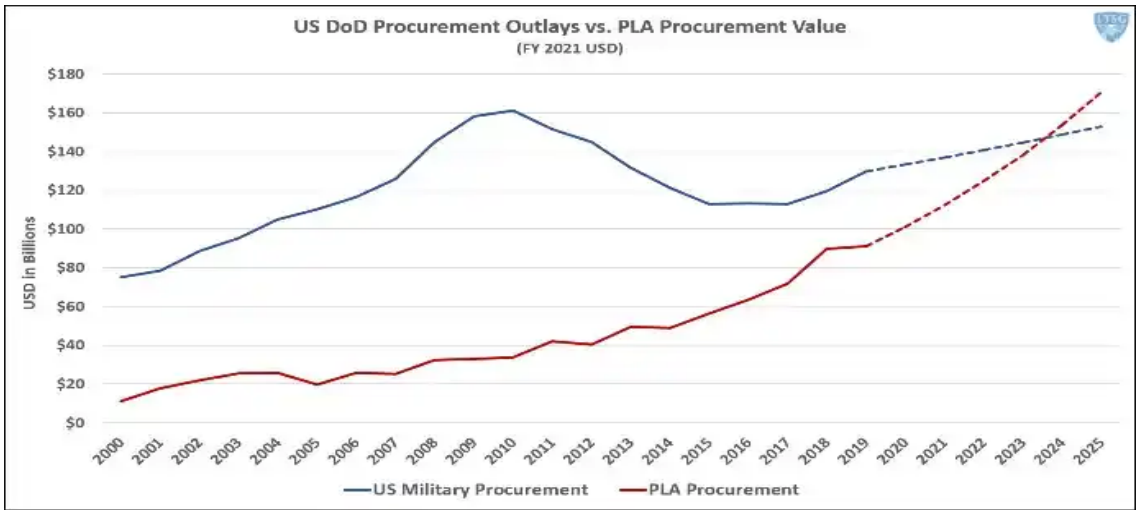



Figure 1. U.S. DOD Procurement Outlays vs. PLA Procurement Value. Source: Politico (2021).

## C. RESEARCH QUESTIONS

The following research questions are designed to enhance the assessments of PALT in order to recognize the common areas and impacts taken toward the process. Along with written articles and other publications, we decided to utilize actual data to assist our research in displaying success rates from an NSWC and to consider if these statistics are the norm across the DOD.

### 1. Primary Question

- What is the role of PALT in the overall acquisition time-frame and its context in the DOD Planning, Programming, Budgeting, and Execution (PPBE) process?

### 2. Secondary Questions

- What are the common malpractices and best practices for acquisition professionals?
- What are the impacts and consequences for rushing PALT?
- Is NSWC providing a proper PALT success rate?

## D. SCOPE AND LIMITATIONS

The scope of this thesis includes published articles/theses and analytical samples of NSWC Simplified Acquisition Procurement (SAP) Purchase Request (PR)s, that were submitted to the contracting activity for acquisitions of goods and services. This research recognizes the findings related to PR distributions (workload) given to the Contract Activity Office (CAO), impact of Fiscal Year (FY) Defense Budget (Continuing Resolution), type of requests (thresholds) that impacted the acquisition timelines, and the periods during the FY.

Because of the endless data from procurements that fall under our measures, the NSWC CAO was able to supply us 413 SAP processed transactions ranging from $25K to 7M awarded in FY21.

A restraint toward this research was the utilization of Microsoft Excel for breaking down the data section. We're aware of possible sophisticated software tools that may have possibly dissected the information further, however we believed Microsoft Excel was sufficient to supply the research required for this study.

## E. ORGANIZATION OF THE STUDY

This report is structured in five chapters. Chapter II provides a background on the PALT and PPBE processes along with other regulations. Chapter III includes a literature review of articles and published theses to offer the alternative facts and perspective on PALT, political aspects surrounding PALT, governing regulations, and real-life examples. Chapter IV investigates the process and comparison of PALT in multiple methods, to include a compare and contrast breakdown, case study on the theme, and provides an analysis from the gathered data. Chapter V determines the body of research and delivers recommendations on our results as it relates to PALT. This chapter has presented the topic for this Joint Applied Project (JAP), PALT, and designates the track and determination of this research. The following chapter deliberates the background of PALT and other matters pertaining to the subject.

# II. BACKGROUND

Government procurement is the course by which the government acquires the goods and services it requires. This chapter provides insight to the readers with the necessary information essential to better understand the procurement processes. We provide background information on PALT and PPBE applicable to acquisition regulations and outline challenges. We conduct fact-findings of effective and ineffective practices across multiple DOD agencies. The knowledge base is extracted from research and at all levels of subject matter experts from acquisition communities to include procurement managers and contracting professionals.

## A. PPBE PROCESSES

In this chapter, we provide an understanding of the defense acquisition system and main components within the progressions. It is essential to understanding the PPBE as shown on Figure 2 and PALT as it is applied into the acquisition methods and its criticality toward programs. We will identify malpractices and best practices from acquisitions professionals to include consequences for accelerating the process. Finally, we provide an analysis from NSWC FY21 PALT metrics.

> The Planning, Programming, Budget, and Execution (PPBE) process (see PPBE Map) is one of three (3) processes (Acquisition, Requirements, and Funding) that support the Defense Acquisition System. The PPBE process is focused on Financial Management and resource allocation for current and future DOD acquisition programs. The process is established by the Secretary of Defense (SecDef) who provides priorities and goals under the main guidance of DOD Directive 7045.14 "Program Planning Budget & Execution (PPBE)" Process." (AcqNotes, 2022)
>
> The PPBE process consists of four (4) distinct but overlapping phases:
>
> 1. Planning: The Planning Phase of the PPBE Process is the definition and examination of alternative strategies, the analysis of changing conditions and trends, threats, technology, and economic assessments in conjunction with efforts to understand both change and the long-term implications of current choices.
> 2. Programming: The Programming phase of the PPBE process defines and analyzes alternative force structures, weapon systems, and

support systems together with their multi-year resource implications and the evaluation of various tradeoff options.

3. Budgeting: The Budgeting phase of the PPBE process includes formulation, justification, execution, and control of the budget. The primary purpose is to scrutinize the first one or two years of a program's budget to ensure efficient use of resources.
4. Execution: The Execution phase of the PPBE process is the real-world application of the Planning, Programming, Budgeting, and Execution process. (AcqNotes, 2022)

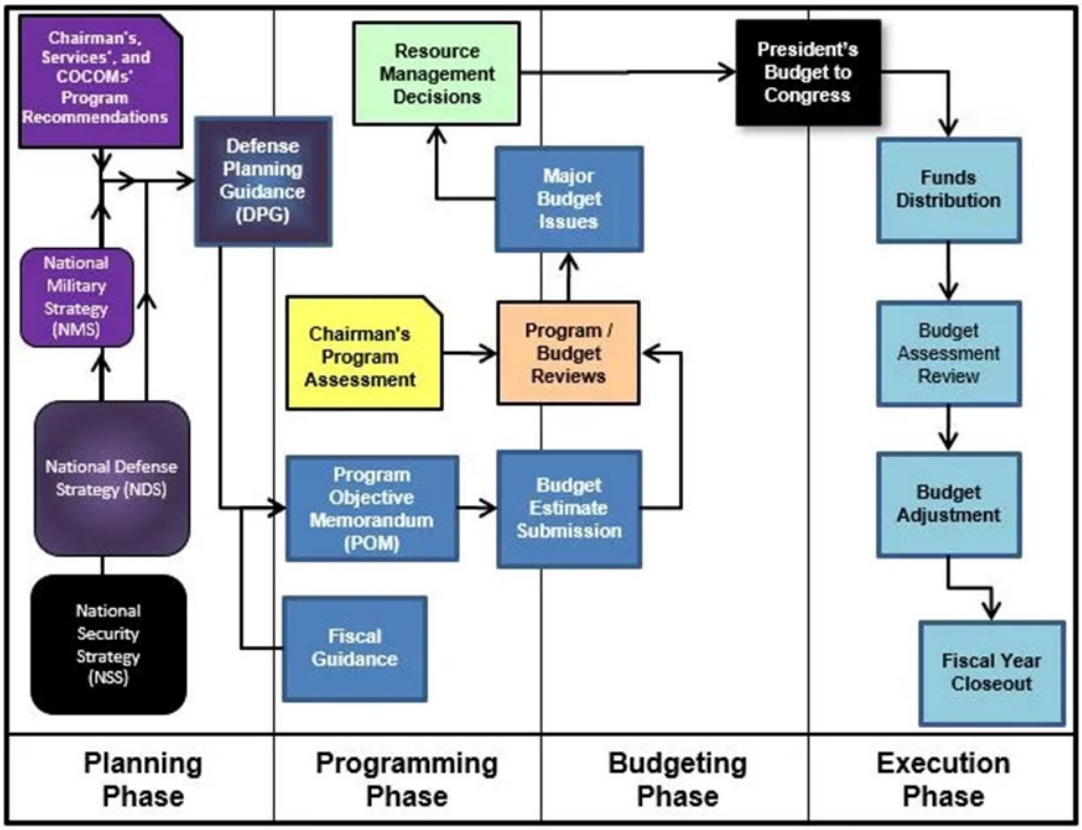



Figure 2. PPBE Process Overview. Source: AcqNotes (2022).

Project/Program Manager (PM)s assigned to all major systems at every level utilize PPBE as a foundation when establishing requirements. The primary reason for PPBE is to ensure resources within the DOD and provide guidance for the acquisition community to work jointly along with the PMs and to make certain the developments are being utilized correctly within the current policy and regulations.

PPBE has a long and historical foundation that provides the direction for the DOD to document procedures of evolution through each of its phases. Referring to our research, we have identified similarities across many major programs and concluded the PPBE process may require adjustments to stay current with our timelines. One area of concern that is considered extremely critical for the DOD is cybersecurity. We can assume any major program that is applying PPBE will successfully comply with all four phases may already be falling behind by the time the Execution Phase is reached.

> Procurement Lead Time is a term sometimes used interchangeably with the terms Procurement Action Lead Time, Contract Action Lead Time, and Administrative Lead Time. Precise terminology varies among contracting officers and across agencies, but organizations use one or more measures of lead time for internal management and efficiency purposes. (DAU, n.d.)

The thought of "PALT" being referenced may be vague and it is left to be interpreted as best fitted for internal use, it is subjected to its own interpretation and we believe that there is no focal structure or methodology that can provide structure. We examined case scenarios that described PALT in specific phases of the PPBE, and identified risk as the pressure to have a successful program may place checks and balances at peril and be overseen to ensure the project delivers on its intended purpose. PMs are usually found in scenarios that place them to take unavoidable risk.

Although politics are not officially part of the PPBE process, many of the decision actions within the PPBE depend on elected officials. This deed usually leads to a negative domino-effect across all phases. This explanation will be provided in Chapter III as we indicate the non-direct impacts of politics.

Acquisition professionals and stakeholders must take into account all mandatory regulation and procedures set by their overarching agency to generate a methodology to generate some reasoning behind PALT. There are many methodologies that can be implemented into the PALT, but they are required to make sense. In Chapter IV we provide an analysis of how a NSWC implemented the Interquartile Range (IQR) to generate its PALT.

Studies and analyses were conducted using NSWC's SAP PALT data, for procurements processed in FY21. Raw data was extracted from a naval internal system called Contract Management Tracking System (CMTS) for inconsistency and incomplete information to further explain NSWC's PALT process and methodology covered in Chapter IV. The focus of the analysis is to provide current and authentic presentation data to present as challenges or best practices.

## B. SUMMARY

This chapter provided an overview description of the statutory requirement for the PPBE and a general description of PALT. The following chapter will provide further details into literature reviews, professional studies, and quantitative analysis.

# III. LITERATURE REVIEW

## A. INTRODUCTION

Evaluations and examinations into public procurement are common. Subject matter experts and peer-reviewed articles create a large quantity of literature that can emphasis on the field.

This literature review examines articles connecting to the number of deficiencies and disadvantages relating to the topic. Information pertaining to PALT/ALT was bound to minimal library of articles and scholastic examination of related cases in this topic. The focus of the literature review is to display cases in different environments and exhibit the challenges in the acquisition process.

## B. ALTERNATIVE FACTS AND PERSPECTIVE OF PALT

### 1. Require Delivery Date

PALT has several deficiencies and disadvantages:

- It is one of many indicators of effectiveness.
- Does not take into consideration the changes possibly required.
- Could provide a small amount of purpose toward the Stakeholders.

Field activities have utilized PALT in conjunction with other indicators such as:

- Record data that can be utilized for improvements.
- Backlogs.
- Tools to provide feedback from users for enhancements.
- Required Delivery Date (RDD)

RDD has its own set of challenges, the use of RDD is not common at many acquisition locations and there are some concerns that customers often submit unrealistic

RDDs. Secondly, most procurement professionals mistrust customers with RDD validity, so the wariness would have to be overcome.

Alternative resolution can be solved by the customer and the procurement activity in addressing unrealistic RDDs, or the "repeating worst offenders." Another approach that is utilized in the private sector is the cost center and fees for service approach, albeit maybe difficult to execute in the public sector. There is a standard fee established, and if the purchase needs to be expedited there will be an additional fee toward the request. Even with its shortcomings, PALT is here to stay for the long run and has been used throughout the acquisition community and history.

### 2. Total Acquisition Lead Time

A picture is worth a thousand words. The Total Acquisition Lead Time (TALT) chart (Figures 3 and 4) breaks down the workflow in the simplest form, from the agencies' needs, to contract award with contractor initiating performance. The diamond plate in the middle is when the contracting activity accepts the PR and initiates the start of PALT. In a zero-sum game scenario, the overall ALT remains the same. The interest of the acquisition community in procuring faster, and the movement of the diamond plate to the right in compressing the PALT. What often is left out of the picture, are the results to the other half of the equation in the overall time frame.

Purchase Request Acceptance Lead Time (PRALT) is the phase before the formal entry into the PALT. Once a requirement is met, many factors may delay the PRALT such as creating a Statement of Work (SOW) for service, obtaining necessary waivers, and/or funding. Complexity and higher price requirements are even prone to longer postponements. The PALT officially begins when the contracting activity has accepted the PR and recognizes it as completed. An example of the five-year master planning schedule is examined, taking a holistic view approach, TALT = PRALT + PALT.

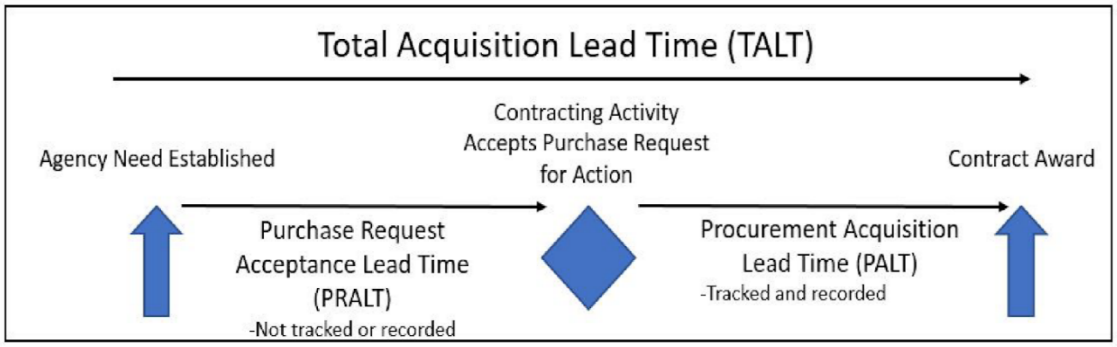



Figure 3. TALT Breakdown and Measurements. Source: Letterle et al. (2019).


Figure 4. Notional Depiction of Acquisition Planning Timeline. Source: Letterle et al. (2019).

