



ACQUISITION RESEARCH PROGRAM SPONSORED REPORT SERIES

**Intellectual Property: Technical Data and Computer Software
Rights Procurement in Department of Defense Major Weapon
Systems**

December 2019

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



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ACQUISITION RESEARCH PROGRAM
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ABSTRACT

Intellectual property and intellectual property rights play an important role in the Department of Defense's ability to ensure major weapon systems are affordable. The DOD has placed increased emphasis on improving how the DOD procures intellectual property and intellectual property rights and in understanding the complex issues behind intellectual property that exist between the DOD and industry. The research in this paper seeks to evaluate recent DOD efforts to improve the acquisition of intellectual property (specifically technical data and computer software) and intellectual property rights. Additionally, the research takes a look at past acquisitions to evaluate the intellectual property strategies developed during the acquisition planning and contract award phases of four Air Force major weapon system programs. The paper utilizes the research findings to identify "best practices" that can be readily applied to future acquisitions when procuring technical data and computer software rights.



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—Daniel Carrillo, Capt, USAF

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—Spencer Jacobson, Capt, USAF

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—Aaron Ashley, Capt, USAF



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LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|--------|---|
| ACAT | acquisition category |
| AFFARS | Air Force Supplement to the Federal Acquisition Regulations |
| CFT | cross-functional team |
| CRH | Combat Rescue Helicopter |
| DFARS | Defense Federal Acquisition Regulation Supplement |
| DMPD | detailed manufacturing and process data |
| DOD | Department of Defense |
| DODD | Department of Defense Directive |
| DODI | Department of Defense Instruction |
| EMD | Engineering, Manufacturing, and Development |
| FAR | Federal Acquisition Regulation |
| FFF | form, fit, and function |
| FFRDC | Federally Funded Research and Development Center |
| GAO | Government Accountability Office |
| GPR | government purpose rights |
| ICP | item, component, or process |
| IP | intellectual property |
| IP CoE | Intellectual Property Center of Excellence |
| LCSP | Life-Cycle Sustainment Plan |
| LR | limited rights |
| MDAP | major defense acquisition program |
| MOSA | modular open systems approach |
| NDAA | National Defense Authorization Act |
| OMIT | operation, maintenance, installation, and training |
| O&S | operations and support |
| PMO | project management office |
| PO | program office |
| R&D | research and development |
| RFP | request for proposal |
| RR | restricted rights |



| | |
|------|-----------------------------------|
| SOW | statement of work |
| TCTO | time compliance technical order |
| TO | technical order |
| TOMA | Technical Order Management Agency |
| UCF | Uniform Contract Format |
| UR | Unlimited rights |
| USAF | United States Air Force |



I. INTRODUCTION

Intellectual property and intellectual property rights are a critically important area of weapon system acquisitions. Acquisition of intellectual property gives the United States military access to emerging technology. Its role in weapon system procurement has started to percolate to a position of awareness over the past several years and major acquisitions. In his memorandum establishing the new cross-functional team (CFT) for intellectual property in Air Force acquisitions, Under Secretary of the Air Force Matthew Donovan opens by explaining “obtaining adequate intellectual property license rights from our industry partners is critical to ensuring our major weapon systems are affordable and adaptable to meet warfighter needs” (Intellectual Property Cross Functional Team, 2019). The judicious acquisition of intellectual property also helps increase long-run competition for major weapon systems and has the potential to reduce sustainment costs over the lifetime of expensive procurements.

A. PURPOSE

The Air Force maintains many older weapon systems past their intended lifespan, often referred to as *legacy systems*. While these legacy systems remain combat-effective, they have increasing maintenance costs as the systems age and components break down. Acquiring the intellectual property rights to legacy systems and future weapon systems can help keep life-cycle maintenance costs down. These costs are minimized by allowing the Air Force contracting officers in charge of life-cycle procurement to use more competition to solicit for parts and components that were previously locked into a single source by their proprietary nature, and therefore usually only available for sole-source acquisitions.

In addition to keeping sustainment costs low, proper acquisition of intellectual property may serve to increase the adaptability of legacy weapon systems. Turning future competitions into an open-source environment by releasing a product’s intellectual property from proprietary vendor-lock allows more contractors to design, bid, and compete. Vendor-lock is a serious consideration when procuring data packages for weapon systems, especially when trying to promote increased future adaptability and decreased sustainment costs (Pawlyk, 2018). Increased vendor numbers can lead to superior products



to be adapted for any mission that the United States Air Force may require of their weapon systems.

Access to emerging technologies is an integral factor in advancing the United States Air Force's superiority over its adversaries. These rising technologies can often come from nontraditional defense contractors; that is, contractors that do not normally do business with the Department of Defense (DOD) or the Air Force but have products that the military may find useful. In many cases, these nontraditional defense contractors may be discouraged by the infamously long DOD acquisition and procurement processes. In other cases, however, nontraditional defense contractors avoid working with the Air Force and other military branches because they do not want to give up their intellectual property and the rights to their technical data.

Another important factor when considering whether to pursue the procurement of intellectual property and technical data rights is the effect that these rights have on competition. Putting acquisitions that normally end up being sole-source into a fully competitive environment may have the long-term effect of driving life-cycle operations and support costs down. This factor will have to be weighed against the upfront contracting costs for the Air Force to take ownership of any intellectual property and technical data rights for new procurements or aging legacy systems.

Expanding the Air Force's procurement of intellectual property and technical data rights may also allow for the inclusion of more small businesses in Air Force contracting. Lack of participation from small businesses in Air Force procurement is a perennial issue, and the small business procurement goals that the Air Force sets are mostly carried by smaller contracting offices with smaller budgets. Leveraging the massive amount of spending that a life-cycle management center, a system program office, or any of the other large Air Force contracting offices against the cost of acquiring intellectual property could help take the pressure off smaller offices throughout the Air Force.

As alluded to when discussing competition, the acquisition of intellectual property and technical data rights has the strong potential to keep life-cycle sustainment costs down through competing contracting actions for maintenance work and replacement parts. In recent years, the replacement parts for Air Force weapon systems have made the news with



their shockingly expensive price tags (Pawlyk, 2018). These increased price tags come from long-held contracts that keep the parts in a sole-source environment, excluding other vendors for competing on components contracts for the Air Force.

As it stands right now, intellectual property and technical data rights are an important part of Air Force procurement strategies, yet this is one of the more poorly understood areas of procurement. There is no standardized way for the procuring contracting officer to procure intellectual property or technical data rights, making each contract a one-off event. In some cases, the Air Force is using Section H of their contracts to procure those data rights, but they often ask for a level of ownership over the intellectual property or technical data rights that is unnecessary or even inappropriate (DeVecchio, 2018).

Recognizing this as an issue, the Air Force established the Intellectual Property Center of Excellence (IP CoE), which seeks to clarify and guide Air Force contracting officers in the procurement of intellectual property, including technical data rights. The IP CoE provides education and training to the Air Force on intellectual property procurement, which can be a significant force multiplier, making acquisition more effective. The Intellectual Property Center of Excellence is, however, only a single office, and the task of educating the Air Force acquisition corps is challenging.

Not only is the Air Force struggling with their own understanding of intellectual property and data rights in acquisitions, but the vendors that the Air Force works with are far savvier than the military. Past acquisitions have relied on questionable clauses and dubious interpretations for Air Force acquisitions personnel to gain access to and ownership over intellectual property and data rights (DeVecchio, 2018). Now, some vendors are pushing back and threatening protest over the misuse of certain federal statutes, while encouraging others to do the same (DeVecchio, 2018). If the Air Force cannot perform these acquisitions properly, there may be negative consequences for the Air Force and the taxpayer dollars entrusted to them.

The lack of understanding extends beyond the legal intricacies and into the actual technical needs of the Air Force. According to Major General Cameron Holt during a conversation with Naval Postgraduate School students at the 2019 Acquisition Research



Symposium, there were many times in his career in which the Air Force asked for more access to intellectual property and technical data rights than was truly needed for the program in question (Holt, 2019). What was most telling about these exchanges is that the vendors knew far more about what was required than the Air Force acquisition team they were engaging with and that the Air Force acquisition team was defaulting to demand almost every piece of intellectual property.

General Holt went further to elaborate on the need for providing Air Force contracting guidance on how to set up contract clauses, specifically using Section H of the Uniform Contract Format, to come up with mutually agreeable clauses for intellectual property and technical data rights acquisitions (Holt, 2019). Currently, the clauses being used are all tailored specifically to individual contracts, which is a necessity with such highly specialized contract content. There must be, however, many similar characteristics across the clauses in Section H of these contracts and the Air Force could capitalize by streamlining clauses to most closely match what is required, and what is most mutually beneficial to the Air Force and the contractors.

It has been made abundantly clear that the Air Force needs to better understand the intricacies of intellectual property and technical data rights in acquisitions if the Air Force is to stay ahead of their competitors. Competing nations may not have to abide by the same level of regulation that an Air Force contracting officer has to abide by. These countries may even require the wholesale surrender of data rights to the purchasing nation. Sometimes military materiel in competitor nations is purchased through state-run industries unlike the defense industrial complex of the United States. Despite these handicaps, the necessary technical data rights and intellectual property can be acquired within the guidelines of the Federal Acquisition Regulation.

Understanding which rights are required and when they are required are key to having a successful program. Unfortunately, the Air Force lags behind its industry partners in this understanding and often asks for levels of access that are unnecessary and inappropriate for the health of the program. Our thesis outlines several identifying factors that indicate when technical data rights and intellectual property need to be procured. This work also shows the level of ownership that the Air Force truly needs to be successful when



it is deemed appropriate to acquire intellectual property and technical data rights from a vendor.

The issue of intellectual property in procurement is not solely a problem within the United States Air Force. Rather, this issue extends across the DOD into all the branches of military service (Thornberry, 2019). Funding for other programs is threatened if the DOD does not make significant progress in the establishment of an intellectual property policy and a knowledgeable workforce (Thornberry, 2019). The attention of Congress toward the issue of intellectual property in military procurement highlights just how important this issue has become in an era of increasingly tight budgets and elevated scrutiny.

The attention from the United States Congress extends into the National Defense Authorization Act of 2019. This act, named after late Senator John S. McCain, a veteran United States Navy aviator and long-time lawmaker, outlines the specifics of how the United States Congress authorizes the United States military to obligate money for fiscal year 2019. Within the National Defense Authorization Act, there are nine references to the procurement of intellectual property (John S. McCain National Defense Authorization Act for Fiscal Year 2019, 2018). Many of those references are specific directions to consider the impact of procuring intellectual property in new systems (John S. McCain National Defense Authorization Act for Fiscal Year 2019, 2018).

The direction from Congress extends from the acquisition of software development and applications to quantum sciences, and also extends protections for the original developers of the intellectual property and technical data rights (John S. McCain National Defense Authorization Act for Fiscal Year 2019, 2018). This indicates that Congress has recognized that the procurement of intellectual property is very important to the DOD but has also realized the importance that these intellectual properties and technical data rights hold for the software developers, programmers, and engineers who are working hard on their products and that they deserve to have their rights protected.

Congress clearly does not want the United States military to go overboard on the procurement of technical data rights, especially with regard to agile software development, directing the DOD to evaluate “how intellectual property ownership issues associated with software applications developed with Agile DevOps processes will be addressed to ensure



future sustainment, maintenance, and upgrades to software applications after the applications are fielded” (John S. McCain National Defense Authorization Act for Fiscal Year 2019, 2018). This reminds us that the procurement of intellectual property may not be the appropriate action in each case, and that every procurement is substantially different from other procurements and needs to have careful consideration given to the procurement of intellectual property and technical data rights for each applicable acquisition.

The direction to consider intellectual property in the procurement of future systems can also be extrapolated to be a direction to consider the procurement of technical data rights and intellectual property for legacy systems as well as new systems in the procurement pipeline, especially in the realm of maintenance and replacement parts. Clearly, this is an important issue for the United States Congress, which means that it deserves scrutiny, effort, and understanding from the United States military and acquisition professionals.

B. PROBLEM

Our primary research question stemmed from a conversation held with Major General Cameron Holt, the deputy assistant secretary for contracting, Office of the Assistant Secretary of the Air Force for Acquisition, Technology and Logistics (Holt, 2018). Major General Holt mentioned that, throughout his career as an Air Force Contracting Officer, there had often been disputes on what intellectual property and technical data rights promoted successful programs. The definition of “healthy” varies from procurement to procurement. Some procurements may require rapidly adaptable, open-source hardware and software while others may be more focused on schedules, budgets, or other more traditional acquisition focuses (Holt, 2019). From this conversation we seek to answer the question: Is the United States Air Force sufficiently addressing intellectual property in acquisition planning for major weapon systems? Another question from that primary question is: What level of intellectual property is appropriate to acquire in United States Air Force acquisitions? There is clearly a level of ownership that is appropriate, and that level likely varies from one acquisition to the next.

Further consideration of our primary question brings about a secondary question that relates to the contract clauses being used to acquire these data rights and intellectual



property. What contract clauses are contracting officers using to acquire intellectual property and data rights? We hypothesize that there is not a standardized set of clauses being used by each procuring contracting officer, and that each clause is tailored to each individual contract. An additional research question is: What characteristics are shared between the custom clauses being used?

Following our question about contract clauses, we wanted to know how the Air Force defines operation, maintenance, installation, and training (OMIT) data within contracts and does industry have issues with this definition? There has not been a standardized definition in the DFARS for OMIT Data (Intellectual Property Cross Functional Team, 2019), and this has led to considerable friction between government acquisition teams and industry partners (DeVecchio, 2018).

Our final research question, what are the main factors that contribute to issues between the Air Force and contractors in successfully negotiating intellectual property rights, seeks to investigate how the Air Force determines what rights are necessary to acquire. This question focuses mostly on the pre-award phase of the contract and how the knowledge gap between the Air Force and industry drives government-vendor interactions.

Research Questions:

1. Is the United States Air Force sufficiently addressing intellectual property in the acquisition planning of major weapon systems?
2. What contract clauses are contracting officers using to acquire intellectual property and data rights?
3. How does the Air Force ensure adequate deliverables and license rights are obtained in operation, maintenance, installation, and training data within contracts?
4. What are the main factors that create friction between the Air Force and contractors when negotiating intellectual property rights?

C. METHOD

Using data provided through the Air Force's newly formed Intellectual Property Cross Functional Team (Intellectual Property Cross Functional Team, 2019) and Air Force Life Cycle Management Center Project Management Offices (PMOs), we looked at several



major weapon systems and how many of them procured technical data packages, either as part of the solicitation, or as a part of a change order to the larger contract. After procuring this data, we investigated how those systems handled the exchange of intellectual property and the rights to the technical data, and how those exchanges evolved over time.

