



ACQUISITION RESEARCH PROGRAM SPONSORED REPORT SERIES

Unveiling the Distinctions: A Descriptive and Comparative Study of Other Transaction Authority Agreements and Federal Acquisition Regulation–Based Contracts in Government Acquisitions

December 2023

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Prepared for the Naval Postgraduate School, Monterey, CA 93943

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ABSTRACT

The utilization of Other Transaction Authority (OTA) agreements has been expanding within defense agencies, but there remains limited empirical evidence regarding their comparative risks, benefits, and outcomes versus traditional Federal Acquisition Regulation (FAR)–based contracts. Through a mixed methods approach, we systematically compared six matched sets of Air Force FAR and OTA contracts from 2010–2020 to evaluate their structural distinctions. Quantitative analysis of contract attributes and qualitative examination of language revealed OTA agreements prioritize tailored flexibility, whereas FAR contracts emphasize procedural rigor. Our findings show OTAs achieve latitude through less standardized terminology and oversight processes but incorporate similar core content as FAR vehicles. While both models adhere to basic legal tenets, OTAs accommodated more diverse research, prototypes, and experimental initiatives. To optimize utilization, we recommend mandating OTA business case justifications, tracking metrics on innovations unlocked, expanding stakeholder education, and implementing regular audits. By unveiling the balance between programmatic adaptability and contractual discipline, this study offers data-driven guidance regarding when OTAs provide value over FAR agreements for defense acquisitions.



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LIST OF ACRONYMS AND ABBREVIATIONS

AI	Artificial Intelligence
AO	Agreement Officer
CICA	Competition in Contracting Act
CRS	Congressional Research Service
DAFFARS	Department of the Air Force Federal Acquisition Regulation Supplement
DARPA	Defense Advanced Research Projects Agency
DFARS	Department of Defense Federal Acquisition Regulation Supplement
DoD	Department of Defense
FAR	Federal Acquisition Regulation
FY	Fiscal Year
GAO	Government Accountability Office
IP	Intellectual Property
MRAP	Mine-Resistant Ambush Protected
NAICS	North American Industry Classification System
NASA	National Aeronautics and Space Administration
NDAA	National Defense Authorization Act
NDC	National Defense Contractor
NDS	National Defense Strategy
OIG	Office of the Inspector General
OT	Other Transaction
OTA	Other Transaction Authority
OUSD(A&S)	Office of the Under Secretary of Defense for Acquisition & Sustainment
PSC	Product Service Code
R&D	Research and Development
SAF/AQC	Secretary of the Air Force for Acquisition—Contracting



U.S.C.

United States Code

UCF

Uniform Contract Format



I. BACKGROUND

Other Transaction Authority (OTA) agreements, also known as other transactions (OTs) for short, are nothing new to federal procurement. Paul Dembling was general counsel for the National Advisory Committee for Aeronautics—the predecessor of the National Aeronautics and Space Administration (NASA) and was the primary author of the National Aeronautics and Space Act (Space Act). In 1958, Dembling wrote “Other Transactions language into the statute and pioneered early reimbursable Space Act Agreements” (Dunn, 2021, p. 17). The legislation allowed NASA “to enter into and perform such contracts, leases, cooperative agreements or other transactions as may be necessary in the conduct of its work” (Boyd, 2018, para. 6). Given that the language leaves the decision up to the administrator, the act gave NASA a great deal of flexibility. The significance of this clause lies in its exemption from regular procurement laws and regulations, granting NASA substantial flexibility in conducting its work.