The flow chart seen on Figure 5 depicts the United States Marine Corps (USMC) RCO SW. Utilizing raw data provided by 8,929 SDN, covering roughly from FY 2016 – FY 2018. The scrubbed data brought the final count to 661 unique SDN's to conduct the research. All extracted data were from "contracting actions below the Simplified Acquisition Threshold (SAT) of $250,000" (Letterle et al., 2019, p. 29). Data displays the average PRALT to be "22.59 days, would be added to the PALT tracked by the contracting activity to determine TALT" (Letterle et al., 2019, p. 36). Some PRALT ranged as long as 288.37 days, which "suggests the possibility for comprehensive improvement to streamline processes and decrease variability" (Letterle et al., 2019, p. 37).

Several factors played into the disparities of PRALT, by popular demand being the use of RDD or Period of Performance (POP). Delayed acceptance was also interfered, depending on how many PRs were submitted during the month. Although one finding

displayed "delays were shortened during months with greater amounts of PR submissions" (Letterle et al., 2019, p. 62) and longer PRALTs were the result of fewer submissions. Someone might scratch their head with that analogy, but it was acknowledged by the authors as a possible "hesitation around accepting new PRs factor into these delays" (Letterle et al., 2019, p. 62).

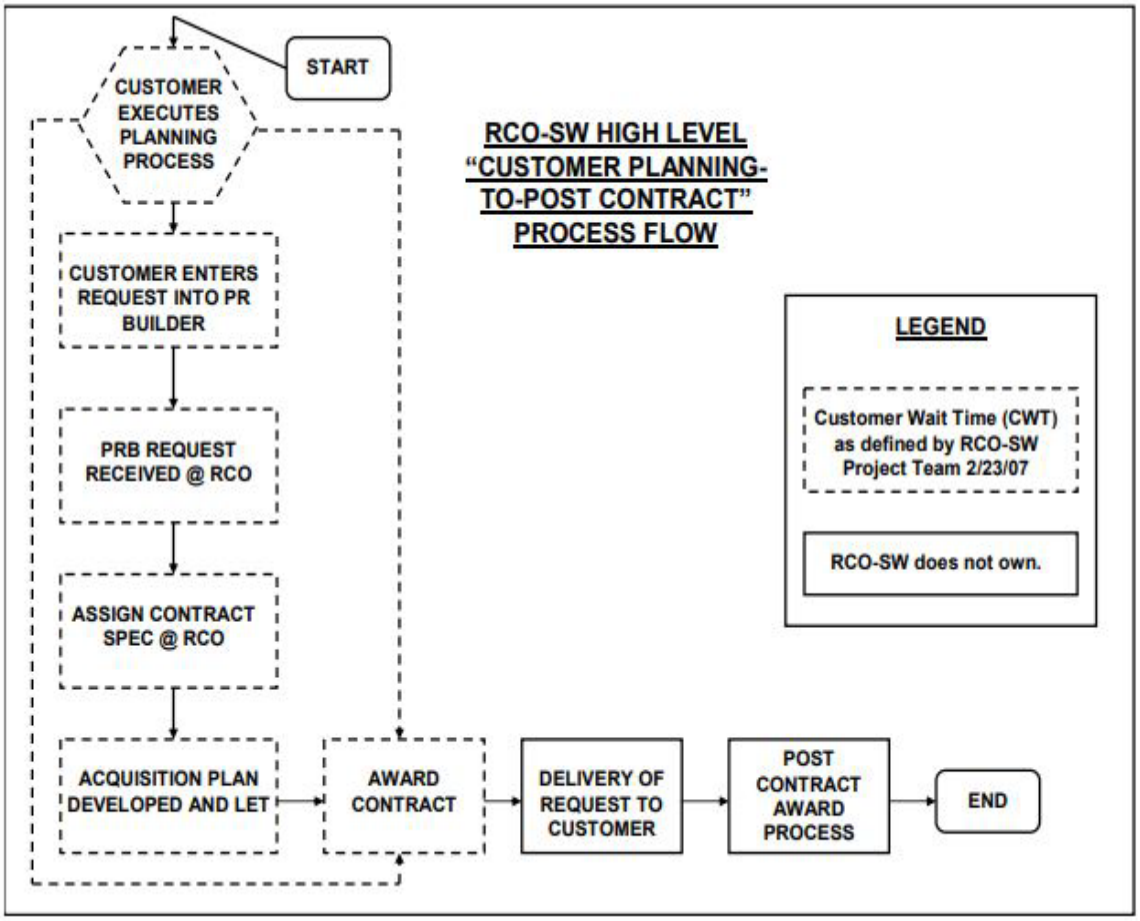



Figure 5. RCO-SW Process Flow. Source: Letterle et al. (2019).

### 3. Where Time Goes

NSWC has gradually transitioned from the SeaPort eMilestone tool to Acquisition Management System (AMS), software suites that facilitate communications and provide visibility to the procurement process for the stakeholders. The AMS product was the result

of a misalignment for expectations at NAVAIR amongst stakeholders with its own distinctive schedules.

AMS Instructor William Randolph simplified the milestones horizon to start with the identification of requirements to provide a solution toward the vendors (AMS, 2021). He also illustrated the early stages of requirements on emphasizing where time goes to die. Whereas the PALT activities are time-bound and sequence with regulation and approval, processes that cannot be skipped. The proposed solution is to put the requirements definition on the clock, and not allow it to fall under Parkinson's Law and work to fill the time allotted for its completion. This is how the acquisition team can harvest time from the PR requirements phase and move the milestones downstream to bring the timeline closer to execution and reduce the overall cycle time. An example can be found on Figure 6.

### 4. Factors of PALT

The research looked at:

- The drivers of PALT.
- Identifying opportunities to reduce PALT.
- To predict when specific requirements are likely to be awarded using government wide data from Federal Procurement Data System – Next Generation (FPDS-NG), on over 5 million federal contracts.

Two questions are asked:

1. What are the significant unexplored features/predictors of PALT?
2. Can machine learning models be applied to reliably and accurately predict when a contract action will be awarded? (AMS, 2021)

| Token | Count | Coefficient | Variance Importance | Mean PALT Days |
|---|---|---|---|---|
| idiq | 3452 | 25.8 | 12.6 | 137.4 |
| tuition | 736 | -90.2 | 11.2 | 9.4 |
| macc | 443 | 147.0 | 28.1 | 286.2 |
| ae | 1963 | 18.4 | 7.1 | 119.3 |
| protect | 895 | 45.2 | 12.1 | 143.9 |
| guarante | 660 | -58.6 | 7.6 | 196.8 |
| uss | 1563 | -35.2 | 9.7 | 38.2 |
| repair | 9240 | -12.4 | 9.8 | 70.5 |
| report | 1545 | 27.7 | 8.4 | 178.4 |
| express | 740 | 132.2 | 23.8 | 266.0 |

Figure 6. Token Importance. Source: SYM-AM-21-096 (2021).

The researcher uses the IRS Shopping Cart model (Figure 7) for "predicting contract award dates results" (Gill & Hawkins, 2021, p. 65). Various techniques of natural language processing, Generalized Linear Model (GLM), and a displayed "list of the 10 highest importance tokens from GLM" (Gill & Hawkins, 2021, p. 62). They discovered the "number of days until the fiscal year end (days_until_FY_end), the current number of contracts assigned to the CS overseeing the contract (current_CS_workload), and the functional area (Functional Area) of the contract have the largest impact on model performance" (Gill & Hawkins, 2021, p. 69).

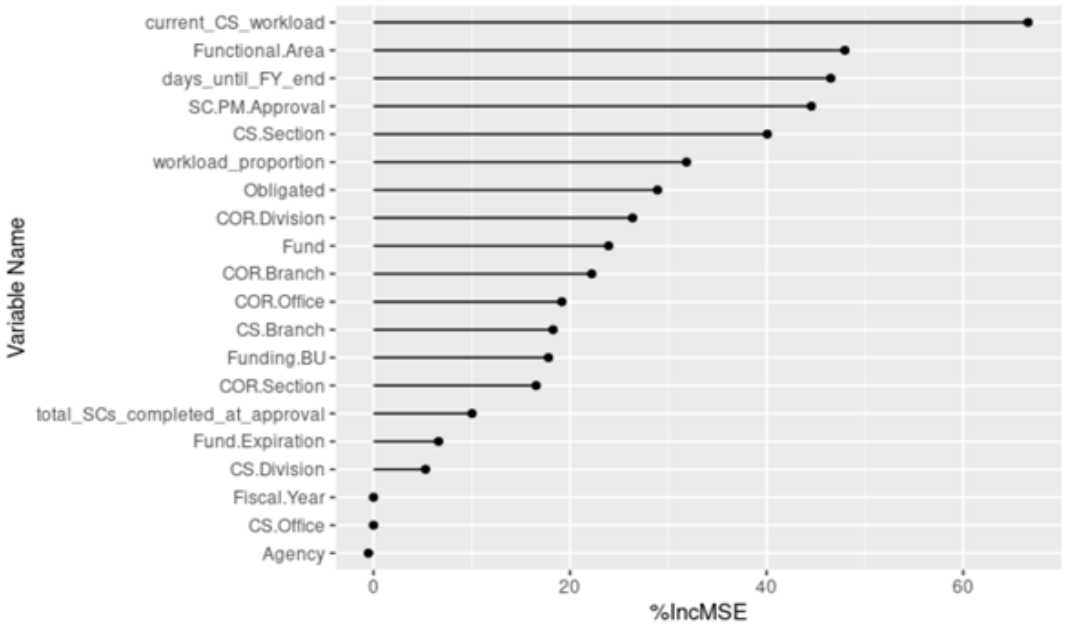



Figure 7. IRS Shopping Cart Random Forest Model. Source: SYM-AM-21-096 (2021).

Confirmed factors affecting PALT include:

- Price.
- The extent of competition with the number of offers received.
- Good of services procured by the NAICS code.
- Contract.

## C. POLITICAL ASPECTS

### 1. Data on MDAPS

A reliable incentive acquisition professionals can lean on are acquisition reforms. There is a pattern to this pendulum swing madness of repetition throughout history and some describe it as a "never-ending cycle." The grant assessed the "relationship between cycles of acquisition reform and cycle-times (see Figure 8) (i.e., the time to field new capabilities)" (Dwyer et al., 2020, p. 1). 200 Major Defense Acquisition Program (MDAP)s were utilized in a span of 60 years over six acquisition cycles of reform as shown on Figures

9 and 10. It was "observe that, historically, centralized oversight correlates with lower rates of cycle-time growth but that cycle-times have remained relatively unchanged throughout defense reform cycles" (Dwyer et al., 2020, p. 1).

It is difficult to make comparisons between the DOD, U.S. private sector, and China's practices due to limited data on other non-MDAP programs (private sectors, and foreign countries). Available data shows that DOD fielded MDAPs at speeds comparable to the U.S. private sector, as well as competing power such as China. (Dwyer et al., 2020).

**(1962–Present)**

| | Program Type | Mean | Median | Max. | Min | N |
|---|---|---|---|---|---|---|
| **Cycle Time (years)** | *Complete* | 6.5 yrs | 6.3 yrs | 21.2 yrs | 0.1 yrs | 237 |
| | *Active* | 9.3 yrs | 9.1 yrs | 18.7 yrs | 2 yrs | 39 |
| **Cycle Time Growth (percent)** | *Complete* | 30.5% | 14.6% | 346.7% | -53.6% | 189 |
| | *Active* | 33.6% | 12.4% | 180.0% | -1.3% | 37 |

Figure 8. Cycle-times and Cycle-time Growth for Complete + Active MDAPs. Source: Dwyer et al. (2020).

**MDAPs, 1962–2016)**

| Reform Cycle | Years | Mean | Median | Max. | Min | N |
|---|---|---|---|---|---|---|
| *McNamara Reforms* | 1961-1969 | 5.0 yrs | 4.4 yrs | 11.5 yrs | 0.9 yrs | 14 |
| *Defense Systems Acqusition Reform Council* | 1970-1980 | 6.0 yrs | 6.0 yrs | 15.7 yrs | 1.4 yrs | 54 |
| *Acqusition Improvement Program* | 1981-1989 | 7.1 yrs | 6.5 yrs | 21.2 yrs | 1.5 yrs | 62 |
| *Defense Acquisition Board* | 1990-1993 | 6.9 yrs | 6.9 yrs | 14.5 yrs | 1.8 yrs | 15 |
| *Mandate for Change and Transformation* | 1994-2007 | 7.6 yrs | 7.6 yrs | 16.8 yrs | 0.1 yrs | 83 |
| *Weapon Systems Aqusition Reform Act* | 2008-2016 | 7.2 yrs | 6.3 yrs | 18.7 yrs | 1.3 yrs | 42 |
| ALL CYCLES | 1961-2016 | 6.9 yrs | 6.6 yrs | 21.2 yrs | 0.1 yrs | 270 |

Figure 9. Cycle-times and Cycles of Acquisition Reform. Source: Dwyer et al. (2020).

Complete MDAPs, 1962–2016)

| Reform Cycle | Years | Mean | Median | Max | Min | N |
|---|---|---|---|---|---|---|
| *McNamara Reforms* | 1961-1969 | 3.0% | 1.7% | 11.4% | 0.0% | 5 |
| *Defense Systems Acqusition Reform Council* | 1970-1980 | 23.6% | 12.9% | 112.5% | -31.7% | 34 |
| *Acqusition Improvement Program* | 1981-1989 | 41.3% | 11.1% | 346.7% | -8.0% | 48 |
| *Defense Acquisition Board* | 1990-1993 | 14.7% | 13.5% | 62.0% | -53.6% | 13 |
| *Mandate for Change and Transformation* | 1994-2007 | 35.1% | 22.2% | 204.2% | -7.1% | 81 |
| *Weapon Systems Aqusition Reform Act* | 2008-2016 | 26.7% | 10.5% | 180.0% | -15.2% | 40 |
| ALL CYCLES | 1961-2016 | 31.2% | 14.6% | 346.7% | -53.6% | 221 |

Figure 10. Cycle-times Growth and Cycles of Acquisition Reform. Source: Dwyer et al. (2020).

### 2. Continuing Resolution

In this article (Brien, 2022), we see the attempt to crack the code for acquisition professionals, in effort to remove the barriers from the acquisition process. Continuing Resolution (CR) can brings its own set of challenges. "Starting the fiscal year with CR is the rule rather than the exception, as appropriation legislation was passed on time only a handful of times over the last several decades" (Brien, 2022, p. 6).

The grant looked at the early state of the acquisition life cycle when PR entered the acquisition system, and the impact of the federal CR on defense acquisitions. During a CR, the PR generated is reduced by nearly half and has a significant impact on service requests. With the lack of full budget authority, it has "clear impacts on procurement activity that result from the uncertainty and increased administrative burden that is triggered by the lack of full budget authority" (Brien, 2022, p.11). Data shows "a strong peak of purchase order creation towards the middle of the fiscal year" (Brien, 2022, p.13), and an uptick near the end of fiscal year associated with the "use it or lose it" pattern of obligation and pressure to obligate remaining funds as shown on Figure 11.