D. SCOPE

The chapter following the introduction provides a background on the status of intellectual property in Air Force contracting. Following our background information, we discuss the literature used in researching this thesis. Next, we discuss our results, and finally we provide a summary of our findings, along with some questions for potential further research.

E. SUMMARY

Acquiring ownership over intellectual property has the potential to drive Air Force procurement costs down for both legacy systems and for next generation systems making their way through the Air Force procurement system. These costs are driven down by expanding the level of competition for maintenance actions and spare parts for systems. There will likely be, however, some significant up-front resistance by vendors who are rightfully guarding their intellectual property and the technical data that make up their products. The Air Force must weigh when the up-front costs of procuring the intellectual property and technical data rights outweigh the long-term life-cycle costs of maintaining the system, and whether it will be worth the investment in the long run.

Access to emerging technology will shape the way that the Air Force operates in the future. With adversaries rapidly closing the technology gap (Radin et al., 2019) that the United States military has enjoyed for the past several decades, the procurement of new technologies must become a major part of United States military procurement programs. These emerging technologies include intellectual property, and the Air Force needs to understand how procuring ownership over the technical data and intellectual property of these technologies affects the cost of ownership of new systems.

The thorough understanding of emerging technologies also requires a thorough understanding of how intellectual property and technology procurement are intermingled.



With increasingly tech-savvy adversaries, the United States and her Air Force need to rapidly come to an understanding on how to cooperatively procure technical data rights from its industry partners. Some vendors are very averse to the military gaining access to their technology, especially if the military takes full ownership over it. Negotiating with those vendors who may have innovative technologies is an important part of advancing the level of technology available to the American warfighter.

According to General Holt, there is scarcely another area of United States Air Force procurement that is as misunderstood than the procurement of intellectual property and technical data rights (Holt, 2019). The inception of government cadres to specifically address intellectual property indicates that this area of procurement is not fully understood. Though the Air Force has made incremental strides in expanding the understanding of intellectual property and technical data rights in procurement, there is a long way to go. Our research expands the knowledge base and furthers the understanding of the intricacies of how the Air Force has procured intellectual property in the past, recommends ways to improve intellectual property procurement considerations in future acquisition efforts.



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II. BACKGROUND

This background discusses the Defense Acquisition System and the role that intellectual property plays in the process to acquire, sustain, and modernize weapon systems and materiel solutions necessary to equip the warfighter with the capabilities to execute the DOD mission. Underlying modern weapon systems is the technology and the intellectual property that is created from incorporating advanced technology into weapon systems. The procurement strategy for acquiring the intellectual property and license rights is just as critical a program consideration as any to the long-term sustainment and modernization of the weapon system. By statutory requirement, the Defense Acquisition System provides for the intellectual property strategy to assess program needs for intellectual property and license rights in an effort for program management to increase competition, program affordability, and lower sustainment costs of the program over the product life cycle (Department of Defense [DOD], 2017).

A. DEFENSE ACQUISITION SYSTEM

The Defense Acquisition System is the management mechanism acquisition professionals utilize to meet the capability requirements of the warfighter and to manage investments in technology, weapons systems, and product support. Department of Defense Directive (DODD) 5000.01, *Defense Acquisition System*, and Department of Defense Instruction (DODI) 5000.02, *Operation of the Defense Acquisition System*, provide the governing management framework of policies and procedures that the acquisition workforce must navigate in order to meet the needs of the warfighter. The defense acquisition system integrates requirements, acquisition, and the budgeting process in order to meet program objectives (DOD, 2017). Extensive knowledge and effective management of this complex process is necessary to establishing and executing a successful DOD program. As technology in society continues to advance, the incorporation of advanced technology into weapon systems will continue to grow, forcing programs to give considerable attention to intellectual property and how the intellectual property incorporated into the program is managed throughout the product life cycle.

DODI 5000.02 *Operation of the Defense Acquisition System* states,



Program Managers for ACAT I and II programs, regardless of planned sustainment approach ... shall assess the data required to design, manufacture, and sustain the system as well as to support re-competition for production, sustainment, or upgrades. DOD Guidance goes into more detail that analysis shall be completed to outline the open systems architecture approach, combined with technical data rights the government will pursue in order to ensure a lifetime consideration of competition in the acquisition of weapon systems. (Monsey, 2019)

The importance of intellectual property within any acquisition is key in leveraging our buying power and allows for flexibility throughout any program to make sure our warfighters are getting what they need while spending appropriately.

The FY2016–FY2018 National Defense Authorization Acts (NDAA) include a number of acquisition reform initiatives addressing intellectual property for major weapon systems..

Rights to technical data developed in relation to government contracts have been a long-standing subject of debate between contractors and the government. The FY2016 NDAA set up an advisory panel to submit recommendations on amending regulations governing technical data in major defense acquisition programs (MDAPs). The FY2017 NDAA made a number of amendments to technical data rights, including giving DOD more authority to negotiate for data rights, and, in the case of interfaces developed exclusively at private expense, to require negotiations to determine the appropriate compensation for the technical data. The FY2018 NDAA required the DOD to develop policy on the acquisition or licensing of intellectual property and establish a cadre of experts to assist in managing and acquiring intellectual property rights. (Schwartz & Peters, 2018, p. 5)

Furthermore, the report goes into detail about defense acquisition programs.

The FY2017 NDAA required MDAPs to be designed and developed using a modular open system architecture approach to enable incremental development and enhance competition, innovation, and interoperability. The open architecture requirements extend to major system interfaces and standards for use in major system platforms. The act also generally establishes the authority to conduct and establish funding for prototype projects when there is a high-priority warfighter need due to a capability gap, there is an opportunity to integrate new components into a major weapon system based on commercial technology, the technology is



expected to be mature enough to prototype within three years, and there is an opportunity to reduce sustainment costs. (Schwartz & Peters, 2018, p. 4)

The Federal Acquisition Regulation (FAR) is the principal set of rules for government contracting within the DOD, while the Defense Federal Acquisition Regulation Supplement (DFARS) is the governing regulation on intellectual property. The FAR along with the DFARS guide contracting officers and all members of the acquisition team in acquisition planning, competition requirements, pre-award concerns, award procedures, and contract administration.

B. INTELLECTUAL PROPERTY RIGHTS

Intellectual property is the broad category that traditionally includes, “patents, copyrights, and trademarks” along with trade secrets (American Association of University Professors, 2016). “Owners of intellectual property are granted certain exclusive rights protected by law to control the use and dissemination of their intellectual property” (Nash & Rawicz, 2008). When discussing intellectual property in the acquisition of weapon systems, the IP of greatest interest is in technical data and computer software (Van Atta, Kneece, Lippitz, & Patterson, 2017).

The intellectual property of a defense contractor is generally regarded as the livelihood of the company; therefore, companies seek to protect their intellectual property from competitors in order to maintain a competitive advantage and to protect large investments into research and development. In the past, the DOD led industry efforts in research and development into technology; however, today the reverse is true, where industry is now leading research and development spend into technology and has become the driving force for innovation in weapon systems (Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics [OUSD(AT&L)], 2001).

As a result of the change, the DOD has shifted from “initiator” to “early adopter” of new technology, where the DOD must look for ways to bring industry innovation to the DOD in order to capture the latest technologies and capabilities within its weapon systems. As an early adopter of innovation, the government does not own the intellectual property created by a defense contractor, even under a contract completely funded by the government, except under certain circumstances. In practice, the government acquires a



license from the defense contractor to use, reproduce, modify or share the data with outside sources in accordance with the level of license acquired from the defense contractor.

The challenge, however, has been in establishing the appropriate level of the data rights the government believes is necessary in order to acquire, modernize, and sustain a weapon system in an affordable manner. This has resulted in an overreach at times by the government to seek data rights beyond what defense contractors are comfortable with releasing, resulting in companies opting not to contract with government for fear of release of their proprietary intellectual property to third parties.

In the Defense Acquisition System, intellectual property strategy is a statutory requirement for programs to evaluate how intellectual property will be managed through the life cycle of the program. Although the government program manager is responsible for ensuring intellectual property requirements are assessed at the beginning of a program, the procuring contracting officer plays a significant role in negotiating the terms and conditions of the contract and must work with the program manager to ensure the contract contains the appropriate intellectual property clauses in order to protect the interest of both the government and the defense contractor.

Recent Government Accountability Office (GAO) studies have shown that acquiring the appropriate level of data rights at initial contract award is one of the most cost-effective solutions for the government to reduce program costs (Monsey, 2019). Waiting until after initial contract award can significantly drive up the costs of intellectual property rights and can have significant negative program effects such as reduced competition, diminishing supplier sources for spare parts, and increased sustainment costs.

As weapon system hardware and software continues to incorporate more advanced technology, understanding the complexities of intellectual property statutes and regulations, along with the effective protection and management of the intellectual property, has become more important than ever for both industry and the government. Before tackling the issues surrounding intellectual property rights, establishing a basic understanding of the different categories of intellectual property and the license rights is important for acquisition professionals to possess in order to enter into meaningful discussions with defense contractors regarding these topics. Working toward increased



education and training of these concepts across the acquisition workforce will be important to creating and implementing appropriate intellectual property strategies in various acquisition programs across the DOD acquisition workforce.

C. INTELLECTUAL PROPERTY RELEVANCE TO DEFENSE ACQUISITION SYSTEM

The National Defense Authorization Act for Fiscal Year 2018 shows the offensive mindset needed for the management of intellectual property matters within the Department of Defense and how critical it is for better training and education within the acquisition workforce.

The House bill contained a provision (sec. 813) that would create a small cadre of experts in intellectual property that would advise, assist, and provide resources to program offices as they develop their IP strategies and negotiate with industry. This provision would also establish a centralized Office of Intellectual Property within the Department of Defense to standardize the Department's approach toward obtaining technical data, promulgate policy on IP, oversee the cadre of IP experts, and serve as a single point of contact for industry on IP matters. Finally, this provision would add IP positions to the acquisition workforce and would revise the training provided to the acquisition workforce on IP matters. (National Defense Authorization Act of Fiscal Year 2018, 2017)

The DOD is seeking to address the acquisition missteps of the past when it comes to data requirements and technical rights.

The F-35 program is an example of why intellectual property is a top priority because of the failures throughout the program. Air Force Lt. Gen. Christopher Bogdan, who runs the F-35 program, explained, "The lack of clear contractual language about ownership of technical data and software code has put the Pentagon in a bind and has limited the government's options on how to maintain, upgrade, and manage the Pentagon's largest weapons acquisition" (Monsey, 2019). Lt. Gen. Bogdan went into further detail discussing concerns with government and industry partners regarding the review of laws and regulations pertaining to rights in technical data. He expressed, "what I'm experiencing is the classic example that if you don't think about this upfront you're dead in the water at the back end of this" (Monsey, 2019). The Air Force is playing catch-up now on every decision when it comes to intellectual property. He also stated, "We don't train our program



managers, contracting officers, or even our lawyers that advise us on what this monster is” (Monsey, 2019).

The GAO completed a report on the F-35 program titled *F-35 Sustainment, Need for Affordable Strategy, Greater Attention to Risks, and Improved Cost Estimates* and found the same concerns as General Bogdan. The bottom line was that the GAO recommends, “to promote competition, address affordability, and inform its overarching sustainment strategy, develop a long-term intellectual property strategy to include, but not limited to, the identification of current levels of technical data rights ownership by federal government and all critical technical data needs and their associated costs” (Government Accountability Office [GAO], 2014a). The GAO reported:

According to current DOD acquisition policy, an Intellectual Property Strategy must be established and maintained for all defense acquisition programs in order to identify and manage the full spectrum of intellectual property and related issues, such as technical data, from the inception of the program and throughout the life cycle. The intellectual property strategy describes how program management will assess program needs for, and acquire competitively whenever possible, the intellectual property deliverables and associated license rights necessary for competitive and affordable acquisition and sustainment over the entire product life cycle. The intellectual property strategy is to be updated throughout the entire product life cycle, summarized in the Acquisition Strategy, and presented with the Life Cycle Sustainment Plan during the Operations and Support Phase. The intellectual property strategy is also to integrate, for all systems, the intellectual property planning elements required under Subpart 207.106 (S-70) of the Defense Federal Acquisition Regulation Supplement. (GAO, 2014a)

The GAO reports that DOD officials need to better assess and evaluate technical data rights, recommending the development of a plan that describes what technical data the government possesses, what license rights are needed, and an assessment of the costs to acquire the necessary technical data and license rights. Throughout the investigation, multiple DOD officials acknowledged the importance of intellectual property rights, but still struggled to develop effective IP strategies. The report finally states:

Without a long-term intellectual property strategy, the program runs the risk of not being able to complete requirements for such things as spare parts. Unless technical data rights needs are considered up front, critical data and software may not be acquired, rendering them unavailable (or unaffordable)



years later when seeking to maximize competition on a program during its sustainment phase. (GAO, 2014a)

The relevance of intellectual property is critical for success in any major system and needs to be a priority from the start, with a focus for all members working on the acquisition strategy and intellectual property strategy addressing all future needs and concerns for the program. Figure 1 shows a high-level intellectual property strategy of long-term data needs and how the data will be used.

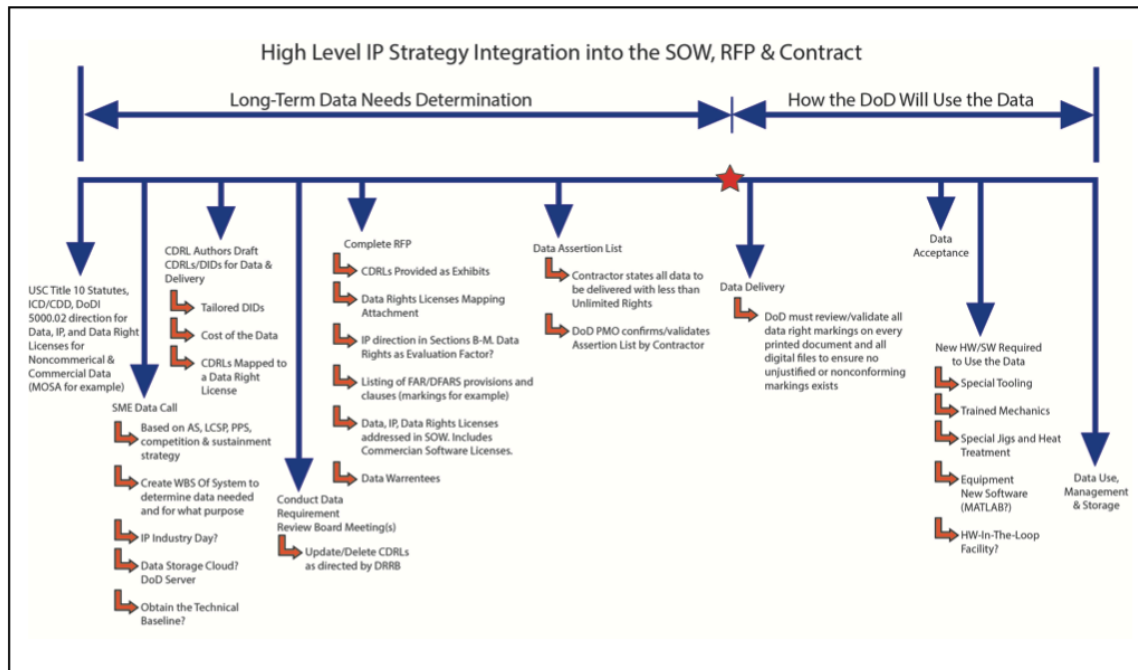


Figure 1. High-level intellectual property strategy. Source: Intellectual Property Cross Functional Team (2019).