Since initially implementing these OTAs, Congress has expanded the powers of two of the eleven agencies. The Defense Advanced Research Projects Agency (DARPA), which is a component of the Department of Defense (DoD), was granted the first authorization to engage in OTs in 1989 (Neumann, 2016, p. 8). The authority was extended to DARPA only when “the use of standard contracts or grants is not feasible or appropriate” (Schwartz & Peters, 2019, p. 22). Subsequently, in 1991, Congress extended this authority to encompass the entire defense department and made it a permanent provision. In 1993, Section 827 of the National Defense Authorization Act (NDAA) for Fiscal Year (FY) 1994 empowered the Secretary of Defense and military department heads with the ability to undertake a range of research activities, including basic, advanced, and applied research. This was facilitated through various means such as contracts, cooperative agreements, grants, and OTs. Notably, this expanded the scope of authority beyond what was earlier limited to just advanced research (Schwartz & Peters, 2019, pp. 24–25). Then, in 1996, under the FY1997 NDAA, Congress further broadened the scope of authority by allowing the entire DoD to employ OT agreements for prototype projects (Neumann, 2016, p. 8). Currently, OTA regulations fall under 10 U.S.C. § 4021, Research for Basic, Applied, and Advanced Research Projects Related to



Weapons Systems or Other Military Needs (Research Projects, 2021), and 10 U.S.C. § 4022, Prototype for Research and Development (R&D) and Prototyping Activities to Enhance Mission Effectiveness of Military Personnel and Supporting Platforms, Systems, Components, or Materials (Authority of the Department of Defense, 2021). Unlike prototype OTs, research OTs lack the capability to evolve into follow-on production contracts or transactions.

The 2018 National Defense Strategy (NDS) addressed the need for reform within the DoD for greater performance and affordability. In the section titled Deliver Performance at the Speed of Relevance, the NDS states,

Current processes are not responsive to need; the Department is over-optimized for exceptional performance at the expense of providing timely decisions, policies, and capabilities to the warfighter. Our response will be to prioritize speed of delivery, continuous adaptation, and frequent modular upgrades. (Department of Defense [DoD], 2018, p. 10)

General Charles Q. Brown (2020), chief of staff of the Air Force, elaborated further in his *Accelerate Change or Lose* strategic approach, asserting,

To do this, we must contribute to the Joint Warfighting Concept, enabled by Joint All-Domain Command and Control, and place capability in warfighters' hands faster—through innovation, experimentation and rapid prototyping, and a collaborative approach with our service and industry teammates. (p. 5)

The 2018 NDS and Gen Brown's (2020) strategic approach emphasized the urgent necessity for reform and enhanced efficiency in the DoD. Recognizing the tendency of existing procedures to favor exceptional performance at the expense of prompt decision-making and the provision of capabilities tailored to the needs of combat personnel, the DoD is now vigorously embracing these new principles. This significant strategic adjustment is designed to strengthen the DoD's ability to adapt to the dynamic requirements of contemporary warfare and to offer robust support to military personnel in active service.

During an interview with Jason Miller (2019) of the Federal News Network, Air Force Lieutenant Colonel Sam Kidd, general counsel and professional staff member of



the Section 809 Panel, delved into the driving force behind the growing interest in OTAs. LtCol Kidd explained,

The desire for the OTA comes from the desire for more speed. Our system has become so laden with bureaucratic requirements, with clauses and provisions and a system that isn't rapid enough to meet the needs of our warfighters, our commanders and those who are supporting them. They hear about this other transaction authority that gets them out from under the Federal Acquisition Regulations and the Defense FAR where they can be more agile in whatever contracting tool they are going to use. And there is a desire to use that without really fully understanding what they are for. (Miller, 2019, para. 5)

Highlighting the shortcomings of a system burdened by bureaucratic requirements and sluggishness in meeting the needs of warfighters and commanders, LtCol Kidd explained how the allure of OTAs lies in their potential to bypass the confines of the Federal Acquisition Regulation (FAR) and Defense Federal Acquisition Regulation Supplement (DFARS), providing a more agile and adaptable contracting approach, even if their true purpose remains somewhat elusive.