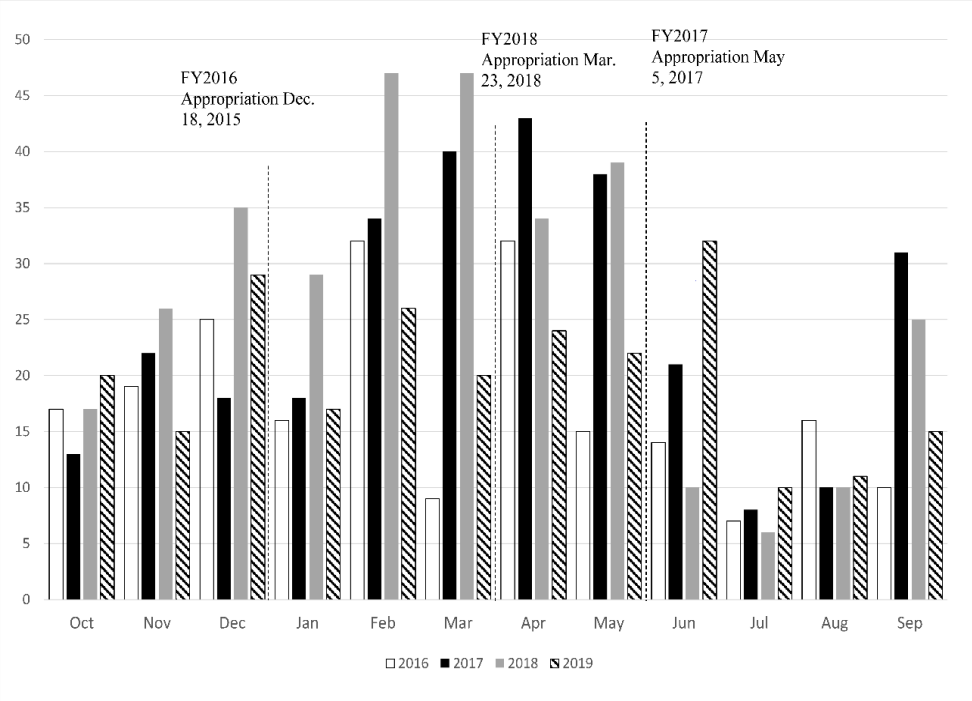



Figure 11. Distribution of Purchase Requests Initiated by Month. Source: NPS-AM-22-019 (2022).

The PR count and PR adjustments are also reflected in Figure 12.

| | | Continuing Resolution | | Full Budget Authority | | Overall | |
|---|---|---|---|---|---|---|---|
| | | Service | Good | Service | Good | | |
| Number of Purchase Orders | | 148 | 80 | 530 | 316 | Total<br>Goods<br>Services | 1074<br>396<br>678 |
| PRALT Length in Days | Mean | 101 | 47.1 | 65.2 | 30.9 | | 58.7 |
| | Std Dev | (173.5) | (76.3) | (119.1) | (50.1) | | (113) |
| Total Price | Mean | $39,281 | $45,917 | $57,544 | $31,618 | | $46,533 |
| | Std Dev | ($53,990.7) | ($75,002.4) | ($63,626.5) | ($50,148.2) | | ($60,665) |
| Adjustments | Mean | 4.8 | 3.3 | 5.1 | 3.3 | | 4.4 |
| | Std Dev | (3.8) | (3.7) | (5.4) | (3.9) | | (4.7) |

Figure 12. Summary Statistics of PRALT Length and Total Price, Differentiated by Good/Service and Continuing Resolution Status. Source: NPS-AM-22-019 (2022).

### 3. Behavioral Acquisition and Biases

The Been There, Done That, series examines "how behavioral biases affect decision-making within acquisition efforts and contributes to acquisition program failures" (Mortlock, 2021). Mortlock (2021) used the personal finance analogy to display how a third-party outsider such as a financial professional, can objectively be driven by data analysis to bring "value to their clients, keep their clients from making decisions based on emotions or biases" (para. 2). How is this relatable to defense acquisition? The same concept of acquisition professionals can protect the senior leaders from themselves. Mortlock (2021) coined the phrase behavioral acquisition, "which explores defense acquisition from a behavioral standpoint, including the impact of psychology, organizational behavior and politics."

Besides the iron triangle of cost, schedule and performance, the PM also faces the Chain of Command, Program Executive Officer (PEO), Organizational Services, Under Secretary of Defense (USD) Acquisition and Sustainment Defense Acquisition Executives, and Milestone Decision Authority. The Government Accountability Office (GAO) has documented for the past three decades, a laundry list of high risk for waste and mismanagement. Common root cause and reason of program failures includes ill-defined requirements, but what's underappreciated and understudied is the "people part," "which may have the largest effect on improving acquisition outcomes" (Mortlock, 2021).

Mortlock (2021) presented a good model of the interactions and the connection of the various levels from the Instructional (DOD) to the Organizational (Service or PEO), to the individual Program Level (see Figure 13).

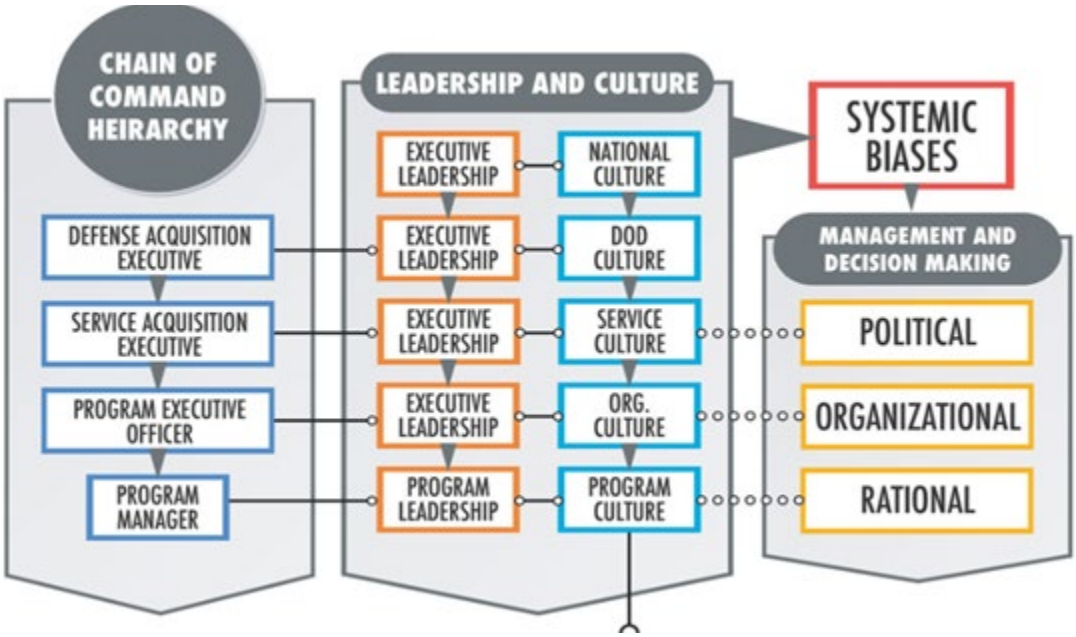



Figure 13. The Connection. Source: Mortlock (2021).

Mortlock (2021) has provided "a list of common behavioral biases often observed within defense acquisition programs that have affected decision-making and therefore program outcomes."

- Planning fallacy—"This time it's different."
- Difficulty making tradeoffs—"Everything is important, therefore nothing is."
- Over-optimism—"Yes, we can do it," or seeing things through "rose-colored glasses."
- Recency bias—"Little chance of success unless this new initiative is incorporated."
- Narrow or myopic framing of issues.
- Loss aversion when ahead and risk favoring when behind.
- Status quo bias or anchoring effect.
- Confirmation bias.
- Attribution bias—"Externalize failures or internalize successes."
- Illusion of control.
- Availability heuristic—"In my last program …," "Other programs right now … ."
- Narrative fallacy preference for stories over data.
- Framing effects—We are influenced by the way information is presented.
- Regret aversion.

- House money effects—Make us more risk-seeking.
- Hindsight bias.
- Blind spot bias—We think we are less prone to cognitive bias than those around us. (Mortlock, 2021)

Despite acquisition reforms and calls for data-driven analysis, emphasis on rational optimization provides a decision-making by humans with political dimensions and behavioral biases. Mortlock (2021) quotes, "Cognitive biases are a two-edged sword: on the one hand they have a positive function in helping people to make fast decisions using limited cognitive resources. On the other, cognitive biases also lead people to make errors in decision-making that deviate – often in important ways – from rational decision making" (Mortlock, 2021).

## D. REAL-LIFE EXAMPLES

### 1. Boeing 737 Max

The article is part of a research agenda in improving the realism of acquisition schedules. Pickar & Franck (2021) looks at the case of the Boeing 737 MAX, and uses the case to illustrate the risk of "scheduling by fiat" (Pickar & Franck, 2021). Humans think in terms of cause and effect, however in execution the visibility to the schedule is reduced. What is left out of the equation is the action-reaction-counteraction sequence. Due to the market competitive reason, Boeing is playing "catch-up": to Airbus A320 neo that will soon be available by 2017. Market competitive forced Boeing to create a quick response to assure market share and scheduling become the primary driving factor over cost and performance. With a long list of reasons, the company settled on using the 1960 era designed 737 airframes, overcoming technical issues such as wings, engine, and aerodynamics.

Management reaction to pressure results in what Pickar & Franck (2021) called "an aspirational schedule." There are formal processes such as Critical Path Method (CPM) and Program Review Evaluation Technique (PERT) for estimating schedule, however the political reason won over the most rudimentary schedule calculations. Political driving developments or schedules are not new, what is lacking are acknowledgements of the

challenges on “aspirational scheduling and an acceptance of the necessity for reasoned trades in a development” (Pickar & Franck, 2021, p.21).

What followed the 737 MAX program was a series of technical challenges, the larger and more powerful engines calls for design modification that relocated the engines higher and forward. This changes the aerodynamics, the center of gravity, and center of lift closer together and causes the nose to pitch up. As mentioned earlier with the “cause and effect manner, solving the immediate problem” (Pickar & Franck, 2021, p.1) was the software implementation of Maneuvering Characteristics Augmentation System (MCAS). The rush caused four key errors:

- Poor documentation.
- Rush released.
- Delayed software updates.
- Humans not being informed. (Pickar & Franck, 2021)

The consequences of the tradeoff for scheduling as the primary results in the program detraction from operational safety. As witnessed in the news, Lion Air crashed in Indonesia in Oct 2018 (Baker, 2019), followed by the Ethiopian crash in March 2019 with the lives of 346 people and world-wide grounding (Macola, 2021, “Introduction”).

### 2. Cyber Attacks

Schoeni (2017) indicated cyber acquisition is similar to other major systems and the slow nature of the acquisition process (cyber acquisition cycles averages seven to ten years). Congress took steps to relieve pressure and burden: “The 2016 NDAA extended to cyber the rapid acquisition authority previously reserved for contingency contracting. [and] The 2017 NDAA extended coverage of the special emergency procurement previously limited to defense from or response to nuclear, biological, chemical, or radiological attacks” (Schoeni, 2017, p. 834).

Schoeni (2017) argued that these changes are insufficient, because of the “limited use for offensive cyber weapons and neglect industry development methods” (Schoeni, 2017, p. 834).

Schoeni (2017) proposes:

1. Congress should raise the rapid acquisition authority's $200 Million cap,
2. Reorient the authority from being purely defensive or reactive and toward an offensive posture that may serve as a proper deterrent, and
3. Adopt software development methods that are better suited to keeping pace with the rapidly emerging cyber threat. (Schoeni, 2017, p. 844 ~ 848)

Schoeni (2017) argues that cyber-attacks pose threats for at least four reasons:

1. U.S. weapon systems heavily rely on software,
2. Networks have enabled the U.S. military to do more with less. Absent a functioning network, the force multiplying effect is lost,
3. Since World WAR II DOD has primarily relied on the private sector to supply its arsenal, this industrial base is an attractive target and has proven ill-equipped to defend itself from cyber espionage and
4. Cyber offers an attractive means for adversaries to compete with the DOD, asymmetrical warfare presents a more affordable alternative, especially for countries with modest defense budgets and for non-state actors. (Schoeni, 2017, p. 836~838)

### 3. Unintended Consequences

This article viewed trends in the recent decades, starting the 1990s when it was best practices and management efficiency. This continuous improvement practice carries into the 2010s with Mr. Kendall's Better Buying Power initiatives reigning in the cost, with the latest BBP 3.0 announced in April 2015. The NDS of 2018 has again re-emphasize the competition with adversaries such as the rise of China. The attention has been focused on the need for speed.

Wong (2020) had viewed the F-22, the Mine-Resistant Ambush Protected (MRAP), and other programs that aim for speedy fielding and lessons learned. The MRAP was a deliberate choice to speed up in order to protect the lives of soldiers, the unintended consequences was the minimal attention to sustainment issues. When acquisition to the iron triangle of cost, schedule, and performance, there are consequences when scheduling or fielding of systems are emphasized. The users need to have cognizance of the potential negative impact on the acquisition as a whole.

Wong (2020) had suggested instead of pushing the envelope with schedule and fielding the system, the defense acquisition community could turn its attention on speed

through the feedback loop via learning and refinement of its current fielded capabilities. The impact with the continuous improvement and speed of adoption of changes, be its end-users input, feedback, and/or updates of a system's designed flaws will add more value than just the upfront fielding of a system.

### 4. F-35 Low Sortie Rate

The F-35 program is the costliest weapon system with an estimated lifetime cost of $1.6 Trillion (Roblin, 2021, para. 2). It is an item of interest for all. In the POGO report, the aircraft's FMC rate collapsed from 12% in October 2016 to zero in December 2017. The Marine Corps' F-35B "fell from 23% in October 2017 to 12.9% in June 2018" (Grazier, 2019). "All of these are far below the target of 80% mission capable rate set by former Defense Secretary James Mattis" (Grazier, 2019, "last para.").

During the course of our NPS study, we heard in the news of the former Defense Acting Secretary Shanahan, frustrated with the low sortie rate (Cohen, 2019, "Introduction"). There are multiple paths and reasons for the low rate, one of the major artery issues is the supply chain management. The software transition from ALIS to ODIN has its own pendulum swing with the initial switch, then funding cutbacks. Readers are welcome to surf the GAO web and obtain the reports. The upcoming 2022 NPS Research Symposium Panel #06 specifically addresses the supply chain concerns with topics such as:

- Supply Chain assessment for an era of Long-Term, Peacetime Competition.
- Organizational Change Considerations for Implementation of Performance-Based Logistics Contracts.
- Acquisition Security Framework Integration of Supply Chain Risk Management Across the DevSecOps Life cycle.

The NPS panel also researched the GAO-22-105943 (Ludwigsonm, 2022) and GAO-22-105995 (Maurer, 2022).

## 5. TRANSDIGM

The F-35 was an illustration of the sustainment during the program's early phase, such as Low-Rate Initial Production (LRIP). TransDigm was a case of end-users playing catch-up during the Operation & Sustainment Phase (see Figure 14) . It was rumored, the committee on Oversight and Reform called on an investigation and refund for unreasonable prices charged on spare parts.

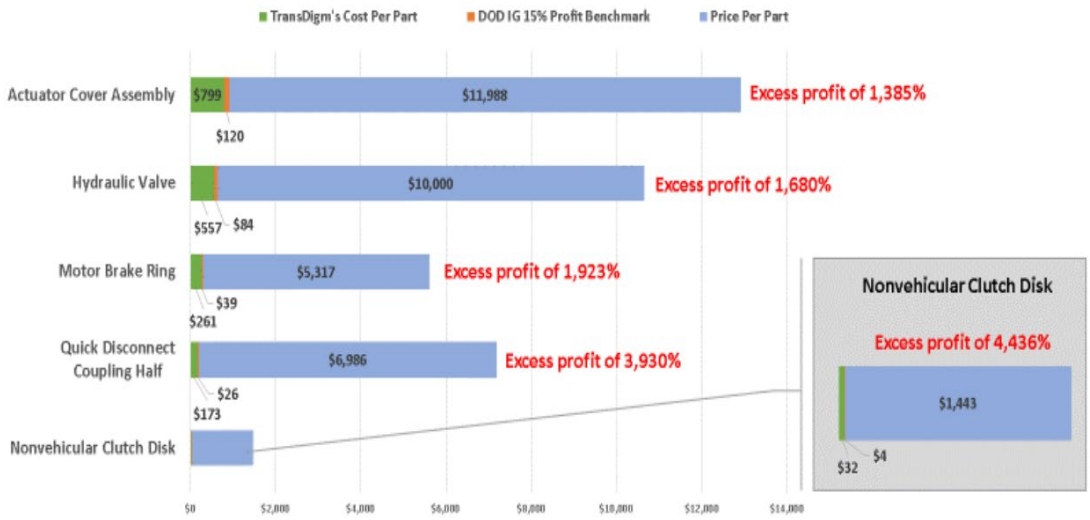



Figure 14. TransDigm's Excess Profit. Source: Majority Staff (2019).