D. INTELLECTUAL PROPERTY IS TOP PRIORITY FOR THE AIR FORCE

The background of how and why intellectual property is a top focus is obvious with all the research conducted within the Air Force and the GAO reports completed over the last couple of years, but the Air Force is getting serious about equipping, educating, and training the Air Force acquisition career fields with the tools necessary to compete with industry when it comes to intellectual property. The Air Force has seen issues with multiple programs, including the F-35, C-17, and F-22 due to not having a trained and educated



workforce on intellectual property (GAO, 2006). *SMART IP: Air Force Data Rights Guidebook* is just one step to equip the workforce. Another step taken was the commission of a government-industry advisory panel to review regulations in technical data rights. The formation of the panel stems from congressional mandate:

The National Defense Authorization Act (NDAA) for Fiscal Year (FY) 2016 (Public Law 114-92), as amended in the FY2017 NDAA (Public Law 114-328), directed the secretary of defense to establish a government-industry advisory panel (the Panel) for the purpose of reviewing Sections 2320 and 2321 of Title 10, United States Code (USC), regarding rights in technical data and the validation of proprietary data restrictions and the regulations implementing such sections, to ensure that such statutory and regulatory requirements are best structured to serve the interests of the taxpayers and the national defense. (DOD, 2018)

We identified multiple findings in the Section 809 Panel regarding how technical data rights requirements affect the Air Force's ability to acquire what is required.

The Advisory Panel on Streamlining and Codifying Acquisition Regulations, aka the Section 809 Panel, was established by Congress in the FY 2016 NDAA. Since its inception in August 2016 to its conclusion in July 2019, the panel has published an Interim Report and three-volume Final Report, containing a total of 98 recommendations aimed at changing the overall structure and operations of defense acquisition both strategically and tactically. (Section 809 Panel, 2019)

The results of the Section 809 Panel were issued in three report volumes. Volume 3 from *Report of the Advisory Panel on Streamlining and Codifying Acquisition Regulations* stated the importance of focusing on intellectual property rights:

Acquisition of data rights as part of the weapon system development has changed in recent years. If a weapon system is to be sustained through a combination of commercial and organic support, access to intellectual property rights that allow component repair and, in some cases, competition to provide those capabilities is crucial. Appropriate planning, funding, and contracting for government acquisition of necessary IP is best accomplished up front, not as an afterthought. Requesting a complete data package might not be cost effective either. Instead, the government should consider obtaining to rights to those specific portions and for the specific purposes of the system it foresees acquiring in the future. (Section 809 Panel, 2018b, p. 49)



The panels expressed tension points between the parties, the issues at hand, discussions had between the parties and finally recommendations going forward. In conclusion,

Government and industry recognize that they have differing positions on certain intellectual property issues. However, they are united regarding the important contributions of both parties to ensure that our Nation's warriors are equipped with state-of-the-art equipment to defend the nation. The DOD recognizes that private industry plays a vital role in ensuring that innovative technologies continue to be developed to support the ever-changing needs of the warfighter. Industry recognizes that the DOD must ensure that support of the warfighter is accomplished in a cost-effective way while protecting the interests of the taxpayer. (DOD, 2018, p. 7)

As the Air Force continues to realize the importance of the issue with intellectual property, the acting secretary mentioned a plan to set up the "Smart IP Cadre" in October 2019 and the Center of Excellence for Intellectual Property will support the acquisition workforce. The issue of figuring out how much intellectual property is required to procure and sustain weapon systems will continue to be a main focus for the Air Force and setting up centers for support is a great start. This shows how important intellectual property is to the future of contracting. The background of why and how important intellectual property is to the acquisition system is no longer the issue. Being able to learn from the failures of the past (especially in the pre-award stage with these new guidelines), intellectual property centers, GAO reports, and the acquisition plans of current programs, we will apply lessons learned and recommendations from the IP guidebook to analyze how the Air Force can continue to get better at understanding intellectual property within large weapons systems.



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III. POLICIES, PROCEDURES, AND PROCESSES

DOD policy toward intellectual property has shifted over the years as a result of changes in the level of funding committed to research and development (R&D) by the DOD in developing new technology for weapon systems. Data from the National Science Foundation shows the DOD's share of R&D funding in the United States during the 1960s was as high as 67%, dropped below 47% during the 1980s, and continued to decline further to just 26% in 2000 (Brock, 2002). Since 2000, the level of R&D investment by private industry has continued to experience tremendous growth, while the level of R&D investment at the DOD has only seen a slight increase (Borouh, 2016). During the period of time when the DOD was leading investment into new areas of R&D, the DOD was driving the creation of new technology under defense contracts to which it virtually had unlimited rights in the new defense equipment and technology (Van Atta, Kneece, Lippitz, & Patterson, 2017). The shift from the Department of Defense to private industry as the leading investor in R&D means most new innovations today are coming from private industry, switching the government from the driver seat of innovation to a partner with industry in the co-development of technology, and in some cases, only a buyer who obtains limited rights to the use of the intellectual property of contractors. As a buyer, the DOD must be an attractive business partner in the eyes of private industry in order to acquire the best technologies and services available within industry. For private industry, the protection of proprietary intellectual property that fuels their business and creates a competitive advantage becomes a vital criterion to working with the government. In order for the government to meet new threats and increasing operational needs, the government must be able to successfully address intellectual property issues that arise between the government and contractors (Brock, 2002). Today, even as private industry leads investment into R&D, the Department of Defense policy seems to be shifting again as the DOD seeks to acquire greater rights in contractor technical data and computer software (Pages, 2013). The shifts in intellectual property policy create a significant challenge for the DOD and private industry in order to protect the interest of both parties, as contractors seek to protect their intellectual property in conducting business and the Department of Defense seeks to acquire the best technologies and services private industry has to offer.



A. STATUTORY AUTHORITIES

Statutory authority establishes the foundation for contractor rights in the protection of intellectual property and the distribution of rights in intellectual property. It is important to understand the underlying authority that protect the works of authors and inventors from the unauthorized use by others (in terms of defense acquisition, this would be the DOD and third parties). Congressional authority to protect the writings and discoveries of authors and inventors is granted under the United States Constitution, Article 1, Section 8 (Van Atta, Kneece, Lippitz, & Patterson, 2017). Congress implements the statutory authority that governs the rights between the Department of Defense, contractors, and subcontractors in technical data in 10 U.S.C. 2320—Rights in Technical Data. As the Department of Defense conducts business with private industry, 10 U.S.C. 2320 governs the allocation of data rights between the parties related to all technical data used in the performance of the contract. In determining the allocation of data rights, the statute generally provides a determination of rights based on funding used to develop items, components, and processes. The three categories of development based on funding include developed exclusively with federal funding, developed exclusively with private funding, and developed with mixed (government and private) funding (10 U.S.C., § 2320).

The statute also provides four exceptions to the category of exclusively privately funded developments in which the contractor cannot place restrictions or limit the use of the government. The exceptions generally result in the government receiving unlimited license rights in data necessary for operation, maintenance, installation, and training (OMIT), related to the form, fit, and function (FFF) data that is publicly available or has previously released without restriction by the contractor or subcontractor, and data that constitutes a correction or change to data furnished by the government (10 U.S.C., § 2320). The regulatory treatment under the DFARS for the two categories of data, OMIT and FFF, are discussed later in this chapter.



B. TECHNICAL DATA AND COMPUTER SOFTWARE

The acquisition of technical data and computer software has become increasingly important to the Department of Defense as it aims to control the costs of programs and to maintain flexibility in the acquisition and sustainment of weapon systems (GAO, 2011). Current policy in the DFARS separates technical data and computer software based on the statutory definition of technical data. The statute 10 U.S.C. 2302 defines *technical data* as

recorded information (regardless of the form or method of the recording) of a scientific or technical nature (including computer software documentation) relating to supplies procured by an agency. Such term does not include computer software or financial, administrative, cost or pricing, or management data or other information incidental to contract administration.

Understanding that the definition of technical data does not include computer software makes clear the reason for separate DFARS subparts in order to address rights in technical data and computer software. The tension points that the statutory definition of technical data create between the government and industry are addressed later in this chapter.

C. FAR AND DFARS

The Federal Acquisition Regulation (FAR) is the codified policies, procedures, and guidance that federal government agencies and contractors seeking to do business with federal government agencies follow in the conduct of business when utilizing Congressionally appropriated funds. The Defense Federal Acquisition Regulation Supplement (DFARS) is the applicable supplemental regulation to the FAR that imposes additional rules, regulations, and guidance that is to be utilized when conducting business with Department of Defense agencies.

According to FAR 27.400, Department of Defense agencies are not to apply the FAR regulation at FAR 27.4, Rights in Data and Copyrights, and are instead, according to DFARS 227.400, to apply the policy at DFARS 227.71, Rights in Technical Data, and DFARS 227.72, Rights in Computer Software and Computer Software Documentation, to determine the allocation of data rights in technical data and computer software.



D. FAR POLICY AND CLAUSES

As mentioned in the above section, DFARS policy and the applicable clauses related to rights in technical data and computer software are to be utilized instead of FAR policy and clauses when conducting business with a Department of Defense agency. When conducting business with civilian agency, FAR 52.227-14, Rights in Data—General, is the applicable clause utilized to determine rights in technical data and computer software.

E. DFARS POLICY AND CLAUSES

The policies and procedures related to the Department of Defense acquisition of data, rights in technical data, and computer software are located in DFARS 227.71, Rights in Technical Data, and DFARS 227.72, Rights in Computer Software and Computer Software Documentation. The following policy review covers the current policy within and related to DFARS 227.71 and DFARS 227.72 for the acquisition of technical data and computer software, respectively.

The implementation of separate DFARS regulatory policy for technical data and computer software stems from the definition of technical data, as defined both in statute and regulation which states that technical data does not include computer software. With the distinction between technical data and computer software understood, two main DFARS clauses contractually govern the allocation of rights in technical data and computer software between the government and contractor in the acquisition of noncommercial items, DFARS 252.227-7013, Rights in Technical Data—Noncommercial Items, and DFARS 252.227-7014, Rights in Noncommercial Computer Software and Computer Software Documentation.

1. Ownership vs. Data License Rights

An important point of understanding when dealing with technical data and computer software is to distinguish between ownership in the technical data and license rights granted by the owner of the data to utilize the technical data. In DOD acquisition, this means the contractor is typically the owner of the technical data and computer software, and the government simply acquires and is granted a license by the contractor to use the technical data in a specified manner under the law. Therefore, it does not matter if



the contractor paid for the development or the government paid for it, the government receives license rights and the DFARS clauses do not grant the government with ownership or title (DeVecchio, 2018).

DFARS policy states,

The government obtains rights in technical data, including a copyright license, under an irrevocable license granted or obtained for the government by the contractor. The contractor or licensor retains all rights in the data not granted to the government. For technical data that pertain to items, components, or processes, the scope of the license is generally determined by the source of funds used to develop the item, component, or process. When the technical data do not pertain to items, components, or processes, the scope of the license is determined by the source of funds used to create the data. (DFARS 227.7103-4)

The language of the DFARS clause clearly describes the government's right to only a license in the technical data, with the scope of the license to be determined based on analysis of the source of funds used to develop the item, component of process.

2. Commercial vs. Noncommercial

The DFARS describes the standard types of license rights the government receives from the contractor in technical data to include unlimited rights, government purpose rights and limited rights, and the government and contractor can choose to utilize a non-standard clause to negotiate specifically negotiated rights (DFARS 227.7103-4). The type of license rights the government obtains from the contractor in the technical data translates directly to the limits of the government's ability to use the technical data for future purposes. This is important to DOD weapon system programs because DOD programs have to consider in acquisition planning the ways in which the technical data will be utilized in the future for operation, sustainment, modernization, and upgrade of weapon systems.

The categories of license rights in computer software vary only slightly to include unlimited rights, government purpose rights, restricted rights, and specifically negotiated rights (DFARS 227.7203-5). Table 1 describes the license categories available in technical data and computer software (both commercial and noncommercial):



Table 1. Data license rights categories. Adapted from Implementation Guidance to Accompany Directive 2018–26 (2019) and GAO (2002).

| Type of License Rights | Definition | Applies to | Permitted Uses within Government |
|--|--|--|--|
| Unlimited Rights (UR) | Right to use and disclose the data publicly, in any manner and for any purpose and to permit others to do so. | Noncommercial TD and CS. Includes data created exclusively with government funds and certain types of data regardless of funding source, such as OMIT and FFF data. | No restrictions on uses within government. |
| Government Purpose Rights (GPR) | Right to use or disclose within the government without restriction or disclose to third parties for government purposes only. Third parties cannot use the data for commercial purposes. | Noncommercial TD and CS. Includes data developed with a mix of government and private fund | No restrictions on uses within government. |
| Limited Rights (LR) | Right to use or disclose data internally. No disclosure to third parties without written permission except under limited conditions (e.g., emergency repair) | Noncommercial TD. Includes data pertaining to items, components, or processes developed at private expense. | Cannot be used for manufacture. |
| Restricted Rights (RR) | Right to use data for specifically negotiated purposes. Other rights may be tailored as needed and negotiated. | Noncommercial CS. Includes software developed at exclusively at private expense. | Only one license to be utilized on one computer at a time. |
| Specifically Negotiated Rights (SNLR) | Right to use data for specifically negotiated purposes. Rights may be tailored as needed. | Any TD and CS. Includes commercial TD and CS. | Negotiated by Govt and Contractor. |
| Commercial Technical Data (TD) Rights | Right to use commercial technical data. | TD related to commercial products | Limited rights in all TD, except UR in OMIT and FFF |
| Commercial Computer Software (CS) Rights | Right to use commercial software and commercial software documentation. | CS or CS documentation | As specified in commercial license customarily provided to public. |



3. Commercial vs. Noncommercial

The DFARS provides an additional distinction in determining the rights of the DOD and contractor in technical data and computer software based on whether an item, component, or process to be delivered is commercial or noncommercial. The assessment of an item, component, or process as commercial or noncommercial is important and often contentious between the DOD and contractor due to the fact that different rights are then attributed to the item, component, or process if it is commercial or noncommercial. The DFARS states that the DOD shall only seek to acquire the technical data customarily provided to the public for commercial items. The DFARS also states the DOD is only to acquire the technical data and the rights to the technical data necessary to satisfy agency needs. The level of rights available to the DOD is significantly reduced if an item, component, or process (ICP) is commercial, therefore the determination of each ICP becomes an important step that requires due diligence by both the contractor and the DOD to ensure the appropriate rights of both parties. Dayn Beam (2009) argues that in assessing each ICP, the determination should be made at the lowest severable level to determine if each ICP is commercial or noncommercial. Beam (2009) also states,

Even if the method of procuring implies a “commercial” status for the end item being acquired, the data rights allocation is most often made at the lowest severable level of the end item being procured. An overall classification of the end item as “commercial” would in no way determine the status of each severable ICP. Therefore, the contract definitions of commercial must be applied to each severable ICP under discussion. (p. 20)

The distinction in policy for commercial and noncommercial items makes the determination important for the DOD to ensure it gets enough data and rights in the data to meet mission requirements, while balancing the contractor’s rights to protect its technical data.