A. PURPOSE STATEMENT

This research impartially examined the structural impact of OTAs on the efficiency and agility of government contracting. The main objective of this comparative analysis was to contribute to the ongoing discussion regarding the constraints of FAR contracts and the potential risks associated with OTA options. We developed a preliminary evidence-based framework to offer contracting professionals the necessary insights to make informed choices when selecting a contract mechanism to fulfill future mission requirements. This comprehensive evaluation encompassed both contract types, involving a combination of quantitative and qualitative research, examining their structures and regulations within the United States Air Force, hereinafter referred to as the Air Force, since the passage of the 2016 NDAA that endorsed OTA utilization (National Defense Authorization Act for Fiscal Year 2016, 2015). Our research aims to assist the Air Force in striking a balance between risk mitigation and operational flexibility, thereby enhancing its capacity to execute missions with greater efficiency and effectiveness.



FAR 1.102 (2023) outlines that the goal of the federal acquisition system is to provide customers with the highest value in products or services promptly, upholding public trust and achieving public policy goals. It aims to meet customer expectations regarding the cost, quality, and delivery time of products or services, reduce administrative costs, ensure business is conducted with honesty, fairness, and transparency, and meet public policy objectives (FAR 1.102, 2023). However, a report by the National Science Foundation Office of Inspector General (2023) revealed deficiencies in the proper security, maintenance, tracking, and reporting of award information within agencies. Specifically, the Office of the Inspector General (OIG) found inadequate tracking and accounting of awarded OTAs and their associated dollar amounts. Additionally, the DoD and the Department of Homeland Security failed to report OTA activities to Congress or provided inaccurate information in their reports. These findings emphasize the need for enhanced measures to ensure proper oversight, accountability, and accurate reporting in the federal acquisition process, aligning with the core principles of the federal acquisition system's vision.

Within the DoD, there have been calls to expand and clarify the authority for utilizing OTAs, especially in production contracts, to accelerate the deployment of innovative technologies and capabilities. As part of these efforts, the Section 809 Panel, a diverse group of acquisition and procurement experts appointed by Congress, proposed reforms to the defense acquisition system. Recommendation 81 from the Section 809 Panel (2019) asserted,

Expanding and clarifying follow-on production authorities under § 2371b and better aligning them with those available in § 2447d would address the challenges of moving quickly from a prototype to production and ensure DoD has access to nontraditional sources of innovation. (p. 8)

The panel argued that providing more flexibility around follow-on production OTAs would allow the DoD to transition successful prototypes more rapidly into the hands of warfighters. It claims that the current limitations on noncompetitive follow-on production OTAs inhibit the ability to quickly move innovative solutions developed by nontraditional contractors into operational use. Expanding authorities would attract more commercial firms and startups to work on defense prototypes.



The advisory panel's recommendation stemmed from limitations in the current statutory authorities for follow-on production OTAs under 10 U.S.C. § 2371b. As highlighted in a 2018 Government Accountability Office (GAO) protest decision, the existing statute narrowly constrains when a noncompetitive production OTA can be awarded based on successful completion of a prototype project (Armstrong, 2018). For instance, the original prototype OTA must explicitly include the option for a follow-on production OTA. This restricts the agency's flexibility. Additionally, the statute precludes awarding a sole-source production OTA to a contractor other than the original prototype performer, even if the original contractor is unwilling or unable to scale production. The panel argued that this could force unnecessary re-competitions under standard contracting procedures.

The panel asserted that expanding authorities would allow OTAs to be used for rapid fielding of existing innovative technologies, not just prototypes. Currently, if a nontraditional contractor has already developed a production-ready solution with private investment, the military's only option to acquire it rapidly is through a standard FAR contract. Providing authority for production OTAs in these scenarios would reduce barriers for commercial firms with mature solutions by enabling a more fluid transition from development to field, reducing the lag time between when a technology is ready and when it can actually deploy. The panel claims that this would bolster access to leading-edge technologies and enable a more seamless transition from development to fielding. While OTAs should still be reserved for exceptional circumstances, clarifying, and expanding production OTA powers would grant defense agencies needed flexibility to acquire critical technologies at the pace of relevance.

However, there are concerns about expanding OTAs without sufficient accountability. OTAs operate outside the normal FAR, oversight measures, and transparency requirements. Some argue that this increases the risk of misuse and abuse. They contend that expanded OTA authorities should be balanced with improved usage data collection, reporting, and measures to prevent waste, fraud, and abuse. There are calls for better tracking of OT project performance and costs to ensure these flexible authorities are not misapplied. Thus, any expansion of OTAs should also implement mechanisms for accountability and oversight commensurate with the increased risks.