## 6. COVID-19 Pandemic

As a general observation of the marketplace with the possibility of a lifetime pandemic. The resilience supply chain for the entire world comes into question. The best illustration of the ALT/PALT are late deliveries and not satisfying the RDD for vaccine deliveries which are claimed by the European Commission with pharmaceutical company AstraZeneca (Deutsche, 2021, "Introduction"). The contract was based on "best reasonable effort" with no firm delivery dates. There is an imbalance with the demand exceeding supply as the World Health Organizations (WHO) has pointed out with the inequities of vaccine distribution (Deutsche, 2021). A high-level interpretation is disruptive toward the supply chain as a whole, countries can start export bans and barriers of free trade. The maritime logistics are also affected, which caused inflation in the Consumer Price Index

world-wide. In relation to our thesis topic of PALT, acquisition professionals need to pay particular attention to the supply chain and the associated industrial supply base. As pointed out earlier with the theme of alternative perspective, RDD used in conjunction with PALT or the concept of TALT comes into play. In emergency scenarios the Procuring Contracting Officer (PCO) has authority to draft a one-day letter or Undefinitized Contract Actions (UCA), so a one-day PALT is possible. With that contract award, are you guaranteed a firm delivery date and the chance to meet the RDD? As demonstrated contractor's only willing to sign on the "best reasonable effort," that does not meet your RDD so it is now a waiting game.

Per the Jones Act/Merchant Marines Act of 1920, the roles of merchant marines and the Military Sealift Command are all examples of industrial base questions that need to be addressed by the acquisition community (Maritime, 2011, para. 1).

JIT was first implemented by Toyota in 1977 and has been adopted by the world's auto manufacturers across the globe. Toyota faced its first major JIT challenge with the March 2011 Fukushima earthquake, which caused a tsunami and loss of power (Ydstie, 2011). The circumstances at the time forced its suppliers to shut everything down, which caused a domino-effect throughout the supply chain. The JIT system had no inventory on hand and Toyota was forced to completely shut down its assembly plant for many months. The company had learned its lesson and adjusted accordingly to key supplies, a modified JIT system with inventory buffer on critical or long-lead time items as risk management to account for disruptions in the supply chain.

The supply chain disruption is experienced on a world scale in the auto industry as witnessed in spring 2021, with manufacturers struggling to produce the computer chips which are required for their vehicles.

## E. GOVERNING REGULATIONS

### 1. Federal Acquisition Regulation

The Milestones for the acquisition cycle which address the following steps:

- Acquisition plan approval.

- Statement of work.
- Specifications.
- Data requirements.
- Completion of acquisition-package preparation.
- Purchase request.
- Justification and approval for other than full and open competition where applicable and/or any required D&F approval.
- Issuance of synopsis.
- Issuance of solicitation.
- Evaluation of proposals, audits, and field reports.
- Beginning and completion of negotiations.
- Contract preparation, review, and clearance.
- Contract award. (Acquisition.Gov.,n.d.)

### 2. Financial Management Regulation

The total estimated cost of a complete, military useable end item or construction project must be fully funded in the year it is procured. There are two basic policies concerning full funding. To provide funds in the budget for the total estimated cost of a complete, military usable end item to document the dimensions and cost of a program. Exceptions to this policy are advance procurement for long leadtime items and advance economic order quantity (EOQ) procurement. EOQ may be used only in connection with multiyear procurements. Both efforts must be identified in an Exhibit P-10, Advance Procurement, for the Budget Estimate Submission and the President's Budget request. (DOD, 2011, p. 26)

Contracting, on the other hand, is a part of the execution phase or acquisition process within the framework of a program. The number of contracts required to procure a defense system, the type of contract awarded, and the timing of the award have no bearing upon whether or not an item is fully funded. In executing a program, no procurement of material or equipment, or work or services, therefore, shall be directed or implemented unless the full program amount is available, except for authorized economical order quantity (EOQ) and advance procurement. Similarly, the value of existing contracts for the procurement of material or equipment shall not be increased (through contract modifications) unless the funds are available to fully fund the new contract price. (DOD, 2011, p. 29)

### 3. OFPP PALT

PALT is defined as "the time between the date on which an initial solicitation for a contract or order is issued by a federal department or agency and the date of the award of

the contract or order" (Wooten, 2021). Data will be collected in the FPDS-NG, with additional data fields such as the solicitation date as a mandatory reporting field for actions above the SAT. Figure 15 displays a great chart on the different Contract Phases.

Innovation – OFPP has advised agencies to review a growing list of proven business practices to reduce friction, one example of such is the Periodic Table of Acquisition Innovations (PTAI) seen on Figure 16. Another is the use of technology such as Artificial Intelligence and moving its workforce from low to high value activities. OFPP gave numerous examples of frictionless strategy in its four (4) phase's definition of acquisition from:

1. Acquisition Planning to Pre-Solicitation.
2. Solicitation to Proposal Receipt.
3. Proposal Receipt to Source Selection.
4. Source Selection to Award. (Wooten, 2021)

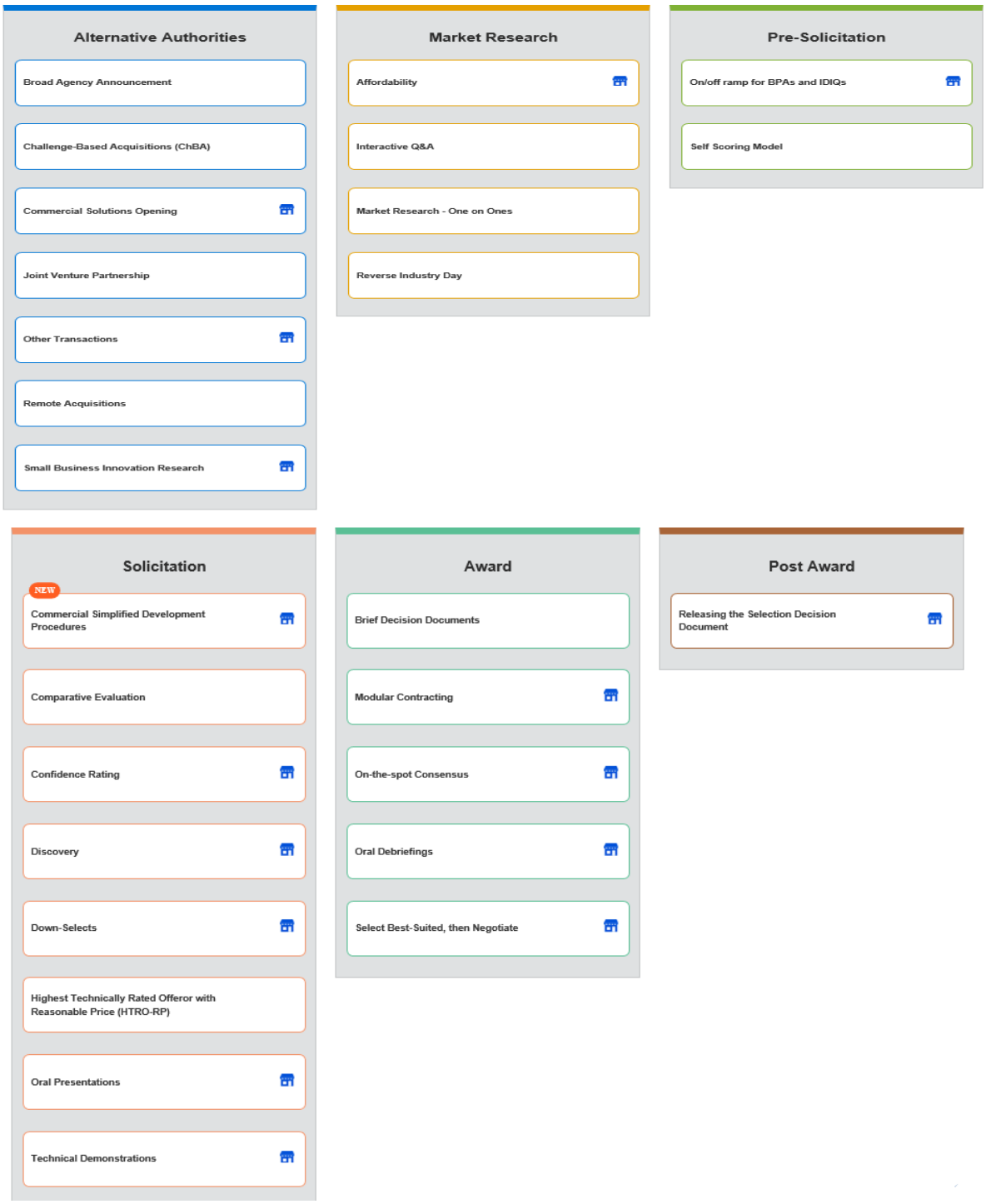



Figure 15. Contract Phases. Source: FAI (2022).

| Acquisition Phase | Acquisition Action | Frictionless Strategy* | Strategy artifacts on Periodic Table of Acquisition Innovations |
|---|---|---|---|
| **Phase 1**<br><br>**Acquisition Planning to Pre-Solicitation** | Develop Acquisition Plan<br><br>Form Acquisition Team<br><br>Conduct Market Research<br><br>Develop Cost Estimate<br><br>Prepare Work Statement<br><br>Develop Quality Assurance Surveillance Plan | **Facilitated Requirements Development Workshop**: use a facilitator to help the integrated program team (IPT) efficiently apply Steps to Performance Based Acquisition and collaboratively develop key requirement outputs such as performance work statements and performance measurements.<br><br>Acquisition Requirements Roadmap Tool **(ARRT)**: help the IPT build acquisition planning documents using a structured process to help ensure the team is asked and answers the right questions. The ARRT suite supports requirements definition, evaluation factors, performance assessment, and cost estimation. | |
| **Phase 2**<br><br>**Pre-Solicitation to Proposal Receipt** | Engage with Industry<br><br>Post Requirements Package | **Pre-Solicitation Industry Dialogue**: post draft solicitation and conduct robust interactive Q&A with vendors before solicitation release to improve understanding between government and potential offerors and reduce time needed for additional iterations of draft solicitations and solicitation amendments. | Interactive Q&A |
| | | **Government Price in Solicitation**: provide target price, estimated price, or price range in solicitation to help reduce industry guesswork | |
| **PHASE 3**<br><br>**Proposal Receipt to Source Selection** | Conduct Exchanges with Offerors<br><br>Evaluate Technical Capability, Past Performance, and Price<br><br>Document Evaluations<br><br>Select Successful Offerors<br><br>Document Approval of Awardee | **Technical Demonstration**: test proposed software & code to determine level of confidence more efficiently and effectively than through use of written proposal. | Technical Demonstration |
| | | **Product Demonstration**: test proposed vendor products and embedded technologies to determine level of confidence more efficiently and effectively than through use of written proposal. | Technical Demonstration |
| | | **Video Proposal**: request vendor capability demonstration via video (e.g., marketing, graphics, IT) where proposal writing is an inefficient way to show capability or in person engagement is not possible or costly. | Remote Acquisitions |
| | | **On-the-Spot Consensus**: document the consensus evaluation of each proposal in consecutive order before evaluating the next proposal, saving days or weeks of follow-up coordination and consensus based on a not-as-fresh after-the-fact recounting of events. | On-the-Spot Consensus |
| | | **Confidence Rating**: assess evaluators' level of confidence the contractor will successfully perform the requirements based on work experience, potentially avoiding the time-consuming complications of using less flexible evaluation methodologies. | Confidence Rating |
| | | **Advisory Down-Select**: based on capabilities statement or other basic information, advise vendors whose proposals aren't among those most likely to be selected for award so they can save the time and money of developing an offer and the government can save the time of evaluating weaker solutions. | Down-Select |
| | | **Comparative Evaluation**: compare one offeror to another factor by factor and then overall at the end of the process, instead of evaluating against assigned ratings. | Comparative Evaluation |
| | | **Highest Technically Rated Offeror**: assess offerors' technical qualifications, rank order, and negotiate price based on best technically rated offeror. | |
| | | **Streamlined Documentation**: document a simple trade off analysis including key decision points, not source selection deliberations. | Brief Decision Documents |
| | | **Commercial Simplified Procedures**: use modular procedures in accordance with FAR Subparts 13.5 and 12.6 to expediently test and acquire emerging technology. | |
| | | **Performance Evaluation Modernization**: improve the efficiency of contractor performance evaluation input and output, both for contract and order level activity, such as by using artificial intelligence to support the identification of relevant past performance, monitoring contractor performance with quality assurance surveillance plan and use ratings to inform past performance assessments, allowing for contractor self-assessments, streamlining rating process for COTS and other commercial solutions, and reducing the proliferation of past performance questionnaires. | |
| **PHASE 4**<br>**Source Selection to Award** | Determine that prospective awardee is responsible | **Contractor Responsibility Determination Bot**: test how Robotics Process Automation can quickly reduce the time required for a contracting officer to make a responsibility determination. | |

Figure 16. Four Acquisition Phases. Source: Wooten (2021).

### 4. Section 809 (Volume 3 of 3)

The Section 809 Panel consisted of 16 members with expertise diverse background (public and private) in the acquisition and procurement policy environment. These panel members' duties consisted of providing recommendations to top level officials that would meet the demands and threats we could expect toward our nation during this era. The goal was to provide a non-bias report in hopes that serious considerations would be extracted along our Streamlining and Codifying Acquisition Regulations without any political excuses (Section 809, 2019). Below are brief summaries on the 13 sections reviewed:

- Section 1 –Marketplace Framework

The defense acquisition system is responsible for delivering a large selection of combat and warfighting support proficiencies as proficiently as possible, under functioning within a multipart security setting. It mentioned the diversity within the capabilities of acquiring the products and how the DOD must alter its acquisition processes to reach its goal.

- Section 2 – Portfolio Management Framework

This section describes the disciplined process that assists the establishments by creating priorities required to allot resources. It is important to note, all its organization's invested materials are "addressed at an enterprise level, rather than as independent and unrelated projects or activities" (Section 809, 2019, p.EX-2).

- Section 3 – IT Procurement

The collaboration between DOD information technology and commercial has been narrow, they are known to function dissimilarly on technological advancements. The commercial IT market had the advantage of outperforming the DOD market for many years, which caused the DOD to settle with "outdated and inferior technology, often at higher prices and slower rates" (Section 809, 2019, p.EX-3). This can cause major issues for the DOD in respect to warfighting capabilities.

- Section 4 – Budget

Described by the SECDEF "as the biggest risk to the nation's defense" (Section 809, 2019, p.EX-4), the ongoing occurrence of starting a new FY without funding is crucial. Current rules play a factor on the flexibility the DOD's acquisition workforce can provide.

- Section 5 – Acquisition Workforce

Many individuals might refer to this section as the "Meat and Potatoes," this area discusses the processes in respect to the acquisition fields, the stakeholders involved in the personnel system and the budgets for programs such as AWF. The public sector is constantly competing with the private sector to recruit talented individuals. One of those incentives often advertised by the public sector is work/life balance.

- Section 6 – Streamlining and Improving Compliance

It is no secret that unlike the commercial sector, the U.S. government has many complex layers of requirements such as "federal procurement laws, federal acquisition regulations, and DOD's internal regulations" (Section 809, 2019, p.EX-6). As imagined, these regulations slow down the acquisition process significantly.

- Section 7 – Simplifying Procurement and Contracting

With improving Streamlining and Improving Compliance (Section 6), it is a logic thought to improve the Procurement and Contracting processes as well. In 2017, Acting Secretary of the Army Ryan McCarthy, voiced the thought of a streamline in the contracting process and reduced procurement timelines were absolutely vital and indicated "Our contracting policies and documents must be well-understood, delayed, and the overall process much faster" (Section 809, 2019).