4. OMIT and FFF Data

Data relating to OMIT and FFF are two exceptions granted under the DFARS clauses related to the level of rights received by the government despite who paid for the development of the data and if the item, component or process is commercial. Based on



the DFARS regulation, the government receives unlimited rights in the use of the technical data and computer software.

5. Asserting, Marking, and Documenting Rights

A third DFARS provision, and perhaps the most critical aspect to ensuring the proper allocation of data rights between the government and contractor, is DFARS 252.227-7017, Identification and Assertion of Use, Release, or Disclosure Restriction. DFARS 252.227-7017 describes the pre-award process the contractor must follow in order to assert rights in noncommercial technical data and software to be delivered to government with other than unlimited rights. Contractors failing to properly adhere to the process identified under DFARS 252.227-7017 have shown numerous examples of contractors giving up rights in technical data and software to the Department of Defense.

The process identified under the provision at DFARS 252.227-7017 for identifying, asserting, and marking rights to be assessed with less than unlimited rights to the Department of Defense is a critical step for both the contractor and the government to ensure the appropriate rights are granted to both parties based on the specific details of each acquisition. Beam (2009) provides a detailed analysis of the assertion, marking, and documenting process, noting the assertion process identifies ICPs that will be used in the performance of the contract in which the contractor asserts less than unlimited rights to the government based on funding use in development of the ICP. DFARS 252.227-7017 provides an attachment for the contractor to identify and assert restrictions on the government's use, release, or disclosure of technical data or computer software.



IV. GOVERNMENT AND INDUSTRY

Successful major weapon system programs and relationships between industry and the Department of Defense rely on the ability of the acquisition and contracting process to meet the objectives of both industry and the Department of Defense. Increasingly, but now more than ever, it seems that intellectual property has become an important issue affecting how industry and the DOD structure their business relationship. Intellectual property is widely considered to be the “lifeblood” of industry contractors, which creates unique competitive advantages for contractors in promoting and conducting business in both the public and commercial sector. Therefore, contractors seek to protect their intellectual property, and are often at first very reluctant to share this proprietary information with Department of Defense customers (Nash & Rawicz, 2008). Across the DOD, agencies have begun to recognize the importance of intellectual property in creating successful programs and sustaining major weapon systems long term. The Office of the Staff Judge Advocate of the Space and Missile Center (2015) noted the importance of intellectual property to the DOD stating,

In a similar fashion, the Department of Defense (DOD) considers a certain type of IP—technical data and computer software rights acquired under its contracts—its “lifeblood” in order to enhance competition and sustain each system and its subsystems over their life cycle (e.g., development, production, testing, installation, operation, maintenance, upgrades/modifications, interoperability with other systems, transfer of technologies to other programs/systems/ platforms). (p. i)

As national security objectives change to address the threats of an increasingly more globally competitive environment, the DOD must adapt its business practices to attract innovation and investment from industry in order to develop and acquire superior weapon systems that allow the DOD to maintain a competitive advantage over near-peer and future adversaries. It is critical to attract investment and innovation from established defense industrial base contractors. However, while it is now more essential than ever to attract new industry contractors to partner with the government, there is also a need to strike the appropriate balance of protecting the intellectual property of industry while also promoting the appropriate level of rights in the intellectual property that allows the DOD



to utilize the intellectual property to effectively and efficiently modernize and sustain weapon systems. The following section will assess the Air Force and contractor perspectives and each side's key concerns regarding technical data and computer software and the various approaches that are being pursued to resolve the issues.

A. CONGRESSIONAL POLICY EFFORTS

Congress has placed increased emphasis in addressing rights in technical data in major weapons systems since 1984, when it enacted statutory codes 10 U.S.C 2320 and 10 U.S.C. 2321 applicable to the Department of Defense, setting the stage for the Department of Defense to implement rights in technical data regulation in DFARS 227.71 (Nash & Rawicz, 2008). Congress adopted separate rights in technical data and computer software with changes to the DFARS in 1995, which, prior to the change, were both handled under rights in technical data (Nash & Rawicz, 2008). The Department of Defense now regulates rights in computer software under DFARS 227.72 Rights in Computer Software and Computer Software Documentation. More recently, the wave of policy change efforts in intellectual property launched from the National Defense Authorization Act for Fiscal Year 2007 which included a requirement for program managers of major weapon systems to evaluate the long-term technical-data needs of the weapon system (GAO, 2011). The Congressional direction required DOD programs to address weapon system life cycle requirements for technical data in the acquisition strategies of major weapon systems. DFARS 207.106 now requires acquisition planning for major weapon systems to address the long-term technical data and computer software needs of the system, to include the development of acquisition strategies that obtain the necessary deliverables with the appropriate level of license rights needed to sustain systems across the entire acquisition life cycle.

Congress has continued to address intellectual property issues through subsequent NDAAs to date. The FY2016 NDAA introduced a number of significant efforts directed at addressing intellectual property rights; Section 809 established an independent advisory panel to review streamlining and codifying acquisition regulations, Section 813 directed the secretary of defense to establish a government-industry advisory panel on technical data rights, and Section 875 mandated a Federally Funded Research and Development



Center (FFRDC) study of DOD policies and practices associated with intellectual property rights relevant to weapon systems.

The FY2017 NDAA introduced several changes to technical data rights, including granting more authority to the DOD to negotiate data rights. With regard to rights for interfaces, for interfaces developed completely at private expense, the NDAA required negotiations to be conducted to acquire the technical data (Schwartz & Peters, 2018).

The FY2018 NDAA directed the DOD to develop acquisition policy for acquiring intellectual property and license rights to intellectual property, and required the DOD to establish a cadre of experts to assist the DOD services with acquiring intellectual property (Schwartz & Peters, 2018). In 2019, the Air Force established the Smart IP Cadre as a cadre of experts that include lawyers, engineers, contracting, program management, and logisticians personnel with the mission to improve the acquisition of intellectual property in the Air Force.

The FY2019 NDAA continues to make strides in technical data and computer software through updating policy to require the DOD, to the maximum extent practicable, to negotiate a price for technical data before selecting a contractor for the Engineering, Manufacturing, and Development (EMD) phase, production of a weapon system, or the sustainment of major weapon system. Additionally, § 870 implements a requirement for the Secretary of Defense, “to report on the feasibility of and advisability of requiring access to digital technical data in all future acquisitions by the Department of Defense of combat, combat service, and combat support systems, including front-end negotiations for such access” (John S. McCain National Defense Authorization Act for Fiscal Year 2019, 2018).

B. DEPARTMENT OF DEFENSE POLICY EFFORTS

The DOD’s efforts to improve the acquisition of intellectual property is part of the greater effort to meet the objectives of the DOD mission. The Defense Acquisition System provides the management process by which defense acquisition personnel acquire major weapon systems.

The Defense Acquisition System exists to manage the nation’s investments in technologies, programs, and product support necessary to achieve the



National Security Strategy and support the United States Armed Forces. (DOD, 2003)

The primary objective of Defense acquisition is to acquire quality products that satisfy user needs with measurable improvements to mission capability and operational support, in a timely manner, and at a fair and reasonable price. (DOD, 2003)

In addition, the FAR system provides overarching guiding principles toward which the federal acquisition system is intended to deliver (FAR 1.102 (b))

(1) Satisfy the customer in terms of cost, quality, and timeliness of the delivered product or service by, for example-

- (i) Maximizing the use of commercial products and services;
- (ii) Using contractors who have a track record of successful past performance or who demonstrate a current superior ability to perform; and
- (iii) Promoting competition.

Effective acquisition of intellectual property plays a significant role in the ability of the DOD to meet the objectives of the FAR and Defense Acquisition System, especially in terms of cost, use of commercial products and services, and promoting competition.

The Air Force has placed increasing efforts to improve intellectual property acquisition through establishment of an IP Cross Functional Team that looks at ways to improve knowledge within the Air Force on intellectual property rights and how the Air Force engages with industry to ensure the Air Force acquires the adequate rights to its major weapon systems. In 2018, the Under Secretary of the Air Force issued guidance to Air Force acquisition community stating

Obtaining adequate intellectual property license rights from our industry partners is critical to ensuring our major systems are affordable.... When we do not secure appropriate rights in technical data and computer software, we become dependent on incumbent contractors for the operation, maintenance, training and sustainment of our major systems. (Donovan, 2018)

The focus on intellectual property policy reform is driven from the top down, generated through Congressional policy changes, adopted and tailored into DOD policy, and finally executed within the executive branches of the military, such as the Air Force.



C. GOVERNMENT VIEW ON INTELLECTUAL PROPERTY

The government's motivation to improve the acquisition of intellectual property in major weapon systems is driven toward meeting the objectives of the Defense Acquisition System, in order to acquire quality products (i.e., major weapon systems) at a fair and reasonable price. By improving the acquisition of intellectual property to ensure the government acquires the necessary intellectual property and license rights, the government can more effectively manage the long-term investments in major weapon systems. The DOD invests billions of dollars every year into new and existing (legacy) programs that are being managed in the acquisition life cycle from cradle to grave. Throughout the acquisition life cycle, intellectual property plays an important role for the government in meeting needs for design, manufacture, sustainment, organic support, third-party support, diagnostics, investigations, modernization, upgrades, subsystems, and replacing diminishing sources (Nash & Rawicz, 2018).

While aiming to meet the goals of the Defense Acquisition System, the unique challenge to the government in acquiring major weapon systems is meeting additional policy requirements such as promoting competition, small business participation, use of commercial products, and modular open systems architecture.

Additionally, statutory regulation (10 U.S.C. 2320) and DFARS regulation only support the government's ability to acquire the minimum required technical data necessary to facilitate life cycle requirements (Kemp, Stutzriem, & Penney, 2018). Limiting the government's ability to acquire more data than necessary creates friction between government and industry in determining where to draw the line on what data is necessary for the government to have. As mentioned by Secretary Donovan (2019), the government must seek to ensure weapon systems are affordable by ensuring the government obtains adequate rights to data produced in major weapon systems. The government still seeks to strike the appropriate balance with industry to secure rights in data and the type of data necessary to meet the government's objectives. The DOD faces a number of issues that further complicate the already complex issues in intellectual property.



D. DOD ISSUES IN INTELLECTUAL PROPERTY

The DOD problems in intellectual property have centered around two basic issues: (1) how much technical information to obtain from contractors, and (2) what protection the government should afford to the technical information obtained (Nash & Rawicz, 2008).

While all acquisitions are unique, the DOD encounters issues in several common areas that require increased consideration in order to improve how it acquires IP and is able to answer the two basic issues in intellectual property identified above. The DOD must give increased consideration to and seek to make improvements with respect to intellectual property in the areas of requirements determination and acquisition planning and OMIT data.

1. Requirements Determination and Acquisition Planning

The requirements definition process is utilized to describe DOD needs for supplies or services, and, as it relates to intellectual property, should describe the DOD's needs in technical data and computer software and associated license rights. The acquisition planning process is aimed at producing a comprehensive and integrated plan to fulfill agency requirements in a timely manner and reasonable cost (FAR 2.101). The requirements determination process and the acquisition planning go hand-in-hand to ultimately ensure the needs of the warfighter are met while also meeting the objectives of the defense acquisition system. Adequate planning is necessary to ensure the agency appropriately addresses all necessary areas of the acquisition and reduces risk (in terms of cost, schedule, performance) to the government in obtaining the requirement.

The general consensus across the DOD is the understanding that negotiation of intellectual property rights favors the government when competition is present in the acquisition process which for major systems occurs prior to the award of the EMD contract (Implementation Guidance for Army Directive 2018–26, 2019). This means the DOD's ability to negotiate favorable intellectual property rights occurs mostly with new systems; however, the DOD has a large number of legacy systems that are beyond the development phase. Legacy programs are in more unfavorable positions to negotiate IP rights without



competition between contractors, therefore, legacy programs experience issues with “vendor lock” (Intellectual Property Cross Functional Team, 2019).

Contributing to the DOD’s ability to adequately obtain the necessary data rights in major weapon systems is the inability of program offices to determine data requirements at the beginning of a program when the government enters into a contract for the development of a new weapon system. The inability to determine requirements early is significant. Findings from the GAO indicate that failing to adequately assess and obtain technical data and license rights early in the acquisition process of a program can create challenges for the DOD in sustaining weapon systems over their acquisition life cycle (GAO, 2006). Nash and Rawicz (2008) point out that from the government’s inability to definitively determine long term data requirements, a “fail-safe” strategy is generally taken to acquire large amounts of data in an attempt to cover all of the possible data needs during the life cycle of the system. Generally, a poorly defined requirement can lead to the government not obtaining all of the necessary technical data and computer software rights to sustain a system, or as in the case described by Nash and Rawicz (2008) translates to the government potentially paying more for technical data and computer software that it does not need or will not use. For example, as highlighted in the 2006 GAO Case 06–893 *DOD Should Strengthen Policies for Assessing Technical Data Needs to Support Weapon Systems*, the Air Force C-17 program did not adequately procure the necessary data rights upfront in the beginning of the program to develop a core maintenance capability requirement that was identified after development and during the operation and support phase of the program. As a result, the Air Force received pushback from subvendors regarding providing the necessary technical data rights that would allow the Air Force to develop the core capability of organic depot maintenance to support national emergencies (GAO, 2006). From this experience and other similar DOD program experiences cited in the GAO report, the GAO recommended the DOD create a requirement for programs to assess the long-term requirements for technical data rights and develop acquisition strategies that address those requirements. In 2007, the NDAA included the requirement for program managers to address the long-term weapon system life-cycle requirements for technical data, and in response the DOD implemented policy that required acquisition



strategies and acquisition plan documents to address the life-cycle technical data requirements for each program.