B. PROBLEM STATEMENT

The practical problem at hand pertains to the ongoing debate surrounding the level of restrictiveness in FAR contracts compared to the potential risks associated with OTA options. Within the context of the Air Force, there is a noticeable gap in knowledge regarding a comprehensive and unbiased comparative analysis that examines the distinctions between these two contract vehicles. This gap specifically relates to the period since the enactment of the 2016 NDAA. The 2016 NDAA, through the amendment of Section 815, initially endorsed the expanded use of OTAs. Subsequently, the NDAA has consistently advocated for the broader utilization of OTAs under 10 U.S.C. § 4022 and § 4021, which replaced the previously authorized 10 U.S.C. § 2371 and § 2371b. The lack of comprehensive understanding hampers contracting professionals' ability to make well-informed decisions regarding the appropriate contract vehicle to employ in support of future mission requirements.

The lack of clear guidance and empirical data available to contracting professionals within the Air Force is indicative of an existing problem. The absence of a systematic evaluation and comparative analysis between FAR contracts and OTA options hampers contracting professionals' ability to effectively assess the advantages, disadvantages, and trade-offs associated with each approach. Richard Dunn (2017) from *National Defense* magazine highlighted this problem by stating,

The department is unorganized and uneducated in the use of these authorities. They are unknown or poorly understood by most organizations that could greatly benefit from their effective use. This results in their underutilization and a failure to leverage their full potential. (para. 2)

Consequently, the underutilization of these authorities impedes the Air Force from fully harnessing the authorities' potential and hindering the Air Force's ability to strike a balance between risk management and flexibility. This, in turn, increases the risk of making suboptimal contract choices that could have ramifications on mission execution.

The knowledge problem/gap is further substantiated by the limited availability of comprehensive research and empirical studies on the structural and regulatory aspects of FAR contracts and OTAs within the context of the Air Force. The absence of an evidence-based framework to inform decision-making regarding contract selection in



support of mission requirements highlights the need for a detailed examination of the two contract vehicles. By conducting thorough quantitative and qualitative research, including an analysis of relevant policies and practices, we can fill the knowledge gap and empower contracting professionals with the necessary insights to navigate the complexities associated with FAR contracts and OTAs.

The Air Force stands to benefit from improved risk management and increased flexibility in executing its mission. Garcia et al. (2020) asserted, “OTAs offer a very valuable tool in the acquisition professional’s toolbox but some additional focus on planning from government and industry representatives can improve results for both parties, while drawing in more nontraditional government contractors” (p. 11). Furthermore, the research outcomes contribute to broader discussions and inform policy development regarding contract selection strategies, potentially influencing decision-making processes in other branches of the military and government agencies involved in defense acquisitions.

C. RESEARCH QUESTIONS

Our primary research question is, “To what extent are OTAs and FAR-based contracts similar and different based on a systemic evaluation?” In pursuit of this, we reviewed existing publications from sources like the GAO, the Congressional Research Service (CRS), and various reports related to national defense. Our supplementary question is, “What are the potential risks associated with OTA agreements compared to FAR contracts?”



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II. LITERATURE REVIEW

The past decade has seen increasing debate within the defense acquisition community about the appropriate balance between standardized acquisition procedures under FAR-based contracts and the flexibilities offered by OTAs. This issue has taken on greater urgency since the 2016 NDAA expanded the use of OTAs for prototype and production contracts. However, there remains a knowledge gap regarding the structural distinctions, comparative advantages, and associated risks between FAR contracts and OTAs.

A review of recent scholarship reveals relatively limited empirical research specifically comparing FAR and OTA approaches. Dunn (2017) argued that the lack of education within the DoD on leveraging OTA flexibilities led to underutilization of the authorities. He contended that better guidance was needed when OTAs offered the greatest advantages. Schwartz and Peters (2019) reviewed early use of expanded OTA powers by defense agencies and found inconsistent data collection and oversight mechanisms. They called for more research on OTA performance and risks. Further analysis through comparative case studies on OTA versus FAR approaches for similar projects could provide insights into the relative costs, benefits, and risks of each.