The Army's strategy is to centralize policy under the Deputy Assistant Secretary of the Army to allow modifications on the outdated policies and review/standardize peer review policies and procedures. The United States Navy (USN) and Air Force are striving to reduce their PALT by reducing the paperwork required for an acquisition plan. A display of the Acquisition Strategy Schedule -Actual can be seen on Figure 17.

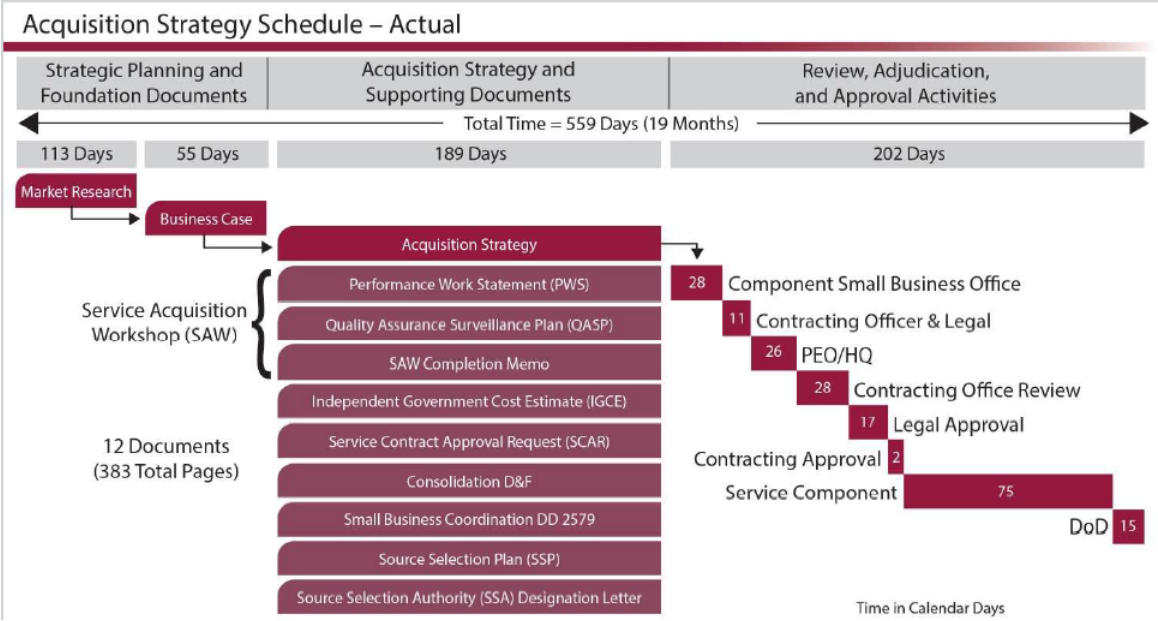



Figure 17. Acquisition Strategy Schedule – Actual. Source: Section 809 Panel (2019).

- Section 8 – Government-Industry Interactions

This section emphasizes the importance of communication and how it connects commercial technology in a complex regulatory environment. In March 2018, the Deputy Defense Secretary Patrick Shanahan sent out a memo on the significance of communications with industry that are both necessary and already permitted. The memo states, "Industry is often the best source of information concerning market conditions and technological capabilities" (Section 809, 2019).

- Section 9 – Acquisition Data

This section discusses the lack of data within the DOD, although billions of dollars are collected and reported. It is noted many DOD personnel in many instances lack the ability to utilize the information systems to access the data. Along with the lack of standardized data architectures which requires the addition of various data translation mechanisms.

- Section 10 – Title 10 Reorganization

Reorganizing Title 10 could assist in restoring quickness and efficiency for the warfighters. The defense acquisition statutes are codified in Title 10 of the U.S. Code; but over the past years these statutes have become confusing even for the most experienced users to sort out.

- Section 11 – Federal Acquisition Regulation (FAR) Reference Document

It is no secret that the FAR and DFARS can be a challenging task to navigate and understand by many of the users who are involved in the acquisition team. This obviously places a burden for those stakeholders attempting to accomplish a mission.

- Section 12 – Minimize Flowdown of Government-Unique Terms in Commercial Buying.

Many public sectors have complained that there are numerous barriers when trying to conduct business with the defense marketplace. Which also presented a fear to many companies that there are hidden compliance traps along with the terms and administrative/ overhead cost.

- Section 13 – Center for Acquisition Innovation

Lastly, to assist with many of the defense acquisition challenges that exist within the DOD. The panel recommended to "create a Center for Acquisition Innovation located at the National Defense University, Eisenhower School" (Section 809, 2019).

## F. SUMMARY

The intent of the information given in this chapter is to provide an overarching illustration. The literature in Chapter III showcases the challenges and impacts timelines caused in the acquisition process. Chapter IV will provide case scenarios, which include factual data and methodology used to showcase acquisition in the SAP and other related facts.

# IV. METHODOLOGY AND DATA ANALYSIS

This chapter reviews the process and comparison of PALT in multiple ways. It provides a compare and contrast between the FAR and OFPP, a case study approach on literature review articles, an argumentative section, and our findings. An analysis of raw data provided by NSWC, for FY21 executed procurements was also implemented to allow the quantitative data portion. We utilized SAP (FAR Part 13.3) and we believed this particular procurement threshold would deliver the best results for this study. Our research focused on analyzing the methodology used to establish PALT for the three thresholds within the SAT (FAR 2.101). Subsequent areas of this chapter will focus on reviews and explanations of the data, and implementations by the organization to meet its requirement within the set PALT.

## A. METHODOLOGY

### 1. Compare and Contrast

As explained in the public notice, OFPP proposed to define PALT as "the time between the date on which an initial solicitation for a contract or order is issued by a federal department or agency and the date of the award of the contract or order" (Wooten, 2021). This is in contrast to the common definition of PALT based on FAR 7.105 (b) (21), milestones for the acquisition cycle and Acquisition Plan Approval to Contract Award. OFPP divided the Acquisition into four (4) phases:

1. Acquisition Planning to Pre-Solicitation.
2. Pre-solicitation to Proposal Receipt.
3. Proposal Receipt to Source Selection.
4. Source Selection to Award. (Wooten, 2021)

Comparing this memo to the FAR Part 7.1, Acquisition Plans, contains thirteen (13) steps starting with Acquisition Plan approval to Contract Award. As a researcher, we recognized the value spelled out in the FAR. The key aspect and update in 2021, is the measurement of when the clock officially starts. There is a legal doctrine called "contra proferentem," vagueness is construed against the drafter. In layman's terms, it is referred to as "garbage in, garbage out."

In numerous GAO reviews, the definition of "requirement" remains the hot topic in the acquisition community. It is incumbent on the acquisition professionals to provide a plan with quality requirements in the Request for Proposal (RFP), as this becomes the foundation that sets the tone for the life of the contract. The impact of avoiding the required early phases of acquisition and rushing to the RFP solicitation stage, may prompt issues such as a protest.

### 2. Case Study Approach

Wong (2020) viewed the unintended consequences of speeding up the fielding weapon system such as the MRAP and F-22. This occurred with minimal attention to sustain issues and the need for cognizance of potential negative impact on the acquisition timelines. Wong (2020) suggested that the acquisition community turned its attention through a feedback loop of learning, refinement of its current fielded capabilities, and the continuous improvements that will add more value than the upfront fielding of the system. In general, we agree with Wong (2020) sentiment and illustrations of its pitfalls of gaming the iron triangle of cost, schedule, and performance by overlooking risk management. Operation and Sustainment (O&S) accounts for 70% of the program life cycle cost, and taking upfront shortcuts has a dramatic impact in arrears with the sustainment phase. The F-35 sustainment is a great illustration of this issue, as the program is still in the LRIP stage. It has challenges with the low sorties rate, precisely due to the sustainment of the fleet with issues in parts, distribution, and upkeep.

Letterle et al. (2019) examined the unit's PRALT for SAT requirements, and the gap time it took before contracting activity takes possession of a PR under the overall TALT. Letterle et al. (2019) defines TALT as PRALT + PALT. Improvements within the PRALT process contributes to the reduced overall TALT, therefore a faster lead-time from identifying the agency's requirements will contribute to quicker contract award. The deficiency of the PRALT process is the non-tracking mechanism before the contracting activity accepts the PR, and PALT is an internal performance metric of the contracting performance. The internal focus on PALT performance also is not customer-focused, and Letterle et al. (2019) seeks to promote a customer-focused acquisition process. In general,

we agree with Letterle et al. (2019) sentiment and our research has also indicated the limited utility, deficiencies, and lack of standard measurement with the current common definition of PALT. One of the common phenomena and issues in acquisition is the "throwing over the fence" phrase with the PR package, the thesis was spot-on with the examination of PRALT and the subsequent start of the clock counted down PALT and the overall TALT.

Vickers (1993) examines the USN Field Contracting System NFCS use of PALT and the procurement activities use of other indicators such as the RDD to measure procurement effectiveness. In general, we agree with Vickers (1993) sentiment and again a different author pointed out the deficiencies in the PALT definition and utilization. The RDD concept is useful for supplies with long lead-time that cannot be shipped directly from the warehouse, a fast PALT in contract award with a slow delivery day may not be useful as the ship is past it dry-docks availability and sailing underway.

AMS Instructor Randolph William, has simplified the milestones horizon to start with the identification of requirements to provide a solution toward the vendors. He also illustrated the early stages of requirements on emphasizing where time goes to die. Whereas the PALT activities are time-bound and sequence with regulation and approval, processes that cannot be skipped. The proposed solution is to put the requirements definition on clock, and not allow it to fall under Parkinson's Law and work to fill the time allotted for its completion. This is how the acquisition team can harvest time from the PR requirements phase and move the milestones downstream to bring the timeline closer to execution and reduce the overall cycle time. There is an old adage that we cannot turn back time, and William Penn famously said, "Time is what we want most, but what we use worst" (Penn, 2022, "Introduction"), and that wisdom rings true in the scheme of PALT & Milestones (Acquisition Management System, 2021).

Lastly, all acquisition professionals work within the 5-year constraint of the PPBE & Program Objective Memorandum (POM) process. Letterle's et al. (2019) had a good graphical representation with its TALT concept. The diamond plate (Figure 3) between PRALT and PALT is when the contracting activity accepts the PR for action, and the PALT measurement begins.

It is often questioned by many acquisition professionals on the process for a 5-year PPBE/POM time, and what actions are created to set PALT times? We often see the malpractice of pushing the diamond plate within the TALT to the right, in the fashion of "robbing Peter to pay Paul" theory (decreased PALT, increased PRALT). Our humble opinion indicates it is a numbers manipulation exercise, but often carried out so the budget is executed before its expiration within the PPBE context.

Some challenges faced at the NSWC is the lack of visibility on what is being pushed down the pipeline, in terms of work projects and the funding stream. In the scheme of TALT, PMs can sometimes be drifted with the PRALT. Upon the NSWC PM's receipt of the requirements package from the sponsor e.g. PEO IWS, Program of Records, the PM has no choice but to demand an aggressive and compressed PALT phase to meet his objective of awarding the projects.

Demand of aggressive PALT includes:

- CR
- Challenges to financially maintain project life cycle (parking funds)
- Contract Types- Focused on contract type which are structured CLINs with a 12 Month POP

To provide field weapon systems at the speed of relevance and shorter cycle time, the clock starts when the acquisition team begins during the Planning Phase of the PPBE. Attempting to catch-up during the execution stage and compress the lead-time on contracting professionals and the associated PALT, should never be the solution. The Chief of Naval Operations (CNO) Gilday and the Navy have provided the "Get Real, Get Better" initiatives in January 2022 (Gilday, 2022). The essential element is fostering an ecosystem—a culture—that assesses, corrects, and innovates better than the opposition. This is an opportunity for acquisition professionals and involved teammates to take a deeper sense of the process.

### 3. The Argument

The 2020 NPS Proceeding SYM-AM-20-046 (Cycle-times and Cycles of Acquisition Reform), provided content from Dwyer et al., 2020 on how reformers decided to decentralize DOD authority in 2016 after six decades and six cycles of acquisition reform. Although each reform project is unique, historical cycles can be described in terms of recurring attempts to either centralize or decentralize acquisition oversight (Dwyer et al., 2020). In comparison, available data shows that DOD fielded MDAPs at speeds comparable to the U.S. private sector. We recognize and acknowledge the acquisition manager's attempt in putting out "stretch goals," to force the frontier in shortening up the cycle time. Empirical data has shown that in general, overall cycle-times remain relatively unchanged.

We started down the journey investigating the PALT as it is prevalent and an item of interest in the acquisition community. In the Section 809 Panel and 2016 NDAA, studies have shown there is interest from top leadership in the acquisition process to field weapon systems at the speed of relevance. What is commonly missing is the "how" and the "resources" to support this cause. Resources in terms of acquisition manpower availability (do more with less and the "can do" theme), to facilitate the acquisition process to meet the desired end goal of acquisition at the speed of relevance. It is a meeting of the minds and balancing act of supply (manpower) and demand (program office) requirements. Based on the case study and article reviews of previous research and thesis, we would propose the following key points and takeaways as a way forward in addressing the common theme for a faster PALT and acquisition cycle time.

Acquisition lead-time generally is a function of the manpower availability and the project's priorities in the overall hierarchy scheme of things. There are too many variables and contributing factors that constitute the overall PALT, from the classical issue of requirements definition, contract type, and construct to Integrated Product Team (IPT) team member availability. Typically, the demand for contract awards and post award contract administration exceeds the supply. Referring to the 2021 OFPP PALT Memorandum, OMB provided a common definition of PALT by providing guidance and steps via modern business practices in delivering value. Indirectly, OFPP left the inner

workings of the acquisition process up to the stage of release of RFP solicitation to the organizations to determine.

In layman's terms, "when there's a will, there's a way." Case in point with the DOD Joint Enterprise Defense Infrastructure (JEDI) re-procurement, the aggressive schedule of its replacement, and successor the Joint Warfighter Cloud Capability (JWCC) (Curran, 2021, para. 2). The executive director of the Cloud Computing Program Office of Defense Information Systems Agency (DISA) had a schedule for contract award in Q2 of 2022 timeframe with the completion of the pre-solicitation phase by October 2021. That aggressive schedule (12 months or less) is not reflective of the common PALT for large procurement (typically over 18 months), let alone potential maximum value of $10 Billion, high visibility with Congress as well as the competitive environment within a 12-month timeframe. JWCC is a perfect illustration of priority, with focuses of the IPT team member manpower on a project in replacing the JEDI contract. Are all large procurements done within a 12-month timeframe across the different DOD enterprises? The answer is likely no.

Vickers (1993) examined the deficiency of PALT and proposed the use of RDD, providing value to the customers. It is our opinion that the RDD concept can be viewed similar to the JIT system in the overall scheme of TALT in terms of deliveries. What does all of this mean for federal procurement? In the iron triangle of cost, schedule, and performance, we'll likely see higher cost due to supply chain disruptions, delivery schedule delays, and in the case of computer chips or key supplies, possibly no delivery or diminished performance of both services and products.

Previously the 116th Legislative Congress passed the Coronavirus Aid Relief, and Economic Security Act (CARES Act) providing economic relief (H.R.748, 2019–2020, "Introduction"). The higher indirect and overhead costs as experienced by the vendors to include both the Prime and Subcontractors are impacting the mission. The 2020 lockdown effect has yet to fully be assessed, and the Incurred Cost Proposal submission has caused higher rates for current and future years in respect to the Forward Pricing Rate. On Firm Fixed Price contracts there could be potential price adjustments to facilitate the "force majeure" condition to enable the vendors to carry on their work in support of government

operation and not forcing them into bankruptcy for conditions beyond their control. Another related bill is the COVID-19 Supply Chain Resiliency Act of 2021 (H.R. 1024, 2020–2021,"Introduction"), on the note of supply chain, Executive Order 14017 of February 2021 entitled "Building Resilient Supply Chains, Revitalizing American Manufacturing, and Fostering Broad-Based Growth" is the government's recent attempt in addressing supply chain disruptions and discontinuities (White House, 2021).