The DOD 5000.02 describes the acquisition strategy as the program manager’s plan for program execution across the entire life cycle of a weapon system. The acquisition strategy is a comprehensive plan that develops strategies for important areas of the acquisition including business, technical, and support strategies to manage risk and meet program objectives (DOD, 2017). As part of the acquisition strategy, the intellectual property strategy is the program’s plan to address how the program will assess IP issues, including technical data and computer software, and the appropriate license rights from the beginning of the program across the entire life cycle (DODI, 2017). The Section 875 Institute for Defense Analyses report provides a detailed analysis of the DODI 5000.02 sustainment planning processes and notes the additional IP strategy uses in sustainment planning,

As part of life cycle sustainment planning, program management develops a product support strategy, which as one of its minimum requirements includes “the necessary intellectual property (IP) deliverables and associated license rights, consistent with and integrated with the program IP Strategy.” To ensure the continued support of the system being acquired, the IP Strategy “becomes part of the Life-Cycle Sustainment Plan (LCSP) during Operations and Support (O&S).” The IP Strategy is a required annex of the LCSP and is to be “updated appropriately during the O&S Phase.” (Van Atta, Kneece, Lippitz, & Patterson, 2017, 22–23)

The Air Force notes the importance of incorporating IP into the acquisition strategy documents, by stating that the process is vital to address needs for technical data and software and although the IP Strategy is only statutorily required for Acquisition Category (ACAT) I and II programs, all programs should assess IP requirements (Intellectual Property Cross Functional Team, 2019).

2. OMIT Data

OMIT data is the unique category of data that is provided an exception for in 10 U.S.C. 2320 *Rights in Technical Data* when considering allocation of rights in data. The statute provides that a contractor’s development of an item, component, or process exclusively at private expense, does not restrict the governments rights if the data is related



to OMIT, not including data related to detailed manufacturing and process data (DMPD). To make the issue more complicated for industry and government to determine rights in data, acquisition regulation does not provide a definition for OMIT data or the specific types of data that are covered under OMIT data. Therefore, industry and the government have been left to debate the definition and negotiate rights in OMIT unique to each acquisition (See Chapter VI Data and Analysis for program examples). Van Atta, Kneece, Lippitz, & Patterson (2017) note in their report, “ambiguous terms and loosely defined constructs impair implementation of IP for sustainment.” The report cites the terms OMIT, DMPD, and depot maintenance as terms creating confusion among industry and government, with both sides having differences in interpretation.

E. INDUSTRY/CONTRACTOR PERSPECTIVE

When it comes to intellectual property, the DOD and contractors have significantly different interests, as contractors consider their intellectual property to be the “lifeblood” of their company that provides them a competitive advantage that they will only disclose for a premium (Office of the Staff Judge Advocate Space and Missile Systems Center, 2015). Contractors who produce technologically oriented products usually have large amounts of technical information, which they consider to be proprietary and may be reluctant to disclose such information to the government (Nash & Rawicz, 2008). Nash and Rawicz (2008) additionally note that the interests of both the DOD and industry are covered in FAR 27.402(a) and FAR 27.402(b). FAR 27.402(b) states the DOD requires data in order for the DOD to run its programs and meet mission objectives, and that contractors have proprietary interests in the data that must be protected from unauthorized use and disclosure. Additionally, FAR 27.402(b) states the protection of contractor data is necessary to promote industry participation in government contracting and to encourage contractors to utilize innovative solutions in government programs.

1. Section 813 Panel Summary

The 2016 NDAA Section 813, directed the secretary of defense to establish a government-industry panel that was charged to review the statutory language regarding rights in technical data includes in 10 U.S.C 2320 and 2321. The government-industry panel



reviewed the sections to ensure the structure promoted the interest of the taxpayer and national defense (Department of Defense, 2018). In the report, both government and industry representatives acknowledged that the DOD and industry have different motivations in their business models. The panel identified tension points of disagreement between industry and the government regarding intellectual property. A few of the tension points discussed during the panel included discussions regarding the business models of the government and industry, contract data requirements lists (CDRLs), OMIT versus DMPD data, contract requirements in Section H, lack of trained personnel, and the burden of the data assertions list to the contractor and the government. The panel address the tension points in white papers that recommend changes to statutory language and changes that do not require statutory language change. In concluding the panel, the government and industry arrived at an important conclusion, recognizing the differing business models of each party, but understanding that the DOD and industry’s goal must remain focused on supporting the warfighter in a cost-effective way.

2. OMIT Data—Contractor Perspective

When it comes to OMIT data, as well as IP rights in general, industry generally agrees that the DOD overreaches when concluding data falls into the category of OMIT. Specifically, in reference to the Air Force’s use of Special H Clauses in contracts to define OMIT data, DeVecchio (2018) states, “They are contrary to law and to the balance Congress and DOD overall strive to maintain between the Government’s and contractors’ interests. They overreach, denigrating contractors’ legitimate and important rights in intellectual property.” He additional notes that the problem is largely due to the absence of definitions in statute, which leaves room for debate. The Section 813 Panel identified the category of OMIT data as a tension point in the acquisition of intellectual property due to the lack of acquisition documents that define data deliverables which relate to OMIT data (Department of Defense, 2018). Contractor pushback toward OMIT data was brought to bear in a GAO protest by Sikorsky Corporation in the Air Force’s solicitation of the UH-1N Helicopter Replacement Program (GAO, 2018). Sikorsky Corporation, as part of the grounds for protest, protested the Air Force’s use of a special H clause which described the delivery and license rights for technical data and computer software for OMIT data. The



contractor asserted the special H clause required the delivery of OMIT data that included detailed manufacturing and production data (DMPD) in its definition of OMIT data. The GAO ultimately denied the protest, and Sikorsky lost the competition for the UH-1N helicopter replacement program, but the protest highlighted contractor and government issues that exist due to a lack of a clear definition of OMIT data.



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V. METHODOLOGY

This project explores the complex contracting situation revolving around the acquisition of intellectual property in DOD weapon systems. The main intellectual property concerns for the DOD deal with technical data and computer software and the rights associated with their use. DOD weapon systems rely heavily on the use of Operational, Maintenance, Installation, and Training (OMIT) data packages for long term sustainment. This reliance often leads to disagreements between contractors and government about what qualifies as OMIT data, and the place of OMIT clauses in Section H of pertinent DOD weapon system acquisitions (DeVecchio, 2018).

Our research involves a combination of policy review, previous procurements in which intellectual property played a major role, GAO and third-party reports on the status of intellectual property procurement in the DOD, and new agency guidance that illuminates the way forward for future intellectual property procurements. Gathering opinions and data from both public and private sector parties, in both academic and professional capacities, helps show the disparity in interpretation of the OMIT clauses, regulations, and statutes.

A. DATA COLLECTION

We gathered procurement data from four ongoing, or recently awarded, United States Air Force (USAF) ACAT I programs: UH-1N Replacement, T-7A Advanced Pilot Trainer, Combat Rescue Helicopter, and KC-46 Pegasus Tanker. Program data for these procurements were provided by individuals within the contracting team for each program.

To attack the policy surrounding intellectual property acquisition, we conducted a thorough analysis of applicable regulations coming from the FAR, DFARS, and DOD5000.2. Additionally, we dove into the rules pertaining to determining the allocation of data rights, including the steps involved to determine the government's rights over data in weapon systems procurement.

Using reports issued by the GAO and third parties such as RAND Corporation, we looked into the issues that have arisen over intellectual property, and the differences of interpretation by government and industry officials. These reports provided a window into



the major hurdles that face USAF acquisition personnel in future weapon system procurement. We also reviewed a recently issued policy guide, the *Air Force Data Rights Guidebook* issued by the Intellectual Property Cross Functional Team (2019), and compared its best practices to the actions taken by the four program offices in the procurement of the UH-1N Replacement, T-7A Advanced Pilot Trainer, Combat Rescue Helicopter, and KC-46 Pegasus Tanker.

B. SUMMARY

This study relies on multiple sources of data and analysis to assess the USAF's efforts to define OMIT data with regard to future weapon system procurement. We utilized acquisitions statutes, regulations, and policies to determine how the USAF can stay within legal boundaries when it comes to protecting industry provided intellectual property, while still acquiring the necessary data to modernize and sustain weapon systems.



VI. DATA AND ANALYSIS

Our data and analysis cover four different weapon system program offices. First, we conducted an analysis of the intellectual property strategy contained within the acquisition strategy and the life-cycle sustainment plan for the weapon systems. Next, we evaluated the similarities and differences between the specialized Section H clauses of the weapon system contracts. Finally, we homed in on the specific H clause that addressed OMIT data for the procurement.

A. INTELLECTUAL PROPERTY STRATEGY ANALYSIS

Addressing the intellectual property needs of weapon systems must be a priority to achieve affordable acquisition and sustainment in all programs, and the DOD must sufficiently address intellectual property needs early in acquisition planning process within the IP strategy contained in the acquisition strategy (AS) and the life-cycle sustainment plan (LCSP). The IP strategy is a mandatory planning element included in the AS and becomes a required annex of the LCSP during the Operation and Sustainment Phase, however, since the LCSP is developed at Milestone A (Technology Maturation and Risk Reduction Phase), the IP strategy annex can be incorporated into the LCSP much earlier in the acquisition planning process (DOD, 2017). The IP strategy manages IP issues across the entire life cycle of the program and describes how the program will determine the requirements for IP and license rights necessary to promote competitive and affordable future sustainment in the program (DOD, 2017). Reviewing the AS in combination with the LCSP will provide insight into the level of assessment each program included in their respective IP strategies to plan for future competition in acquisition and affordable sustainment.

Of the four programs we reviewed, we were unable to obtain the acquisition strategy and life-cycle sustainment plan of T-7A Advanced Pilot Trainer and the KC-46 Pegasus Tanker. We analyzed the intellectual property strategy within the acquisition strategy and the life-cycle sustainment plan for the Combat Rescue Helicopter (CRH) completed in 2012 and UH-1N Replacement Program completed in 2017, while considering new guidance provided in the *Air Force Data Rights Guidebook* to better equip



acquisition personnel to handle IP issues (Intellectual Property Cross Functional Team, 2019). The primary aim of the IP Guidebook,

is intended to equip Air Force acquisition personnel to handle common issues encountered in the realm of intellectual property acquisition under the Defense Federal Acquisition Regulation Supplement, particularly those issues surrounding rights in technical data and computer software....Through action oriented plans, acquisition personnel are equipped to make informed decisions with the aim of improving acquisition outcomes (Intellectual Property Cross Functional Team, 2019, p. ii)

We utilize the guidebook to compare the level of planning documented in the intellectual property strategy with best practices identified in the guidebook to assess where improvements to intellectual property strategy development can be made. The IP Guidebook emphasizes the importance of addressing program needs for technical data and computer software in acquisition planning, which ultimately comes together in the acquisition strategy. Therefore, the IP strategy must provide a thorough assessment of program needs for technical data and computer software and in-depth consideration by the program of the relevant issues that can impede the DOD's ability to sustain the weapon system. The guidebook states,

Acquiring the right technical data and computer software is essential for ensuring Air Force systems will remain affordable and sustainable. Thus, these needs should be addressed in the Acquisition Strategy, or more specifically, the IP Strategy. The IP Strategy covers almost every functional area within a Program Management Office (PMO), such as acquisition, financial, contracting, logistics, testing, and engineering, and it should contemplate the entire life cycle, not just the immediate requirements of the contract or PMO. (Intellectual Property Cross Functional Team, 2019, pp. 1)

A top-level view from the Guidebook advises on what information should be incorporated into the intellectual property strategy, along with how it should be integrated, and why the information needs to factor into the strategy. The Guidebook utilizes the DOD 5000.02 to identify the required content of the IP strategy, and provides how to utilize the required contents to create an actionable plan. We utilize the following best practice to examine the intellectual property strategy contents in the Combat Rescue Helicopter and UH-1N Replacement programs and analyze how each program incorporated the results of the best practice into an actionable plan.



What: Analyze the data required to design, manufacture, and sustain the system as well as to support re-competition for production, sustainment, or upgrade. Consider baseline documentation data, analysis data, cost data, test data, results of reviews, engineering data, drawings, models, and bills of materials. (Intellectual Property Cross Functional Team, 2019)

How: Address how the program will provide for delivery of technical data with the appropriate level of rights the government requires for the system's total life-cycle sustainment. Include analysis of data needs to implement the product support life-cycle strategy including such areas as materiel management, training, information assurance protection, cataloging, open architecture, configuration management, engineering, technology refreshment, maintenance/repair within the technical order (TO) limits and specifically engineered outside of TO limits, and reliability management. (Intellectual Property Cross Functional Team, 2019)

Why: The business case analysis calculation, conducted in concert with the engineering tradeoff analysis, outlines the approach for using open systems architectures and acquiring IP rights. The cost benefit analysis explains whether to include a priced contract option for the future delivery of technical data and IP rights not acquired upon initial contract award. An analysis of the risk that the contractor may assert limitations on the government's use and release of technical data or computer software (e.g., technical data and computer software developed exclusively at the contractor's expense) factors into the strategy. (Intellectual Property Cross Functional Team, 2019)

We will take an in-depth look at the CRH and UH-1N replacement program to determine what was completed and what could have been done differently. Determining intellectual property requirements in technical data and computer software is no small task, especially planning for these requirements across the entire acquisition life cycle. Nash and Rawicz (2008) noted the long periods in which the weapon systems remain in use by the military drives the DOD programs to create significantly large data requirements early on in planning. The IP guidebook promotes the need for discipline in determining technical data and computer software requirements,

To say identifying IP requirements is a challenge would be an understatement. If ever there was a Goldilocks exercise in defense acquisition, identifying IP requirements is it. The DFARS disallows requiring "all the data." But experience shows that while having too many requirements may be costly and useless, having insufficient data negatively impacts life-cycle support. The goal is to establish requirements that are not



too much, not too little, but just right. (Intellectual Property Cross Functional Team, 2019)

1. Combat Rescue Helicopter

First, we look at the Combat Rescue Helicopter Program Acquisition Strategy signed September 2012 in support of entering the acquisition process at Milestone B (EMD). The acquisition strategy identifies the CRH program pursued an acquisition approach of full and open competition, with a 14-year period of performance, in a single contract for the development, integration, production, and initial sustainment of the CRH system (including air vehicles, training systems, and product support). The Combat Rescue Helicopter Acquisition Strategy Section 7.6 Technical Data Rights Strategy identifies the Air Force anticipates both organizational and depot level maintenance will be organically accomplished by the Air Force (Air Force Life Cycle Management Center [AFLCMC], 2012). The requirements of the CRH program for a contract that covers development, production, and initial sustainment, and a strategy to pursue organic maintenance requires significant consideration be given to the intellectual property requirements of the program to meet those objectives. In determining the data requirements, the acquisition strategy identifies the CRH program team utilized a directorate (squadron) level integrated product (IPT) team to define the CRH system data requirements and implement a data management strategy. Section 7.6.1 Data Requirements Analysis states,

The Rotary Wing Data Management Integrated Product Team, consisting of the [CRH Program Office (PO)] and HH-60G sustainment office, evaluated sustainment lessons learned from the current fleet. This evaluation helped to define the CRH system data requirements. Additional analysis determined that future support of software and avionics may require CRH to pursue the acquisition of all data required to modify the CRH Systems Software and/or Operational Flight Program, depending on the platform selected. (AFLCMC, 2012)

The use of an integrated IPT to assess the data requirements for the CRH program was successful and allowed the team to evaluate and share lessons learned from the HH-60G program. The IPT also contributed to identifying areas of future requirements for technical data and computer software.