The ultimate sustainment challenge to be addressed with the current advances in Artificial Intelligence (A.I.) is the predictive analysis based on historical data and future projection. Without this data as a point of reference, buyers rely simply on guessing for analyzing the reasonableness of the RDD request. Working with unrealistic milestones and RDDs are causing accountability issues for managing the entire process, which can be improved with experienced buyers and procurement managers on a daily basis.

The F-35 program with its legacy ALIS is being replaced by the Operational Data Integrated Network (ODIN). The system is being optimized for higher efficiency and incorporating the voice of the customer at the forefront of the requirements list. The holistic approach of the ODIN incorporates mission planning, flight scheduling, repairs, schedule maintenance, spare parts, and a holistic supply chain management view.

## B. ANALYTICAL MEASURES

The SAP data provided by the NSWC, provides insight on factual data in real time and is relevant to procurements set by the SAT (FAR 2.101) which ranges from $10K to $7 Million (see Figure 18). An in-depth analysis and recommendation will be discussed in the following subsections.

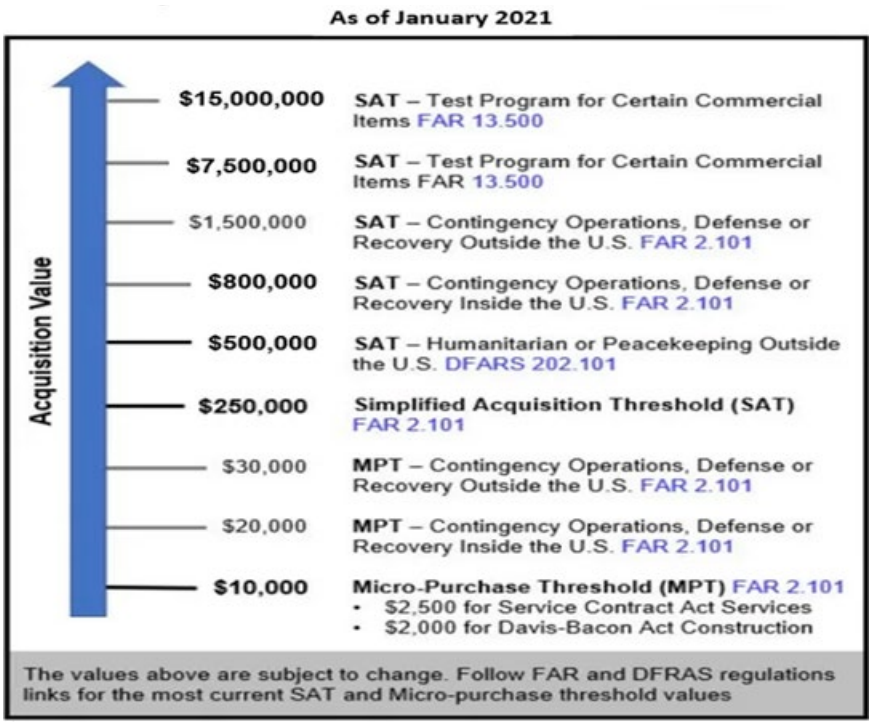



Figure 18. Simplified Acquisition Threshold Values. Source: Source: (AcqNotes, 2021).

### 1. Data Cleansing and Sanitation

CMTS is utilized by many NSWC's, it is an internal system that assists in tracking the progress of acquisitions based on the set PALT. The provided raw data was extracted from the CMTS system and generated via Microsoft Excel. The delivered data consisted of 413 SAPs total, processed, and awarded in FY21. The array of information was convoluted with broken data. The data displayed some flaws and misleading information, which is a result of lack of maintenance and/or human errors. In addition, the CMTS tool does not interact with any other procurement module and can only function correctly by manually inputting the data into the system. The raw data was sanitized to remove any anomalies to include unusable outliers.

### 2. PALT Development

The organization used historical data to analyze in subsections to establish its PALT using the IQR. "The IQR is a measure of statistical dispersion, it spreads the data or

observations. The IQR describes the middle 50% of values when ordered from lowest to highest. To find the interquartile range (IQR), first find the median (middle value) of the lower and upper half of the data. These values are quartile 1 (Q1) and quartile 3 (Q3). The IQR is the difference between Q3 and Q1" (Khan Academy).

### 3. Analytical Measures

From the sanitized data, we were able to further investigate and analyze the data to conduct initial exploration into analytical fields. The cleaned data allowed for the analysis to be valid and provide a factual result on the variation of impacts and causes for deviation and/or impacts to PALT.

Table 1 displays a quality and cycle time analysis that aligns with NSWC, IQR methodology to establish its PALT for each SAT.

Table 1. Quality and Cycle Time Statistics. Adapted from NSWC (2022).

| Quality and Cycle Time | | | | | |
|---|---|---|---|---|---|
| Dollar range | 25th Percentile | Average PALT | 75th Percentile | PALT | Average Value |
| $10K - $25K | 17.25 | 26.80 | 41.00 | 30 | $23,892 |
| $25K- $250K | 18 | 31.93 | 41 | 45 | $81,766 |
| $250K- $7M | 19 | 70.35 | 42.75 | 120 | $701,680 |

### 4. PRALT to Award Analysis

Given the data provided we can assess and compare the NSWC target PALT dates to actual awards as seen on Table 2 and Figure 19.

Table 2. FY 21 PRs Created per Month/SAT. Adapted from NSWC (2022).

| FY2021 | FY 2021 PRs $10-$25k PALT 30 Days | | | FY 2021 PRs $25k -$250k PALT 45 Days | | | FY 2021 $250K-$7M PALT 120 Days | |
|---|---|---|---|---|---|---|---|---|
| | QTY | Avg. PRALT | | QTY | Avg. PRALT | | QTY | Avg. PRALT |
| October | 25 | 30 | | 1 | 91.00 | | 1 | 42.00 |
| November | 10 | 23.20 | | 8 | 46.75 | | 2 | 92.50 |
| December | 8 | 28.00 | | 14 | 41.44 | | 2 | 116.50 |
| January | 3 | 11.33 | | 9 | 15.75 | | 4 | 80.00 |
| February | 11 | 32.54 | | 16 | 26.81 | | 2 | 69.00 |
| March | 13 | 28.91 | | 14 | 32.57 | | 10 | 51.12 |
| April | 19 | 25.94 | | 29 | 30.70 | | 0 | N/A |
| May | 10 | 22.22 | | 41 | 30.82 | | 6 | 67.75 |
| June | 23 | 31.09 | | 29 | 35.50 | | 3 | 69.00 |
| July | 32 | 22.00 | | 38 | 32.84 | | 2 | 15.50 |
| Aug | 9 | 17.50 | | 15 | 14.75 | | 0 | N/A |
| September | 0 | N/A | | 1 | N/A | | 0 | N/A |
| Total | 163 | 24.79 | | 215 | 36.27 | | 32 | 67.04 |

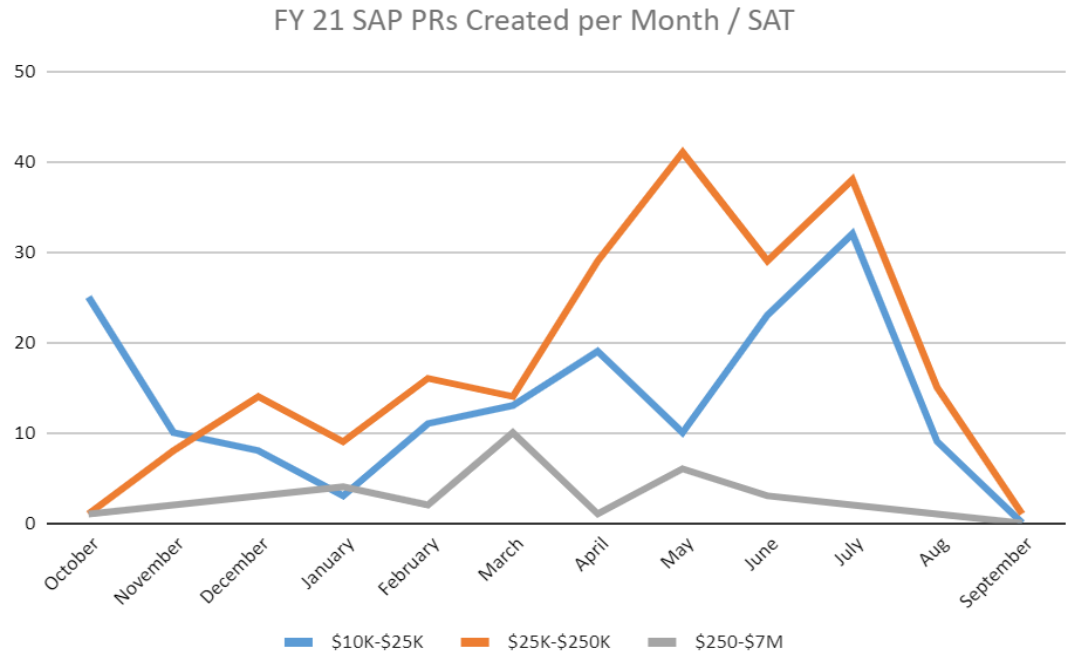



Figure 19. FY 21 SAP PRs Created per Month/SAT. Adapted from NSWC (2022).

NWSC established PALT for each of its categories within the SAT, displaying that their methodology of IQR is successful and also ensuring their award dates stay within the PALT. For SAT $10k-$25k the established PALT was 30 days and the overall average to award was 24.70 days, which resulted in a 121% success rate for a total of 163 procurements. For SAT $25k- $250K the established PALT was 45 days and the overall average to award was 36.27 days, which resulted in a 124% success rate to an overall 215 procurements. For SAT $250k- $7M the established PALT was 120 days, and the overall average was 67.04 which resulted in an astonishing 179% success rate to an overall 32 procurements. There were some anomalies as shown on Table 2. For example, SAT $10-$25K displayed two months where the established PALT was exceeded but only by a variant of 3%-8%. For SAT $25k-$250k showed that overall, for the FY, the average PALT was able to be maintained under the advertised PALT with the expectation of one procurement in the month of October that can be considered a one of instance. The one procurement exceeded the advertised PALT by 102%, well doubling the target advertised PALT. Without knowing the details, it could not be further analyzed. Lastly, the SAT $250K -$7M truly stands out as the one SAT that successfully maintained and successfully was able to reduce its average PALT by an average of 53 days and reduce its days by 44%.

## C. FINDINGS

### 1. PALT Statistic Distribution

Table 3 shows a cumulative statistical data range for PALT in days for FY21 NSWC SAP. The average PALT was 33 business days. This does not take into account the other procurement process, but these statistics would be utilized to be annexed into the procurement TALT.

Table 3. SAP PALT Statistic Day to Award. Adapted from NSWC (2022).

| | |
|---|---|
| MIN | 1 |
| MAX | 191 |
| Range | 190 |
| Average | 33 |
| Median | 27 |

The SAT range and uniqueness of the procurements will be a factor into the TALT. The data displayed in Table 3 shows the days it takes for a procurement to process from the day a PR is received by the CAO. The average PALT was 33 days and the median PALT was 27 days, which indicates that the average time within the values of the data are close together and have a symmetrical distribution. The aperture between average/median and the range, are indicative that SAP procurement processes have a huge gap in the requirement process for the different SAT. Given the data, will this drive the requisition to utilize or change the government requirement in order to reduce PALT to meet the requirement? In the subsection we will also analyze the effect of the requisition obtaining the required funds for the procurement.

### 2. Statistics Requirement Impacted by FY Defense Budget

> The program activities of most federal agencies are generally funded on an annual basis through the enactment of regular appropriations acts. When those annual appropriations acts are not enacted by the beginning of the fiscal year (i.e., by October 1st), one or more continuing appropriations acts (commonly known as continuing resolutions or CRs) may be enacted to provide temporary funding to continue certain programs and activities until action on the regular appropriations acts is completed. (CRS, 2020)

The data displayed in Table 4 and Figure 20 align with the historical continuing resolution and can directly represent the impact on PALT.

Table 4. PRs Created per Month. Adapted from NSWC (2022).

| PRs Created per Month | | | | |
|---|---|---|---|---|
| FY2021 | PRs $10K - $25K | PRs $25K- $250K | PRs $250K- $7M | Total |
| October | 25 | 1 | 1 | 27 |
| November | 10 | 8 | 2 | 20 |
| December | 8 | 14 | 3 | 25 |
| January | 3 | 9 | 4 | 16 |
| February | 11 | 16 | 2 | 29 |
| March | 13 | 14 | 10 | 37 |
| April | 19 | 29 | 1 | 49 |
| May | 10 | 41 | 6 | 57 |
| June | 23 | 29 | 3 | 55 |
| July | 32 | 38 | 2 | 72 |
| Aug | 9 | 15 | 1 | 25 |
| September | 0 | 1 | 0 | 1 |
| Total | 163 | 215 | 35 | 413 |

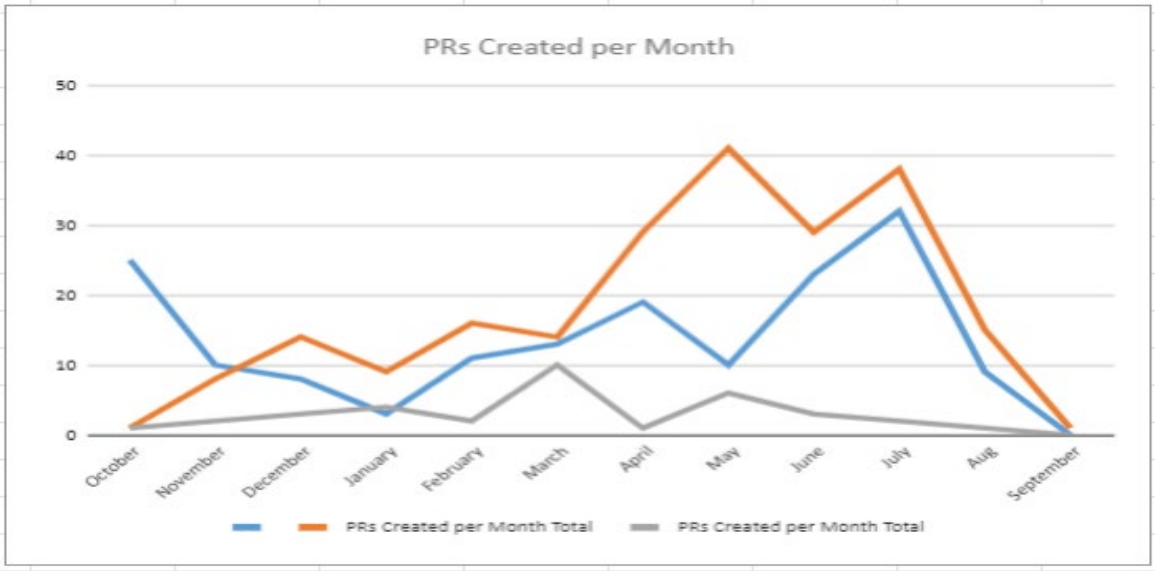



Figure 20. PRs Created per Month. Adapted from NSWC (2022).

The federal government's FY starts on October 1st, of each year (Haughey, 2020, para 1). Taking into consideration the budget has often not been approved on time and CR is enacted, this matter causes FY Q1 and parts of Q2 (October-January) to be significantly lower than the remainder of the FY. It is visible on Table 4 that there is an increase for PR requests during the months of February through July, to catch up with the requirements.

Historically, the DOD had to adjust and plan on the cautious side to ensure critical national defense programs stay on track and continue to schedule. This issue impacts the processes in the acquisition planning and causes a domino effect from the top-down.

### 3. Inconclusive Data Analysis

After analyzing the data, it can be determined that NSWC Systems only covers the process internally to the contract department. This procurement phase includes the receipt of funds via PR and provides a complete package for the contract specialist to evaluate and construct for procurement approval. This action provides a request for proposals, intermittently it will be evaluated for technical acceptance and finally to award. Due to the lack of information when the CAO receives the packages, it is difficult to determine the full scale of the timeline for the data provided. The complexity of the requirement can also impact the length in addition to the contract processing time.