CRH Acquisition Strategy Section 7.6.2 Technical Data Rights, Access, and Delivery Summary identifies how the CRH program will provide for delivery of technical data and computer software with the appropriate level of rights the CRH requires to implement an organic maintenance capability in the future. The CRH program identifies it will pursue rights as detailed in DFARS clauses 252.227-7013 and 252.227-7014, Rights in Technical Data-Noncommercial Items and Rights in Noncommercial Computer Software and Computer Software Documentation, respectively. The CRH program relies on the standard rights under these two clauses which are determined by source of funding in development, purpose of the data, and if the ICP is noncommercial or commercial. The CRH program also identifies it will pursue standard rights in commercial technical data and commercial software, however, identifies it will seek unlimited rights in commercial technical data for OMIT and FFF data. A review of the rights in technical data and computer software pursued by the CRH program are consistent with the standard DFARS clauses determining rights in technical data and computer software.

The IP guidebook identifies a third area of consideration in creating an actionable IP strategy, which is to conduct activities to support the “why” of life cycle support by completing analyses for business case and engineering tradeoff to support the IP strategy. Section 7.6.3 Business Case Analyses and Section 7.6.4 Cost Benefit Analysis for Priced Options are identified as subsections of the technical data rights strategy which can ensure programs are conducting the appropriate analysis to consider affordability of the strategy and appropriate tradeoffs. Limited information is provided under Business Case Analyses, and only one sentence is provided for under Cost Benefit Analysis for Priced Options. Section 7.6.3 Business Case Analyses states, “the Source of Repair Analysis, as coordinated through HQ AFMC/A4 (Logistics), had indicated both depot and supply will be organic. Therefore, the CRH Program will ensure all necessary data rights are addressed as part of an inclusive EMD and production contract” (Air Force Life Cycle Management Center, 2012). Section 7.6.3 Business Case Analyses does not include an assessment of the cost to acquire IP rights, or considerations for engineering tradeoff analysis or open systems architecture by the program team. Lastly, section 7.6.4 Cost Benefit Analysis for Priced Contract Options states, “The CRH program will procure the necessary data rights as part of the contract” (AFLCMC, 2012). The lack of information provided in this section



of the technical data rights strategy indicates potential difficulties in estimating the cost of options for future delivery of data, but indicates the program may evaluate priced options for future delivery of data as part of the award of the contract, which would require the program to include a requirement for priced options in the request for proposal (RFP) requirements.

The final section of the Technical Data Rights Strategy covering limitations on the government's use of data acknowledges "there is a risk that the selected contractor will assert limitations for use on some portions of data" (AFLCMC, 2012). To support the acquisition strategy, the CRH program conducted market research that identified several potential offerors capable of meeting the CRH requirement. The risk identified in this section of the technical data rights strategy simply acknowledges that the future contractor awardee may assert limitations on the government's use of data based on the source of funds used to develop the CRH technology by the company. Some offerors developed CRH technology exclusively with private funds, while others developed technology with government funds, which means the government could obtain less rights in CRH technology, such as limited or restricted rights, if the selected awardee developed CRH technology with exclusively private funds.

The second program document we reviewed for the CRH program was the Life Cycle Sustainment Plan (LCSP) signed 1 November 2013 in support of Milestone B. We focused our analysis of the LCSP to the product support strategy, subsection 3.3.6 Technical Data/Data Rights. In review of the section, the content contained is similar to the information provided in the intellectual property strategy of the acquisition strategy, but, in addition the CRH program includes a definition of OMIT data and non-OMIT data to provide clarity to the OMIT data the government intends to pursue in the contract in order to re compete sustainment. We found the OMIT definition is later utilized by the CRH program to create a special section H clause in the RFP. We provide our analysis of the OMIT definition in Section H Clauses.

In a full-view assessment of the intellectual property strategy for the CRH program, the CRH program sufficiently addressed most areas required by the DOD 5000.02 and provided summary results in an actionable plan format to describe how the CRH program



would pursue delivery of data and license rights. The IP strategy falls short, however, in providing detail under the sections for business case analysis and priced options for delivery of data. The business case analysis section indicates a Source of Repair Analysis was conducted and indicated organic maintenance would be the long-term maintenance strategy, but within the IP strategy no information is provided to address open systems architecture or potential engineering tradeoffs in considering the IP strategy. While the technical data rights strategy section does address the required minimum information under DOD 5000.02 for IP strategy, in other areas of acquisition planning we did observe a number of useful practices conducted by the CRH program that the IG Guidebook identifies as useful strategies to determine the long-term data needs of the program. These activities include extensive market research of the competitive environment, industry days, and data calls conducted by the data management team. Additionally, the RFP development included extensive consideration of technical data and computer software needs in creating the contract data requirements list (CDRL), OMIT and non-OMIT assertions list, inclusion of DFARS clauses, and utilizing product support-data management as a technical evaluation subfactor in source selection criteria. While the IP strategy included as part of the acquisition strategy occurs early in the acquisition process, updating the IP strategy and incorporating additional information outside of the minimum required information by DOD 5000.02 with actions taken by the team in acquisition planning and developing the RFP would create an IP strategy document that more adequately describes how the CRH program is obtaining delivery and adequate level of rights in data.

2. UH-1N Replacement

The second program we looked at was the UH-1N Replacement Program, to include the Pre-Award Acquisition Strategy approved July 2017 and the Life Cycle Sustainment Plan supporting Milestone C approved March 2018. The acquisition strategy identifies the UH-1N replacement program pursued an acquisition approach to procure an existing airworthiness certified baseline air vehicle and baseline training system using full and open competition, for the production and non-developmental integration of the UH-1N system (including air vehicles, training systems, test support, product support package, and data). The long-term sustainment strategy identified a two-level concept that could include both



contractor support and organic maintenance capability. While the UH-1N replacement program entered the acquisition life cycle process at Milestone C, opting for an existing system and not to develop a new system under EMD, significant considerations in intellectual property are required to ensure program obtains the necessary delivery and appropriate level of rights in data. Within the Acquisition Strategy, under the Business Strategy category, the UH-1N Program creates the Intellectual Property Strategy. Section 7.7 Intellectual Property Strategy states,

The Government will obtain rights in technical data and computer software deliverables in accordance with 10 U.S.C. § 2320 and DFARS 227.71, 227.72, 252.227-7013, 252.227-7014, and 252.227-7015. Pursuant to these authorities, while the Government is entitled to receive Unlimited Rights in certain deliverables, the Government will pursue Government Purpose Rights for technical data necessary for Operation, Maintenance, Installation, or Training (OMIT) purposes and form, fit, and function data. For data pertaining to an item, component or process developed exclusively with Government funds, as well as non-commercial computer software developed exclusively at Government expense and computer software documentation, the Government will retain entitlement to unlimited rights. For non-commercial computer software (except OMIT) developed exclusively at private expense, the Government will receive Restricted Rights. For non-commercial technical data (except OMIT) where the item was developed entirely at private expense, the Government will receive Limited Rights. For technical data related to items, components or processes and non-commercial computer software developed partly at Government expense and partly at private expense, the Government shall have Government Purpose Rights. The Government may also receive commercial technical data that will be subject to restrictions set forth in DFARS 252.227-7015 unless it is OMIT or another type of data that is subject to Unlimited Rights. The IP strategy will be updated to address evolving IP considerations associated with source selection and contract award. (AFLCMC, 2017).

In an assessment of the above language, the UH-1N Replacement Program intellectual property strategy relied on the statutory language of 10 U.S.C. § 2320 and the standard license rights provided in DFARS clauses to obtain rights in technical data and computer software. The IP strategy highlights the government's authority to obtain unlimited rights in OMIT data, however, the program office acknowledges it will only pursue government purpose rights (GPR) in OMIT and FFF data. The program office determined GPR in OMIT data were sufficient to meet the requirement. A potential benefit



in pursuing GPR instead of unlimited rights is a signal to industry that the government did not want to overreach in acquiring rights to data and would protect the data by utilizing the technical data and computer software for government purposes only.

In addition to the standard rights pursued under the DFARS clauses, Section 7.1 Intellectual Property strategy identifies two clauses intended to pursue specifically negotiated rights, AFLCMC/WIH-H002, Commercial Computer Software License and AFLCMC/WIH-H003, Delivery and License Rights for Technical Data and Computer Software Necessary for Operations, Maintenance, Installation, and Training. The intellectual property strategy states,

Pursuant to AFLCMC/WIH-H002, offerors are to provide any licenses for commercial software to be transferred to the Government with their proposal submission, and those commercial software licenses are required to be compliant with certain required terms and conditions stated in the clause. Pursuant to AFLCMC/WIH- H003, OMIT Data is specifically defined to include non-commercial computer software necessary for OMIT purposes (other than detailed manufacturing or process data). (AFLCMC, 2017)

With the combination of the standard DFARS clauses and the Section H clauses, the program office makes a strong effort to define what type of data and level of rights are required by the program office for the long-term sustainment of UH-1N Replacement system. Where the DFARS clauses lack clarity in the definition of OMIT data, the Section H clauses clarify to offerors the government's definition of OMIT data for this program, to include non-commercial computer software necessary for OMIT. Providing clarity in OMIT data serves to ensure all offerors submit proposals for the same requirements, while also ensuring the government does not exceed the statutory limits of rights in technical data by seeking rights to detailed manufacturing or process data.

The intellectual property strategy is further broken down in subsections addressing data rights analysis, provision for technical data rights in sustainment, technical manuals, and integrated digital environment. We utilize the IP Guidebook best practice to analyze how the IP Strategy addresses the required contents of the DOD 5000.02 and furthermore how each section of the IP Strategy contributes to creating an actionable plan. Section 7.7.1. Data Rights Analysis states,



The Government will pursue the least restrictive rights in technical data and computer software but anticipates contractor-asserted restrictions on those rights. The Government will review and challenge those assertions as appropriate. The UH-1N Replacement program RFP will require offerors to identify and assert any restrictions on use, modification, reproduction, release or disclosure of technical data in accordance with DFARS Clause 252.227-7017, Identification and Assertion of Use, Release, or Disclosure Restrictions (AFLCMC, 2017).

Section 7.7.1 Data Rights Analysis describes the process the government will use to review and challenge contractor asserted rights in technical data and computer software. The DFARS clause 252.227-7017 identifies the standard process for offerors to follow in asserting rights in data, but section also describes a Section H clause AFLCMC/WIH-H004, Identification and Assertion of Restrictions of Technical Data and Computer Software that identifies additional requirements for offerors. The special H clause AFLCMC/WIH-H004 places additional requirements on the contractor to identify contract line item numbers, CDRLs, and statement of work paragraphs to provide traceability of data requirements.

Analyzing Section 7.7 Intellectual Property Strategy and 7.7.1 Data Right Analysis together, these sections include specific details of “how” the UH-1N Replacement program will provide for delivery of data and ensure the appropriate level of data rights are obtained. The program office will utilize standard and non-standard Section H clauses to determine the allocation of rights in data and will utilize standard and non-standard Section H clauses to describe the assertions process the program office will use to review and challenge contractor restrictions in technical data and computer software.

Section 7.7.2 Provision of Technical Data Rights in Sustainment provides a summary analysis of steps taken by the program team to identify the long-term data requirements of the UH-1N replacement system. Within this section, the program team considered data needs to meet future competition for logistics support, including spares and repairs, of the system, subsystems, and components. The section also describes how program office plans to include requirements in the RFP for deferred ordering of technical data and computer software and a data accession list for reporting of data not required to be delivered. The section describes the combination of deferred ordering and the data accession list create a beneficial strategy for the program to identify future requirements



for delivery of additional data not originally obtained as part of the contract. The section describes clear actions taken by the UH-1N Replacement program to answer the “what” of the IP Guidebook best practice by highlighting assessment of data needs for long term sustainment and future re-competition at the system and subsystem level.

Section 7.7.3 Technical manuals describes the establishment of a Technical Order Management Agency (TOMA) to manage development and delivery of technical manuals, including maintenance manuals, flight manuals, and time compliance technical orders (TCTO). The section describes that modifications throughout the entire life cycle of the program will be accomplished by TCTOs and will require updates to the appropriate manuals. This section of the IP strategy provided information above the minimum required information by DOD 5000.02, but provides valuable information to address “how” the program will manage modifications to the system and subsystem. Establishing the TOMA will contribute to keeping critical program technical documentation up-to-date and assist the program in tracking the governments rights in data regarding modifications.

Section 7.7.4 Integrated Digital Environment addresses that the statement of work will direct the contractor to provide access to a contractor electronic data repository, a complete list of documents created during the program. In addition to the contractor repository, the government will create its own government data repository to ensure the team has continued access to program data for future purposes. This section includes content above the minimum required by the DOD 5000.02 intellectual property strategy, but highlights a unique consideration by the program to ensure the government has continued access to data for future sustainment purposes, in the event the government recompetes sustainment support and no longer maintains contractual access to the contractor’s data repository.

The second program document we reviewed for the UH-1N Replacement program was the Life Cycle Sustainment Plan (LCSP) used to support Milestone C entrance. We focused our analysis of the LCSP to Annex 3, Intellectual Property Strategy. At Milestone C, the IP Strategy become a required annex to the LCSP in accordance with DOD 5000.02 policy (Enclosure 2, Section 6a(4)). Upon review of the section, the content is identical to



the content provided in the intellectual property strategy of the acquisition strategy document. No new information is provided within Annex 3, Intellectual Property Strategy.