## D. SUMMARY

This chapter discusses the methodology and findings of our analysis. The initial step was to describe the process of utilization of the data after it was sanitized to a state where the raw data was workable to generate metrics. The data was used to display metric and identify ranges of calculation to analyze NSWC methodology for its development and establishment of PALT. Utilizing the data, we were able to display disparities between established PALT and actuals. In addition, we briefly describe the impact on PALT specifically pertaining to the defense budget and continuous resolutions which restrict the flow of funds while we expose our findings. On the following chapter, we will dive deeper into the primary and secondary questions and provide recommendations.

# V. CONCLUSIONS AND RECOMMENDATIONS

The purpose of this project was to examine, research, and provide a case analysis on DOD ALT. We summarized the related findings to our primary and secondary questions and provided conclusions, along with recommendations related to the subject matter. A study was conducted across various sources to include published theses, articles, peer-to-peer reviews, and relevant data provided by NSWC. Using the real time data, we were able to extract and provide an analysis. We dissected NSWC's methodology and compared data to identify and conclude if the activity was successful and identified potential risks.

## A. ANSWERING RESEARCH QUESTIONS

### (1) What is the role of PALT in the overall acquisition timeframe and its context in the DOD PPBE process?

We covered different areas in the overall acquisition timeframe with the parameters of our research. We identified and summarized the DOD budgeting appropriation processes and how it imposes contrarian and restraints in the overall acquisitions course. We analyzed the cause and effect of the program requirement outcomes and discovered the major issues of the DOD PPBE overall acquisition process caused by expedited efforts. We concluded the FAR, DOD PPBE, and POR do not align well. This path is not designed to sync, and logically it is assumed some projects shouldn't take a longer path to reach the same goal.

In regards to the overall PPBE process, PALT and the five-year TALT provide a significant role in facilitating the PMs to execute the budget. After all, contracting and PALT are known as the "last stop" of the PPBE process and the barrier between obligation and expenditure of budgeting and fulfilling the requirements. A contract letter or UCA can provide a one-day PALT for award, however it may not be the solution for meeting the RDD. As experienced during the 2020 Pandemic, the supply chain disequilibrium is a perfect illustration for that statement. Efforts established by the suppliers versus demand, currently have many world leaders attempting to find a solution.

With the U.S. supporting the 2022 Ukraine war, it has resulted in shortages of Javelin AAWS-M as described on the supply versus demand statement (The Jerusalem

Post, 2022, “Introduction”). The TALT formula establishes the diamond plate seen on Figure 3 with the PALT accounting for 20%, leaving the left-side PRALT accounting for 80% of the longitudinal time frame within the five-year PPBE. The AMS training has educated many acquisition professionals to start the clock on requirements, to avoid wasting valuable PALT time. That is the iceberg that is hidden beneath the surface which unfortunately blinds many acquisition professionals from addressing and/or acknowledging the issue. The framing of the PALT question is barely scratching the surface. Empirical data from the research grant study, has shown the MDAPs and six cycles of reform indicate that generally the cycle time remains unchanged and the government is fielding systems comparable to the industry.

With OFPP providing answers and setting the standard for many acquisition professionals to follow, we attempted to view the iceberg beneath the surface. As often heard, “follow the money” is one common investigation tool we found discrepancies on. An example would include CR and the funding stream it impacts on PMs with program developments. PMs are often guilty of “parking funds,” and this action causes incremental funds to cascade the problem toward the CAO with compressed PALT and contractor performances. These findings steered us towards political and behavioral aspects, such as scheduling by fiat and aspiration scheduling which resulted in poor performances.

As often heard, “there’s no such thing as a free lunch” and the maneuvering and manipulation is just a short-term phenomenon. For the long-term, there is a price to pay in the iron triangle of cost, schedule, and performance. In life cycle management, the F-35 low sortie rate and the TransDigm parts are classic examples of good illustration of rushing payments, or even paid later during the LRIP or sustainment stage. Meeting schedule is not only a government matter, the commercial sector is also facing challenges with the realism of schedules. The 737 MAX could possibly be a case study in the next decade or so, as similar to the federal government’s F-35 program.

(2) What are the common malpractices and best practices for Acquisition Professionals?

We discovered there are some inadvertent good and bad practices that have evolved naturally, due to the attempt of locating the equilibrium. An example would be the malpractice of professionals extracting requirements that aren't clearly defined due to its ongoing Research and Development (R&D). In theory, this matter causes a remarkable risk toward the program and the contractual requirements may not be clearly defined. Aggressive timeline demands on PALT was also identified as a malpractice, this produces unnecessary threats toward the government when the acquisition process is rushed and will most likely cause errors on the process. As discussed, best practices arrive from proper planning and continuous improvements at all ranges from lowest to highest level of authorities.

(3) What are the impacts and consequences for rushing PALT?

In Chapter IV we discussed the impacts of rushing PALT in different case scenarios, which all lead to adverse outcomes. It is evident that the adequate time is not calculated or allotted into the acquisition process regardless of the acquisition path, they'll most likely result in negative consequences.

However, some situations may ignore these risks due to the requirement. A great example would be the need for MRAP vehicles, as discussed in Chapter III "speed was essential to rapidly fielding needed equipment like MRAPs during the wars in Iraq and Afghanistan, were the enemy was exploiting capability gaps and killing hundreds of U.S. troops every year" (Wong, 2020, para 4). In this case, expediting the PALT was saving U.S. troops lives and a long traditional PALT can be controversial when the protections of human beings are at stake.

(4) Is NSWC providing a proper PALT success rate?

In Chapter IV we provided an in-depth analysis of raw data from NSWC, we described their methodology based on the interquartile range formula and displayed the statistics effectiveness of IQR methodology. We analyzed the data and concluded that NSWC utilization of the IQR method and its target of 75% was a successful model. As shown on Table 1, all three SAP thresholds are meeting the mark by awarding the contract within their allocated PALT.

Conversely, the "$10K-$25K" SAPs displayed at least 25% of the PRs aren't awarded by the 30-day PALT, which averages 41 days. These PRs could be delinquent on PALT for numerous reasons. Table 2 seems to suggest quarter 1 and 2 are the periods PRs remain more likely to miss the PALT. One valid reason for the delay could be CR as described on Chapter III, Section C.2. The interesting takeaway is that these months are much slower for PR creations than compared to quarter 4, as many organizations are trying to spend their expiring FY funds before the 30 September deadline.

## B. RECOMMENDATIONS

### (1) Recommendation One

For supply contracts, we propose that the coordination and the acquisition clock start after the Milestone B phase.

This principle applies to organizations such as NAVSUP WSS, DLA, Warfare Centers, depots, and maintenance yards with supplies and refurbishment as its main activity. Not applicable to the commercial or Amazon types of purchases. The reason being majority of the technical decisions are made at Milestone B, this translates to parts and supplies decisions made with the associated technical direction.

Numerous studies have indicated that the first 20% phase of the life cycle timeline locks in 80% of the life cycle cost, alternatively 70% of the life cycle cost are in the O&S stage as seen on Figure 21 and 22.

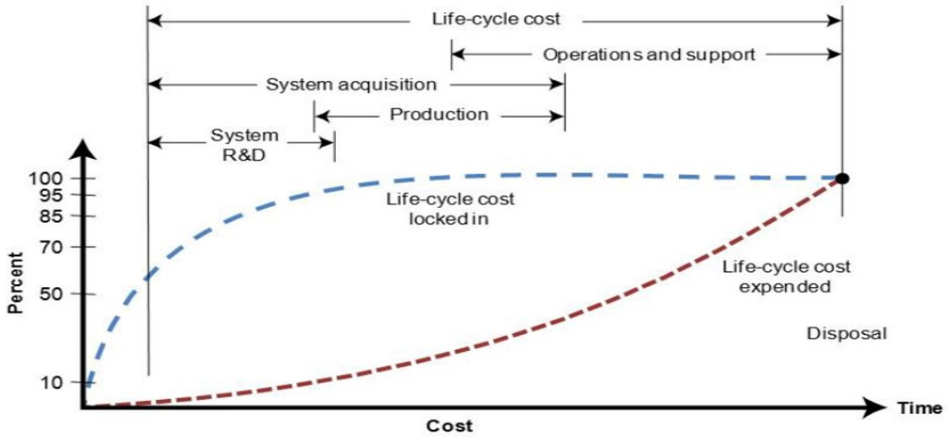



Figure 21. Program's Expended Life-Cycle Cost and Locked-in Cost. Source: Principles of Acquisition and Program Mgmt MN3221 (2020).

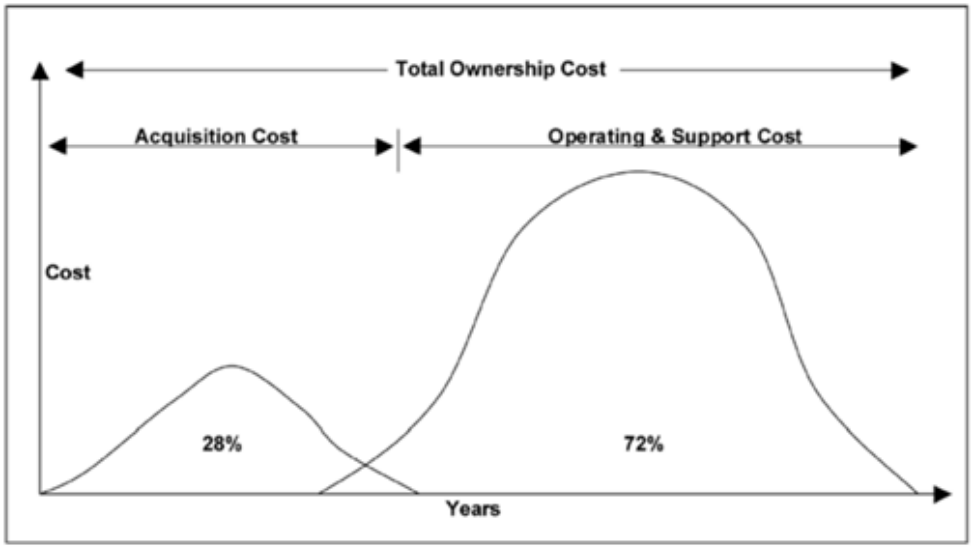



Figure 22. Nominal Life-Cycle Cost of Typical DOD Acquisition Program with a 30-Year Service Life. Source: DSMC (2022).

The proactive risk management post Milestone B with supplies, also ties in the Diminishing Manufacturing Source and Material Shortages (DMSMS) mitigation conducted by the logisticians as part of supply chain management. The life cycle sustainment and DMSMS issues are often ignored upfront during the design phase, due to a tight budget and often leaving the PM without a better option. The unintended consequences with this myopia is the sustainment community struggling in containing cost

after previous decade long decisions. The challenges include data rights, technical data packages, drawings, and Contract Data Requirement List (CDRL)s as part of the overall Systems Engineering Design Considerations. For logisticians the key point is the end of life, and identifying the last wave with the manufacturer's announcement of the final production run. This is especially true in computer chips, integrated circuits with Moore's Law, and the proliferation of electronic counterfeits. With no material resolution, the alternative is substitution or redesign which calls for further engineering and higher costs. The TransDigm case in 2019, as well as the F-35 low sorties rate is a good illustration of parts delaying the availability of weapon systems to the warfighter (Smithberger & Amey, 2019). The inattention upfront on the F-35 and the postproduction stage caused TransDigm to charge 2000% markup are great examples of supplies and parts inflation (National, 2019).

A perfect illustration of how the smallest part and the lowest level item can affect the entire system.

For want of a nail the shoe was lost.

For want of a shoe the horse was lost.

For want of a horse the rider was lost.

For want of a rider the message was lost.

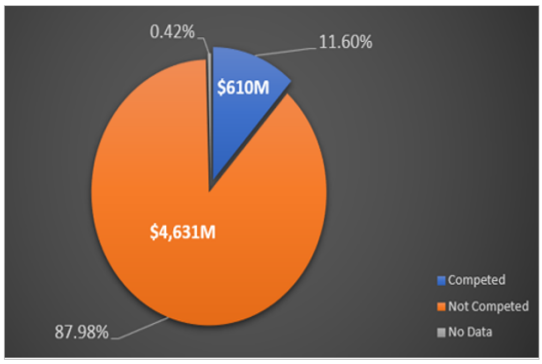
For want of a message the battle was lost.

For want of a battle the kingdom was lost.

And all for the want of a horseshoe nail. (DSPO, 2009)

Referencing the NPS Symposium NPS-CM-22-018 (Adjei & Hendricks, 2021, p. 67) the researcher "identified that more than 80% of WSS contracts occur in a sole-source environment." (See Figure 23)

## Methods




*Overall WSS contract competition by dollar amount FY19-FY20*

- NAVSUP-WSS provided over 62,000-line items of contracting data for fiscal years 2019 and 2020.
- We conducted extensive data cleaning to identify and correct missing information, duplicate data entries, grammatical, and typographical errors.
- Once data cleansing was complete, we conducting a spend analysis to identify patterns and created visualizations using Microsoft Excel to describe critical trends for NAVSUP-WSS expenditures.

Figure 23. WSS Contract Competition. Source: Adjei and Hendricks (2021).

In attempts at addressing that sole source, three scenarios were found. WSS operates in the sustainment phase of the acquisition life cycle. It attempted to increase competition by utilizing small business office engagement and industry days. WSS increases competition in a predominantly sole-source environment by identifying NIIN candidates. Adjei and Hendricks (2021) recommends for increasing competition by

1. Acquire intellectual property and data rights,
2. Pursue reverse engineering,
3. Adopt additive manufacturing and
4. Apply Leader Company contracting. (FAR 17.4)

At last, there are razor and blade business models, this is especially true for the weapon systems with long designed life and a reinforcement of the lock-in relationship. As illustrated above with the proverb, business boosts its long-term revenue and cash flow stream by strategically positioning its revenue stream via the replacement and parts. Readers are welcome to read the news stories with the F-35 and KC-46 programs, as it progresses through the years to gain full appreciation and validation of the razor and blade business model.

(2) Recommendation Two

For service contracts, we propose that the coordination and the PALT should be tied in with the PPBE and the POM submissions.

In a simplistic view, the "Execution" phase is the contracting activities in terms of enabling the PM in executing the budget via contract award as the final goal in the traditional sense of PALT. Revisiting the five-year PPBE/POM cycle, five years of time-frame is the equivalent of 1,825 days. It is beneficial to be aware that contracting professionals are working their best in reducing the PALT of 400 days down to 300 days. When taking the PALT into the TALT equation (400 days out of 1,825 days), PALT accounts for a measly 22% of the total PPBE/POM longitudinal view of time. The diamond plate with PALT is constantly pressured and pushed to the right. Having stated that, the acquisition team and contracting by engaging in the planning phase of the PPBE, is now starting to gain visibility and capture the remainder 78% of the longitudinal time frame. That is customarily unaccounted for (the PRALT part of the TALT), and where the acquisition team can harvest time, vice letting time go to die within the five-year PPBE time constraint. Using the 80/20 rule, the current focus on the 20% of the overall timeline in the name of PALT may need a new set of lenses and approach in defining the problem. Quoting Einstein, "if I had an hour to solve a problem, I'd spend 55 minutes thinking about the problem and 5 minutes thinking about solutions" (Debevoise, 2021, para 1). In the fielding system at the speed of relevance, is compressing the PALT time the solution? Or do the acquisition professionals and team members need to use factual data and focus on "thinking about the problem."

Majority of the acquisition professionals are aware that the contract award is just the beginning with the post-award contract administration phase, and "where the rubber meets the road" (Kelman, 2022, para. 2) with the contractor performance. We believe that the iceberg hidden underneath the apparent visible problem with the PALT question, in the effort to meet the expenditure requirement of the budget. Typically, the contract administration is passed on to either the Contracting Officer Representative (COR) or Defense Contract Management Agency (DCMA) in the post-award phase of the acquisition cycle. DCMA in recent years is facing budget constraints, and has strategized and focused on supplies contracts. The procurement commands and offices are starting to get burdened with contract administration for services contracts. In the 1990s, the government tried "total systems performance responsibility" and put oversight in the hands of contractors.

The effort was subsequently abandoned with high profile failures such as the Future Combat System (Kelman, 2022, para. 16). Who is minding the store, in post-award contract administration, is an interesting question for the PCO's and buying offices to contemplate with its service contract.

## C. SUMMARY

This chapter provided a review of intentions for this study and explained how the research assisted the topics. Both primary and secondary questions were appraised to cover the materials and the questions were tied to the findings on Chapter IV and provided simplicity and comprehension. We then provided two strong recommendations based on the type of contract (Supply and Service).

## D. FURTHER RESEARCH OPPORTUNITIES

As previously stated, the objective of this research was to conduct an analysis and provide awareness toward DOD PALT/ALT. We focused on particular areas such as PPBE, malpractices, best practices, influences, concerns, and displayed real life examples from a DOD organization (NSWC). While we provided a few recommendations for enhancements, further opportunities can be explored in this field of topics with additional research.

The initial journey down research lane was the Sponsored Research Topic #20-035, ALT/PALT Metric Analysis:

1. Are ALT and PALT being measured correctly?
2. What is the start/stop milestone for ALT/PALT?
3. How can WSS measure, track and maintain the metrics?

In the 2021 OFPP Memo, we believed a good portion of that question was answered, "the time between the date on which an initial solicitation….and the date of the award of the contract or order." With management's focus on metrics and the associated promotions plus bonuses, we foresee there will be creative writing and manipulation of data. Parallel track with the infamous creative accounting practice with Wall St. and

Certified Public Accounting (CPA) firms. Award date is a function on the quality of work put in beforehand, so the initial solicitation will be masked by iterations of "draft solicitation" in effort to minimize the PALT data metric. A cognitive bias and hyperbolic effect that causes no new actions.

During the data analysis, we used the SAP threshold of one agency that could be considered a small scale compared to the entire DOD. As previously mentioned, we believed SAP would provide us the best results for this particular research. Further exploration can occur by perhaps analyzing Data from other thresholds such as large contracts (above $7M). Also inputs from other DOD agencies such as the Army or Air Force can also be beneficial. Lastly, the data was analyzed by using Microsoft Excel. Other advanced software's are options for dissecting the information in different ways.

Disney Pixar's 1997 short film Geri's Game shows a person who competes with himself in a game of chess (see Figure 24) (Disney, n.d.). When the camera zooms back, the audience is reminded that only one person was playing the chess game the entire time. In the drive to field system at the speed of relevance, we see parallels whereas the acquisition team is now playing chess, not PMs, PCOs, or functional silos. This calls for a culture that assesses, corrects, and innovates better than the opposition. You are competing with yourself, and sometimes you are your own worst enemy.

Figure 24. Geri's game. Source: Disney (n.d.).

In attempts to answer the PM's inquiry when the CAO awards the PPBE phase of budget execution, we see studies and variations on the subject of PALT. In the article of

scheduling by fiat, besides the cause and effect, what about the action-reaction-counteraction sequence? Are we sure that contract award is the end? Or the beginning of another journey with the contract administration phase, and where the rubber meets the road with contract performance and execution? Are we meeting schedule for the sake of meeting schedule, forgetting the risk that the product we deliver contains serious defects and consequences? What is the impact and consequences on the iron triangle of cost, schedule and performance?

We would love to see advancements in time capture and time savings in the PRALT phase, or the left side of the diamond plate. There is so much potential allotted in those 400 PALT days. Who is minding the store in the PRALT phase that accounts for 1,425 days out of the 1,825 days of the longitudinal time? JFK once said, "ask not what your country can do for you, ask what you can do for your country" (Bates, 2011, sec. "Introduction"). It is a call for action to do what is right for the greater good.

Advancement in A.I. can add value and enable rational optimization with facts and data analysis. The reality is the decision-making will inevitably be made by humans with political dimensions and behavioral biases. To quote from the "Been There, Done That" paper, a third-party outsider with objective data to "protect the senior leaders from themselves." Cognitive biases, we believe, is the final frontier in managing milestones and time.

We look forward to the contributions made by acquisition professionals to the OFPP's PTAI, Defense Acquisition University (DAU) Knowledge Management System, and new frictionless acquisition strategies.

THIS PAGE INTENTIONALLY LEFT BLANK

# LIST OF REFERENCES


116th Congress. (2019–2020). *H.R.748 - CARES Act.* congress.gov. https://www.congress.gov/bill/116th-congress/house-bill/748

117th Congress. (2021-2022). *H.R.1024 - COVID–19 Supply Chain Resiliency Act of 2021*. CONGRESS.GOV. https://www.congress.gov/bill/117th-congress/house-bill/1024/text

AcqNotes. (2022). *PPBE process overview*. https://acqnotes.com/acqnote/acquisitions/ppbe-overview

Acquisition.Gov. (n.d.). *Part 7 – Acquisition Planning.* Retrieved May 20, 2022, from https://www.acquisition.gov/far/part-7

Adjei, S. & Hendricks II, C. (2021). *Increasing Defense Contractor Competition in a Predominantly Sole-Source Contracting Environment* [Master's thesis, Naval Postgraduate School]. NPS Archive: Calhoun. https://calhoun.nps.edu/handle/10945/68774

AMS Insights Episode 3: Navigating the Procurement Package Development Phase (2021, August 26). *YouTube.* https://www.youtube.com/watch?v=VQTSLiFo2ps

Baker S. (2019, October 29). This timeline shows exactly what happened on board the Lion Air Boeing 737 Max that crashed in less than 13 minutes, killing 189 people. Insider. https://www.businessinsider.com/lion-air-crash-timeline-boeing-737-max-disaster-killed-189-2019-10#angle-of-attack-sensors-compare-the-angle-of-the-wings-to-the-direction-of-the-plane-to-establish-the-orientation-of-the-plane-in-the-sky-angle-of-attack-data-is-what-triggers-the-mcas-system-on-a-737-max-the-faulty-system-which-led-to-the-crash-17

Bates, D. (2011, November 1). *Revealed: How JFK stole his "ask not what your country can do' speech from his old headmaster.* Daily Mail. https://www.dailymail.co.uk/news/article-2056020/JFK-stole-ask-country-speech-old-headmaster.html

Brien, S. (2022) *Assessment of the Impact of Federal Continuing Resolutions on the Preapproval Stage of Defense Acquisition* (Report No. SPS-AM-22-019). Naval Postgraduate School. https://dair.nps.edu/bitstream/123456789/4535/1/NPS-AM-22-019.pdf

Cohen, Z. (2019, April 25). *Trump's acting defense secretary called F-35 fighter jet program 'f–d up'.* CNN. https://www.cnn.com/2019/04/25/politics/pentagon-gao-patrick-shanahan-f-35/index.html.

Congressional Research Service (CRS) (2020) *Continuing Resolution: Overview of Components and Practices.* (CRS Report No. R46595) https://crsreports.congress.gov/product/pdf/R/R46595

Curran, J. (2021, July 6). *Pentagon Cuts Cord on JEDI Cloud Contract, Begins New Search.* MeriTalk. https://www.meritalk.com/articles/pentagon-cuts-cord-on-jedi-cloud-contract-begins-new-search/

DAU. (n.d.). *Acquipedia.* Retrieved April 28, 2022, from https://www.dau.edu/acquipedia/pages/ArticleContent.aspx?itemid=348

Deal, J. (2021, May 27). *China could soon outgun the U.S.* Politico. https://www.politico.com/newsletters/politico-china-watcher/2021/05/27/china-could-soon-outgun-the-us-493014

Debevoise, N. (2021, January 26). *The third critical step in problem solving that Einstein missed.* Forbes. https://www.forbes.com/sites/nelldebevoise/2021/01/26/the-third-critical-step-in-problem-solving-that-einstein-missed/?sh=7e27cf733807

Department of Defense (DOD). (2011). *Volume 2A: "Budget Formulation and Presentation (Chapters 1–3)."* https://comptroller.defense.gov/Portals/45/documents/fmr/Volume_02a.pdf

Defense Standardization Program Office (DSPO) (2009, September) *Diminishing Manufacturing Sources and Material Shortages. (*SD-22). Defense Standardization Program Office.https://www.dla.mil/Portals/104/Documents/LandAndMaritime/V/VA/PSMC/LM_SD22FINAL_151030.PDF

Deutsche Welle. (2021, May 26). *EU seeks huge fines for AstraZeneca over COVID vaccine delays.* https://www.dw.com/en/eu-seeks-huge-fines-for-astrazeneca-over-covid-vaccine-delays/a-57664516

Disney Pixar (n.d.) *Geri's Game.* Retrieved April 22, 2022, from https://www.pixar.com/geris-game

Dwyer, M., Tidwell, B., Blivas, A., & Hunter, A. (2020) *Acquisition Research Creating Synergy for Informed Change* (Report No. SYM-AM-20-046) Naval Postgraduate School. https://dair.nps.edu/bitstream/123456789/4183/1/SYM-AM-20-046.pdfFederal Acquisition Institute (FAI). (n.d.). *Periodic Table of Acquisition Innovations*. Retrieved April 15, 2022, from https://www.fai.gov/periodic-table/

Gilday, M. (2022, January 11). *Get Real, Get Better.* [Memorandum]. Chief Naval Operations. https://www.navy.mil/Resources/Blogs/Detail/Article/2894808/get-real-get-better/

Gill, D. & Hawkins, T. (2021). *How Long Does It Take to Award a Government Contract? Understanding PALT Time Frames with Big Data Analytics* (Report No. SYM-AM-21-096). Naval Postgraduate School. https://dair.nps.edu/bitstream/123456789/4403/1/SYM-AM-21-096.pdf

Grazier, D. (2019, March 19) *F-35 Far from Ready to Face Current or Future Threats, Testing Data Shows.* Pogo. https://www.pogo.org/investigation/2019/03/f-35-far-from-ready-to-face-current-or-future-threats

Haughey, J. (2020, October 5). *The Federal Budget Timeline & Process.* FiscalNote. https://fiscalnote.com/blog/14-steps-to-the-federal-budget-timeline

The Jerusalem Post (2022, May 5). U.S. *reports shortage of Javelins, Stingers after Ukraine aid.* US reports shortage of Javelins, Stingers after Ukraine aid - The Jerusalem Post (jpost.com)

Kelman, S. (2022, March 15). *Time to Pivot: Focusing on Post-Award Contracting Management and Resources. Contract Management Magazine.* https://www.businessofgovernment.org/blog/time-pivot-focusing-post-award-contracting-management-and-resources

Khan Academy, *"Interquartile (IQR)"* May 24, 2022[Online]. Available: https://www.khanacademy.org/math/cc-sixth-grade-math/cc-6th-data-statistics/cc-6th/v/calculating-interquartile-range-iqr

Letterle, K. & Kantner, P. (2019). *An analysis of contracting activity purchase request acceptance lead time for USMC using unit acquisitions under the Simplified Acquisitions Threshold* [Master's thesis, Naval Postgraduate School]. NPS Archive: Calhoun. https://calhoun.nps.edu/handle/10945/64005

Ludwigsonm, J. (2022). *F-35 Joint Strike Fighter: Cost Growth and Schedule Delays Continue* (GAO-22-105943). Government Accountability Office. https://www.gao.gov/assets/gao-22-105943.pdf

Macola, I. (2021, June 10). *Ethiopian Airlines crash: what's happened in the last two years?.* Airport Technology. *https://www.airport-technology.com/features/ethiopian-airlines-crash-what-happened-last-two-years/*

Majority Staff (2019, May 15) *Supplemental Memorandum on Actions by TransDigm*. [Memorandum]. Congress of the United States. https://oversight.house.gov/sites/democrats.oversight.house.gov/files/2019-05-15.COR%20Supplemental%20Memo-5-159%20Hearing%20DOD%20IG%20Rept.%20on%20Excess%20Profits%20by%20TransDigm%20Group%20Inc_.pdf

The Maritime Executive. (2011, Jan 13) *Senator John McCain pushes to repeal the Jones Act.* *https://www.maritime-executive.com/article/senator-john-mccain-pushes-repeal-jones-act*

Maurer, D. (2022). *F-35 Sustainment: DOD Faces Several Uncertainties and Has Not Met Key Objectives* (GAO-22-105995). Government Accountability Office. https://www.gao.gov/assets/gao-22-105995.pdf

Mortlock, R. (2021, August 19). *Been There, Done That: Behavioral Acquisition. United States Army Acquisition Support Center.* Acquisition, Army ALT Magazine, Science and Technology. https://asc.army.mil/web/news-been-there-done-that-behavioral-acquisition/

Penn, W (2022) *Time is what we want most, but what we use worst*. Quotewis. https://www.quotewis.com/quotes/time-is-what-we-want-most-1730

Pickar, C. & Franck, R. (2021). *It's About Time: Toward Realistic Acquisition Schedule.* (Report No. NPS-PM-21-037). Naval Postgraduate School. https://dair.nps.edu/handle/123456789/4323

Roblin, S (2021, March 7) *The Air Force admits the F-35 fighter jet costs too much. So it wants to spend even more.* NBC News. https://www.nbcnews.com/think/opinion/air-force-admits-f-35-fighter-jet-costs-too-much-ncna1259781

Rossin, A. (2019, January 30). *Section 809 Panel: Speed Defense Acquisitions and Use Best-in-Class Contracts.* GovWin. https://iq.govwin.com/neo/marketAnalysis/view/Section-809-Panel-Speed-Defense-Acquisitions-and-Use-Best-in-Class-Contracts/3259?researchTypeId=1&researchMarket

Schoeni, D. (2017). *Still Too Slow for Cyber Warfare: Why Extension of the Rapid Acquisition Authority and the Special Emergency Procurement Authority to Cyber are Half Measures.* Public Contract Law Journal, Vol. 46, No. 4, 134–144. https://ssrn.com/abstract=3030927

Section 809. (2019). *Report of the Advisory Panel on Streamlining and Codifying Acquisition Regulations Volume 3 of 3.* *https://discover.dtic.mil/wp-content/uploads/809-Panel-2019/Volume3/Sec809Panel_Vol3-Report_Jan2019_part-1_0509.pdf*

Smithberger, M., & Amey, S. (2019, May 29). *In for a TransDigm, Out for Billions.* Pogo https://www.pogo.org/report/2019/05/in-for-a-transdigm-out-for-billions

Vickers, R. (1993). *Required Delivery Date (RDD), an alternative to Procurement Administrative [i.e. Administrative] Lead Time (PALT)? [*Master's thesis, Naval Postgraduate School]. NPS Archive Calhoun. http://hdl.handle.net/10945/39752

White House. (2021). *Fact sheet: Biden-Harris Administration Announces Supply Chain Disruptions Task Force to address short-term supply chain discontinuities.* https://www.whitehouse.gov/briefing-room/statements-releases/2021/06/08/fact-sheet-biden-harris-administration-announces-supply-chain-disruptions-task-force-to-address-short-term-supply-chain-discontinuities.

Wong, J. (2020, December 16). *Bad Idea: Overly Focusing on Speed in Development and Acquisition.* Rand Corporation. https://www.rand.org/blog/2020/12/bad-idea-overly-focusing-on-development-and-acquisition.html

Wooten, M. (2021, January 14). *Reducing procurement administrative lead time using modern business practices*. [Memorandum]. Office of Federal Procurement Policy. https://www.whitehouse.gov/wp-content/uploads/2021/01/OFPPPALTMemorandum-01-14-2021.pdf


Acquisition Research Program
Naval Postgraduate School
555 Dyer Road, Ingersoll Hall
Monterey, CA 93943

www.acquisitionresearch.net