In a full-view assessment of the intellectual property strategy for the UH-1N Replacement Program, the intellectual property strategy goes into significant detail to create an actionable strategy that identifies what data is required, how rights in data will be verified, how the data will be managed, and how the data will be stored. The IP guidebook identifies those considerations as important to creating an actionable plan for the intellectual property strategy and go above and beyond the minimum requirements stated in DOD 5000.02 Intellectual Property Strategy. When we compare UH-1N intellectual property strategy to the CRH intellectual property strategy, we see some key differences that we identify as significant improvements to the IP strategy development. The UH-1N IP Strategy provides important details to how the government will handle problems between the government and the contractor in the asserting and markings of rights and provides additional clarity to the process with the inclusion of H clauses. Additionally, the UH-1N IP Strategy identifies important considerations given the management of data utilizing the TOMA and government data repository. One area we did not see addressed in the UH-1N IP Strategy is a business case analysis for the approach to acquiring rights. The IP guidebook recommends answering the “why” of the intellectual property strategy by conducting a business case analysis that considers potential engineering tradeoffs and provides an assessment for priced contract options for future delivery of data. Although the UH-1N Replacement Program did not provide business case calculations for these areas within the strategy, the program did note in section 7.7.2 that the RFP requirement would include the option for deferred ordering of data. Overall, UH-1N Replacement program’s IP Strategy displays significant improvement, compared to the CRH program, in the development of the IP Strategy which culminates in a clear actionable strategy that identifies information in what data is required, how rights in data will be verified, how the data will be managed, and how the data will be stored. While these acquisitions are conducted by different program offices, the improvements to the IP Strategies indicate the Air Force is placing increased efforts on improving its acquisition and management of technical data and computer software in its weapon systems.



B. SECTION H CLAUSES

H Clauses are a special set of clauses residing in Section H of the Uniform Contract Format (UCF) that are determined contract to contract by the acquisition team. They are written specifically for an individual contract and are meant to address an aspect of a procurement that is not adequately covered by the FAR or DFARS (FAR 15.204-2(h)). Due to their customized, specialized nature, clauses put in Section H of any contract require a much higher level of approval, often requiring a senior contracting official to approve each clause individually.

In the four contracts that we were able to obtain clauses for, two of them had very similar H clauses. The UH-1N Replacement program had seven Section H clauses (UH-1N Replacement, 2017), the T-7A had five (T-7A Red Hawk, 2018), and the Combat Request Helicopter had three (Combat Rescue Helicopter, 2012). The Combat Rescue Helicopter program is a much earlier procurement effort, with clauses dating from 2012, and that is likely why the program had fewer special clauses and why the clauses are the most unique. The earliest effort, the KC-46 Pegasus, has twenty-seven H Clauses, and is by far the most unique of the four contracts (KC-X, 2009).

Of the seven H Clauses in the UH-1N Replacement Contract, three of them were shared by the T-7A contract, at least by the clause titles. Those three clauses were: Commercial Computer Software License; Delivery and License Rights for Technical Data and Computer Software Necessary for Operation, Maintenance, Installation, and Training (OMIT); and Identification and Assertion of Restrictions of Technical Data and Computer Software. While the titles are the same, the clauses were given different agency clause numbers and different dates.

While it would be tempting to use the KC-X solicitation as a baseline, one should regard its high number of Section H clauses as an outlier. Instead, using the Combat Rescue Helicopter procurement as a sort of baseline, one can tell that the USAF has recognized not only the utility of specialized clauses written into Section H, but also their importance when it comes to intellectual property in weapon system procurement. Not only did the UH-1N Replacement program and the T-7A add additional clauses, their clauses are more



refined and concise when dealing with issues of intellectual property in weapon system procurement.

C. OMIT CLAUSE

All four of the systems that we were able to obtain clauses for had an H Clause addressing OMIT data for the individual procurements. In both the UH-1N and the T-7A procurement, the clause is titled “Delivery and License Rights for Technical Data and Computer Software Necessary for Operation, Maintenance, Installation, and Training (OMIT).” As with the other clauses in Section H of both contracts, the UH-1N OMIT clause is dated from 2017, while the T-7A is dated 2016. Other than that, the clauses are extremely similar, with only a few differences.

In the Combat Rescue Helicopter procurement, the clause is titled “Delivery and License Rights for Technical Data and Computer Software Necessary for Organizational and Depot-Level Maintenance and Training Systems” and is dated 2012. Despite the earlier date, and the different title, the clause addresses OMIT data relatively quickly, although the remainder of the clause focuses on depot-level maintenance, with references to OMIT data throughout. It appears that this clause is a sort of proto-OMIT data clause that serves as an example for future procurements.

A similar clause appears in the KC-X solicitation, titled “Delivery and License Rights For Technical Data and Computer Software Necessary for Two-Level Maintenance and Training Systems” (KC-X, 2009). Despite its different title, like the Combat Rescue Helicopter, this clause is also focused mostly on depot-level maintenance and devotes only a paragraph to define what constitutes OMIT data. With 27 clauses in Section H, the KC-X acquisition serves mostly as an example of what can be accomplished with specialized H clauses.

Both OMIT-titled clauses start with a definition of OMIT data, and the definition is nearly identical in both procurements. In the UH-1N Replacement, there is reference to “developmental tools,” when defining OMIT data, which is neglected in the T-7A. Oddly enough, those developmental tools are included in the Combat Rescue Helicopter’s definition of OMIT data under its Depot-Level Maintenance clause.



The definition of OMIT data is important, and neither the FAR or the DFARS explains how a PMO is supposed to define OMIT data (Intellectual Property Cross Functional Team, 2019). In the recently published USAF guidebook on Data Rights in Weapon System procurement, the third chapter deals almost entirely with OMIT data and helping acquisition professionals define OMIT data for their program.

The earliest program we were able to acquire clauses from, the KC-X (now known as the KC-46 Pegasus), had the least-well defined OMIT clause of the four that we had. To be fair to that program, the clause was focused more on Depot-Level, or “Two-Level” Maintenance, with only a short sub-paragraph dedicated to defining OMIT data. This clause may not be considered up to standard compared to the current guidance given in the Air Force Data Rights Guidebook. This can be forgiven, as the KC-46 Pegasus procurement began 10 years prior to the guidebook being published.

What can be easily seen in all four of the procurements that we were able to get clauses for, is the influence that previous efforts had on the development of the USAF Data Rights Guidebook. On page 28 of the Guidebook, under guidance for developing the request for proposals, the Data Rights Guidebook recommends that the PMO include a special clause that further defines what constitutes OMIT, beyond simply demanding the Unlimited Rights that are permitted under the DFARS (Intellectual Property Cross Functional Team, 2019).

In the UH-1N Replacement Program, instead of demanding Unlimited Rights, the PMO chose to pursue only Government Purpose Rights (UH-1N Replacement, 2017). One reason for this may be that the UH-1N replacement is a commercially derived helicopter, developed in partnership between Boeing and Italian aerospace company Leonardo, based off the AW139. Dubbed the MH-139 by the contractor partnership, the helicopter is already in service with several allied partners and was procured as a commercial item to replace the ancient UH-1N in the USAF inventory.

Perhaps the PMO that awarded the UH-1N replacement program to Boeing and Leonardo wanted to show respect for the commercially derived nature of the data rights that came with the MH-139 (UH-1N Replacement, 2018). Refraining from demanding Unlimited Rights on the commercially derived aircraft and reducing the OMIT demand



down to Government Purpose Rights may have also provided a price benefit in the overall cost of the replacement program.

In contrast to the procurement of the commercially derived MH-139, the Air Force's fifth generation training aircraft, the T-7A Red Hawk, was developed to address a specific need. The previous jet fighter trainer, the T-38C Talon, does not adequately prepare USAF fighter pilots for the successful operation of fifth-generation fighter and bomber aircraft, such as the F-35 Lightning II and the B-21 Raider. Documented gaps in the USAF pilot training program indicates that the T-38C Talon has shortcomings in 12 of the 18 major mission tasks set forth in Undergraduate Pilot Training (Coral & Gertler, 2019).

The T-7A Red Hawk was developed specifically to meet those shortfalls, and the OMIT clause reflects that. Unlike the UH-1N replacement, the MH-139, the T-7A program requires that the government be given Unlimited Data Rights in the OMIT clause in Section H (T-7A Red Hawk, 2018). While we were unable to obtain a copy of the data assertions for the T-7A due to current classification and information security, an assumption can be made that the government was able to obtain unlimited OMIT data rights because the T-7A was developed at government expense and in response to an established government requirement.

D. DEPOT-LEVEL MAINTENANCE CLAUSE

As previously mentioned, whereas the two later procurement efforts included an OMIT clause in Section H, the Combat Rescue Helicopter and the KC-46 Pegasus included a clause addressing Depot-Level Maintenance. Both procurements' Depot-Level Maintenance clause contained a generic description of OMIT data, but the focus was on the definition of Depot-Level Maintenance.

In the OMIT clauses for both the UH-1N Replacement and the T-7A Red Hawk programs, there remains discussion of Depot-Level Maintenance, although the level of importance appears to have flipped. In the Combat Rescue Helicopter, Depot-Level Maintenance is the primary focus of the clause, whereas this definition is relegated to a vestige of its former appearance. In the T-7A OMIT clause, Depot-Level Maintenance



occupies only a seven-line sub-paragraph that focuses primary on the data required to perform that maintenance (T-7A Red Hawk, 2018), and in the UH-1N Replacement OMIT clause uses just a full paragraph to define Depot-Level Maintenance (UH-1N Replacement, 2017).

This reduction in importance of Depot-Level Maintenance over several years' worth of procurements could indicate a shift toward understanding the importance of OMIT data and how it is defined within contract requirements prior to award.

E. OMIT DEFINITION

The OMIT definitions across all four of the contracts for which we were able to obtain Section Hs are similar enough that they raise the question of why each individual agency had to come up with its own clause? In two of the four contracts we obtained, OMIT data is defined for the system as:

All technical data, development tools, computer software, computer software documentation, computer databases and graphics ... required or used when conducting all operation, maintenance, installation, and training activities, regardless of whether such activities are performed by Air Force military, civilian, or contract personnel. (T-7A Red Hawk, 2018; UH-1N Replacement, 2017)

With only a few inconsequential exceptions, the clauses are identical. Even the definitions contained within the clauses for operation, maintenance, installation, and training are similar enough to where replacing the program name with "the system" produces nearly verbatim identical clauses. It appears that agencies are merely duplicating each other's efforts to produce their own OMIT Data clauses for Section H.

To be fair to the writers of the T-7A Red Hawk contract, their Section H OMIT Clause appears to be more robust. For instance, where the UH-1N Replacement Section H states that "maintenance" includes various items "to maintain in, or restore to, a serviceable condition the UH-1 N Replacement System" (UH-1N Replacement, 2017), the T-7A Red Hawk is more specific and inclusive: "to maintain in, or restore to, a serviceable condition the APT aircraft system and GBTS; and their subsystems, assemblies, subassemblies, components, parts, and pieces (whether hardware or software)" (T-7A Red Hawk, 2018).



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VII. CONCLUSION AND RECOMMENDATIONS

The Department of Defense establishes significant long-term investments in major weapon systems, and in doing so creates important partnerships with industry. Protecting the interests of both parties in that partnership is essential to ensuring the DOD has continued access to an innovative industrial base, and that industry that understands the mission of the DOD to support the warfighter must be accomplished in a cost-effective manner (Department of Defense, 2018). The government's increased efforts to identify and analyze intellectual property issues makes clear the importance of the role of intellectual property to meeting DOD objectives. The issues surrounding IP are complex and require the DOD to take the time necessary to create in-depth intellectual property strategies to ensure the DOD programs obtain the necessary technical data and computer software along with the appropriate license rights to ensure the DOD can effectively and affordably meet future sustainment requirements in its major weapon systems.

A. CONCLUSIONS

Through our research we were able to answer our four research questions. While we acknowledge that this research does not represent an “end-all-be-all” in terms of a solution to intellectual property issues, we do believe that our research represents an important step forward in understanding intellectual property rights in government procurement, as well as educating government procurement officials on how to best handle intellectual property in their acquisitions. We also acknowledge that based on the number of programs reviewed in this project, our conclusion should not be used to generalize all programs across the Air Force, however, the results provide useful insights into the efforts of these programs to address intellectual property issues. Based on our research questions, we reached the following conclusions:

1. **Is the United States Air Force sufficiently addressing intellectual property in the acquisition planning of major weapon systems?**

Based on the research of analyzing intellectual property strategies contained in the acquisition strategy and life cycle sustainment plan of past weapon system acquisitions, the programs met the DOD acquisition planning policy requirements at DFARS 207.106 (S-



70) *Additional requirements for major systems* in developing acquisition plans for major weapons and subsystems of weapon systems. The intellectual property strategies developed in the programs met the broad requirement of the DFARS policy to assess the long-term technical data and computer software needs for the program. The broad requirement of the DFARS policy leaves the door open for programs to determine the steps to take to meet this requirement. The DFARS policy does not mandate specific elements of assessment, other than to address the merits of priced options for the future delivery or technical data and computer software with associated license rights. Therefore, programs are allowed to determine the elements included in Intellectual Property Strategy, which can lead to differences seen in IP Strategies across programs. Our analysis included four programs within the Air Force Life Cycle Management Center, therefore, we observed similarities in the IP strategies, but also some differences where we observed improvements to the IP strategies over time. We expect there may be more significant disparity in Intellectual Property Strategies content with other organizations and military services. Therefore, we believe additional guidance, such as the guidance provided in the new Air Force IP Guidebook, can provide weapon system programs with valuable information to create intellectual property strategies that are robust and improve how the Air Force handles IP issues with contractors. A successful acquisition begins with in-depth acquisition planning, therefore, if the Air Force is to improve its acquisition and management of intellectual property, it must conduct adequate planning to create an actionable IP strategy that describes what data is required, how rights in data will be verified, how the data will be managed, and how the data will be stored. Giving adequate consideration to these areas will go a long way to ensure the Air Force obtains adequate intellectual property license rights to ensure our major weapon systems are affordable and adaptable.

Furthermore, within the last year the Air Force has undertaken significant efforts to improve its own strategy to address intellectual property issues across the Air Force. The Air Force has made intellectual property issues a top priority, establishing an Air Force IP Cadre, analyzing the findings of the 2016 NDAA congressionally mandated panels, and issuing an Air Force IP Guidebook. While our research mainly focused on the acquisition planning efforts of the four weapon systems programs, the Air Force IP Guidebook will be



a valuable new resource for all program offices to improve acquisition planning for intellectual property but also improve the handling of IP issues across the entire life cycle of Air Force weapon systems.

2. What contract clauses are contracting officers using to acquire intellectual property and data rights?

Within our research, we found the programs relied on both standard data rights clauses and non-standard data rights clauses. The programs utilized the applicable standard DFARS clauses when determining license rights in both non-commercial and commercial technical data. The standard DFARS clauses were used for the contractor's asserting restrictions to data, and for the government's validation of the restrictive markings. The standard DFARS clauses included:

- DFARS 252.227-7013 - Rights in Technical Data – Noncommercial Items
- DFARS 252.227-7014 - Rights in Noncommercial Computer Software and Computer Software Documentation
- DFARS 252.227-7015 Technical Data – Commercial Items
- DFARS 252.227-7017 Identification and Assertion of Use, Release, or Disclosure Restriction
- DFARS 252.227-7037 Validation of Restrictive Markings on Technical Data

For commercial computer software and computer software documentation, CRH program relied on DFARS 227.7202-1 to pursue license rights customarily provided to the public, unless specific modifications were made at government expense to meet requirements. The UH-1N Replacement program utilized the standard DFARS policy for commercial computer software, and in addition utilized a non-standard H clause to require offerors to provide any commercial software licenses to be transferred to the government with the submission of the proposal.

For non-OMIT data, contracting officers are using relying on the statutory language of 10 U.S.C. § 2320 and the standard clauses provided in DFARS 252.227-7013, 252.227-7014, and 252.227-7015.



For OMIT data, contracting officers are utilizing special contract requirements, laid out in Section H of major weapon system procurements in order to acquire intellectual property and data rights. These clauses are customized to each contract, and therefore can address specific concerns that may not apply to other procurements. Even though the clauses are written by different contracting officers, they often share significant similarities that indicate it may be beneficial to formulate a standardized clause, or set of clauses, to address the acquisition of intellectual property.

3. How does the Air Force ensure adequate deliverables and license rights are obtained in operation, maintenance, installation, and training data within contracts?

The increased emphasis to obtain adequate license rights in technical data and computer software stems from previous acquisition situations, such as the C-17, where the Air Force was unable to meet an organic sustainment requirement and promote competition in sustainment due to vendor lock. Also, observing the rising costs of programs such as the F-35 and the F-22, calls attention to Air Force's efforts to obtain OMIT data and the need to ensure delivery and adequate license rights in technical data and computer software necessary for operation, maintenance, installation, and training.

The Air Force is using clauses in Section H of weapon system procurements to define operation, maintenance, installation, and training data. Due to the customizable nature of these clauses, the definition of OMIT data has evolved over time as newer procurements learn from previous weapon system acquisition efforts. There is no standardized definition of OMIT data from either the FAR or the DFARs, and the Air Force has the potential to take the lead by defining OMIT through AFFARs guidance.

The lack of definition causes some significant friction between government and industry, as was seen through the UH-1N replacement program and the protest levied against that procurement. In some instances, the Air Force tends to ask for the wrong level of ownership over intellectual property by claiming everything is OMIT data. In some instances, the Air Force simply asks for unnecessary data, leading to increased workload for both contractor and government personnel. Formalizing a definition with feedback from



industry should reduce the number of protests over OMIT data definitions, and the level of work required by both industry partners and government procurement officials.

4. What are the main factors that create friction between the Air Force and contractors when negotiating intellectual property rights?

In our background research, we noted, DOD problems in intellectual property have centered around two basic issues: (1) how much technical information to obtain from contractors, and (2) what protection the government should afford to the technical information obtained (Nash & Rawicz, 2008). In our analysis of the program IP strategies, we found answering these two basic questions is a challenge unique to each weapon system. When determining the long-term needs in technical data and computer software, two of the main considerations are what type of data is required by the program and what level of license rights in the data are required to support future competition in sustainment and affordable weapon systems. While the DOD addresses these issues in each acquisition, at the same time, contractors must consider how the DoDs IP strategy protects their intellectual property and meets the contractor's interests. Based on our research, three of the main contributing factors that lead to issues between the Air Force and contractors when dealing with intellectual property occur in requirements determination, the assertions process, and the lack of an OMIT data definition in statute or DFARS policy. DOD efforts to improve acquisition planning early in the acquisition process can help to establish defined data requirements. Additionally, early planning by the program office to work with industry partners can alleviate contractor concerns in the assertions process. Finally, establishing a firm, but fair definition of OMIT data relieves much of the stress between government and industry to determine OMIT for each weapon system program.

B. RECOMMENDATIONS

Improvements to the Defense Acquisition System are being discussed across the DOD with recommendations coming out of the Section 809 and Section 813 Panels, as well as the Section 875 Study. These panels are the stepping-stone for the DOD to implement significant changes to acquisition system and the processes the DOD uses. The DOD should carefully consider recommendations to intellectual property acquisition processes that are critical to the future ability of the DOD to reshape the Defense



Acquisition System. Based on our analysis of the four Air Force programs (the UH-1N Replacement, T-7A Advanced Pilot Trainer, Combat Rescue Helicopter, and KC-46 Pegasus Tanker), our recommendation for improvements to the acquisition of technical data and computer software and data license rights include the following:

1. Recommendation 1: Special “Fill-in” Clause for OMIT Data Requirements

Regarding the special Section H Clauses, our first recommendation is that the Air Force should create a standardized “fill-in” clause to address OMIT data requirements. This clause should contain the generic similarities that exist between commercial and non-commercial acquisitions, with the ability to tailor the clause to the specific acquisition.

This differs from the status quo in that, currently, each agency could completely re-write their OMIT data clause from one contract to the next if they so choose. Establishing a standardized OMIT fill-in clause, perhaps under the Air Force Supplement to the Federal Acquisition Regulations (AFFARS), will standardize how the Air Force asks for data, while still granting the flexibility to change what data rights the acquisition team agrees upon.

A potential “fill-in” clause would look similar to the one contained within the T-7A Red Hawk procurement, with fill-in provisions allowing the acquisition team to tailor the clause to each specific procurement:

(a) Definitions. As used in this special contract requirement and associated CLINs:

1. “OMIT Data” is defined for the purposes of this contract as all technical data, computer software, computer software documentation, computer data bases and graphics pertaining to the *<Fill In here>* required to successfully conduct all operation, maintenance, installation, and training activities, regardless of whether such activities are performed by Air Force military, civilian, or contract personnel.

A. OPERATION



“Operation” includes all procedures, guidance, and instructions for ground and inflight operating, handling, testing, emergency, utilization, familiarization, and functional use of the *<Fill in here>* to perform their intended functions.

Operation also includes all data to identify, catalog, stock, source, acquire, procure, replenish, package, handle, store, and transport of the *<Fill in here>*; and their subsystems, assemblies, subassemblies, components, parts, and pieces.

B. MAINTENANCE

“Maintenance” includes all scheduled and unscheduled organizational, intermediate, and depot-level maintenance and repair capabilities to maintain, inspect, test, service, adjust, troubleshoot, analyze, remove, replace, repair, install, disassemble, reassemble, and overhaul to maintain in, or restore to, a serviceable condition the *<Fill in here>*; and their subsystems, assemblies, subassemblies, components, parts, and pieces (whether hardware or software). Maintenance includes sustainment of the OMIT data itself.

C. INSTALLATION

“Installation” includes infrastructure such as facility planning, site surveys, *<Fill in as required>* communications, data links, security, data information technology, and all other data and planning necessary for the initial standup and continued operations, training, sustainment, and maintenance at all operational sites as well as organizational, intermediate, and depot-level maintenance requirements in support of the *<Fill in here>*; and their subsystems, assemblies, subassemblies, components, parts, and pieces.

D. TRAINING

“Training” includes Type 1 training and all other formal and informal classroom, *<Fill in as required>* supervised and unsupervised instruction in the flight of, operation of, use of, testing of, supply chain management of, and the organizational, intermediate, and depot-level maintenance of the *<Fill in here>* and their subsystems, assemblies, subassemblies, components, parts, and pieces.

2. The term “depot-level maintenance” as used in this contract-

A. Includes, but is not limited to-



- (i) Installation, inspection, localization, isolation, disassembly, interchange, repair, reassembly, alignment, checkout; and
- (ii) Maintenance performed, including modification, testing and reclamation, on material requiring repair, major overhaul, or complete rebuild of parts, assemblies, subassemblies, and end items; and
- (iii) Software maintenance; and
- (iv) Maintenance performed for continuous airworthiness.

B. Does not include the manufacture of new items.

3. Other terms used in this special contract requirement defined in the following clauses have the same meaning as set forth in those clauses:

A. DFARS 252.227-7013;

B. DFARS 252.227-7014; and

C. DFARS 252.227-7015.

(b) Delivery Requirements. The contractor shall deliver all technical data, computer software documentation, computer databases, computer software and graphics that are necessary or required to support OMIT and having the characteristics (e.g., content, format, and delivery medium) necessary for OMIT.

1. General. The Government requirements for such technical data, computer software documentation, computer databases, graphics, and computer software include-

A. No less information or detail than industry standards, nor less than the contractor typically requires or uses to perform OMIT activities; and

B. Additional information or detail necessary for military purposes related to OMIT.

2. Depot-Level OMIT Data. Depot-level OMIT data includes a complete package of technical data, computer software documentation, computer databases, graphics and computer software necessary for installation and deinstallation, and disassembly and reassembly, at the lowest practicable segregable level. Examples of data that are needed to perform depot-level maintenance include, but are not limited to, the following:



- A. Detailed *<Fill in here>* technical data and information regarding all systems;
- B. Depot-level maintenance technical data and information regarding all systems, subsystems, and components; and
- C. Interface Control Documents (ICDs).

(c) License Rights. Contractor hereby grants or shall obtain for the Government unlimited rights in all technical data, computer software, computer databases, graphics, and computer software documentation necessary for OMIT. Any exceptions to this grant for computer software shall be identified and asserted as a restriction on computer software pursuant to *<Fill in Clause Number & Title>* and shall include any assertions for

commercial computer software required for OMIT, which shall be subject to a commercial license consistent with DFARS 227.7202-1(a) and *<Fill in here>* clause, Alternate I and Alternate III only.

(d) Subcontractors and Suppliers. The contractor's obligations in this special contract requirement shall apply to all technical data, computer software documentation, computer databases, graphics and computer software, including all technical data developed, delivered, or otherwise provided by subcontractors and suppliers at any tier; regardless of whether the OMIT data is, or relates to, commercial items or noncommercial items. The contractor shall include these requirements in its subcontracts or other contractual or legal instruments with its subcontractors and suppliers at any tier. The contractor shall ensure all subcontractors and suppliers at any tier replicate this clause.

(e) Validation of Asserted Restrictions and Restrictive Markings. Nothing in this special contract requirement limits or otherwise affects the parties' rights or obligations specified in DFARS 252.227-7019 or 252.227-7037. The Contracting Officer reserves the right to validate any asserted restriction or restrictive marking, at a later date, in accordance with the procedures of these clauses.



2. Recommendation 2: Define OMIT Data

We recommend that the Air Force take the lead and write out a better, more inclusive, definition of OMIT data. As mentioned in the early pages of the *Data Rights Guidebook*, Neither the FAR nor the DFARS declares what constitutes OMIT Data (Intellectual Property Cross Functional Team, 2019). We see this as an opportunity for the Air Force to take the lead within the DOD and formally define what it considers OMIT data for different types of procurements.

The definition of OMIT data would have to change between different types of procurements. For instance, OMIT data for an aircraft will look wildly different than OMIT data for a computer development. There can be enough similarities in language in large-scale weapons system procurement that would enable the Air Force to formalize that definition. One recommendation is to define OMIT in table format inside the AFFARS or in a directive from higher-level contracting professionals.

We again look to recent procurements for the answer. In both the UH-1N Replacement and the T-7A Red Hawk procurement, the definitions of OMIT data are incredibly similar, and suggest that the Air Force use their definition as a force-wide definition of OMIT data for aircraft, and as contained in the potential fill-in clause in the previous recommendation.

3. Recommendation 3: Improve Intellectual Property Strategy Documentation in Acquisition Strategy Development

The inclusion of the IP strategy requirement in the acquisition strategy for the program to assesses the long terms technical data needs of a major weapon system signals the importance of the technical data and computer software and license rights. From our review of program documentation, we recommend improvements to the IP strategy to define specific sections of the strategy that identify what data is required, how rights in data will be verified, how the data will be managed, and how the data will be stored. Additionally, we recommend the IP strategy includes a section that addresses clauses utilized to determine rights in data, identifying both standard and non-standards clauses. Addressing each of these sections within the IP strategy will assist program offices in creating actionable strategies. Currently, the IP strategy is not a stand-alone document and



does not have a required format that promotes standardization of IP strategies across programs, which leaves each program to determine what information is included. From our review of Air Force weapon systems programs, we identified the UH-1N Replacement program created a meaningful format that can be used as a baseline for future intellectual property strategies.

4. Recommendation 4: Increased Education and Training Acquisition Community on Intellectual Property

Our final recommendation is intended to increase the capabilities of the government acquisition team to handle intellectual property issues, and to be knowledgeable enough to assess requirements and evaluate a contractor's position in asserting rights in intellectual property prior to engaging program legal counsel. The entire acquisition team must be knowledgeable on the basic issues in intellectual property to ensure both government and industry's interests are protected. Therefore, we recommend the DOD create mandatory IP training in major weapon system program that involves all members of the integrated product team. The Air Force in 2019 has created the Smart IP Cadre Office (SAF/AQCC) as an intellectual property cadre who will lead the Air Force initiatives focused on solving the critical IP issues facing the Air Force, including educating the workforce and supporting weapon system programs. We believe the efforts of the IP cadre are going to be critical to the DOD creating strategies that increase the knowledge and capability of the DOD to procure technical data and computer software license rights.

C. AREAS OF FURTHER RESEARCH

We acknowledge that based on the number of programs reviewed in this project, our conclusions should not be used to generalize all weapon system programs across the Air Force, however, the results provide useful insights into the efforts of these programs to address intellectual property issues. Future research efforts to increase the number of the programs reviewed can provide additional insight into the intellectual property strategies of weapon systems across the Air Force and DOD.

The focus of our research examined the DOD's acquisition of intellectual property by reviewing acquisition planning documents and contract clauses used to obtain license rights in technical data and computer software. We acknowledge that issues in intellectual



property need to be examined across the entire acquisition process to include issues that arise during contract performance, delivery of data, and during sustainment of weapon systems. Additionally, examination of intellectual property issues across the entire acquisition life cycle is necessary for the DOD to ensure its programs implement strategies that ensure the long-term sustainment and affordability of weapon systems.

Areas of future research in intellectual property we did not address in this project including evaluation of policy for small business innovative research (SBIR) rights, analysis of RFP documents to include CDRLs, SOW, and CLINs, and considerations for intellectual property strategies in legacy vs. new systems.

As the DOD utilizes the findings from the Section 809 Panel, Section 813 Panel, and Section 875 study to improve its understanding of issues of intellectual property, and DOD weapon system continue to require more technical data and computer software, we anticipate the DOD will require new research into data management and intellectual property protection. Intellectual property will, without a doubt, continue to be of significant importance in future DOD and USAF weapon systems procurement.



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