Acquisition policy changes have significantly influenced recent dialogues. The implementation of recommendations from the Section 809 Panel (2019) in the 2018 and 2019 NDAAs enhanced process efficiencies for FAR contracts and broadened the authorities of OTAs. Within the context of the 2018 NDAA, legislators directed the DoD to prioritize the use of OTAs for endeavors in science, technology, prototyping programs, and procurement for experimental purposes (Dunn, n.d.). This expansion in OTA authorities has empowered the DoD to progress in procurement reforms, especially as the associated funding often remains exempt from standard federal laws and regulations (Greeff, 2018). While the DoD policy favors OTAs over FAR-based contracts, there is an evident absence of quantitative metrics to guide such decisions.

Existing scholarship recognizes that OTAs can improve access to commercial innovation and accelerate prototyping, but there remains limited empirical evidence on



FAR-versus-OTA outcomes and risks. Quantitative research and comparative analysis are needed to provide data-driven guidance for defense acquisition leaders contemplating contract strategies and vehicles. Our study intends to help fill this knowledge gap through an objective examination of recent Air Force contracting practices under FAR and OTA approaches.

A. WHAT IS AN OTHER TRANSACTION AUTHORITY AGREEMENT?

OTA agreements function as a specific type of contract. Cornell Law School's Legal Information Institute (n.d.) defines a contract as a legally enforceable agreement between parties that establishes mutual obligations. To be legally binding, a contract must have six essential elements: (a) mutual assent expressed by a (b) valid offer and (c) acceptance, (d) adequate consideration, (e) capacity, and (f) legality. The *Department of Defense Other Transaction Guide* (DoD OT Guide) confirms that while OT agreements are indeed valid legal contracts, they differ from procurement contracts. To minimize confusion with FAR-based procurement contracts, the DoD OT Guide notes that DoD organizations frequently using OTAs often refer to them simply as "agreements" (Office of the Under Secretary of Defense for Acquisition and Sustainment [OUSD(A&S)], 2023, p. 43).

OTAs offer federal agencies a distinctive pathway for procurement, specifically targeting the acquisition of research that promotes technological advancement and prototype development with follow-on production of a successful prototype project (Schwartz & Peters, 2019, p. 2). According to Cummins (n.d.), "this innovative approach to procurement aims to fast-track cutting-edge technological solutions from commercial sources that are unwilling or unable to comply with federal procurement regulations." OTAs are intended to provide the government with solutions from both traditional and nontraditional defense contractors (NDCs). NDCs often bring fresh perspectives, tools, or technologies that are not readily available in the conventional defense industrial base. The popular narrative is that by employing OTAs, the government can form flexible teaming arrangements that are uniquely structured to align with the specifications and demands of individual projects (Office of the Inspector General [OIG], 2022, p. 1). Such flexibility has resulted in innovative solutions tailored to the agency's urgent needs. This



was evident in the case of the Mine-Resistant Ambush Protected (MRAP) vehicle OTA, as its progression from R&D to production took just 90 days, compared to the usual 18- to 24-month FAR/DFARS acquisition cycle (Dobriansky & O'Farrell, 2018). However, the urgency to field the MRAP prototype came at the expense of design considerations for all potential use cases, resulting in vehicles that were prone to rollovers in uneven terrain and proved hazardous in amphibious operations (Eapen & Finkenstadt, 2023, p. 309).

OTAs within the DoD are governed by two parts of the U.S. Code: 10 U.S.C. § 4021 (formerly § 2371) for research projects and 10 U.S.C. § 4022 (formerly § 2371b) for prototype projects. The first part, 10 U.S.C. § 4021 facilitates OTAs for various research stages. The DoD OT Guide notes that these agreements aim to promote dual-use R&D while minimizing regulatory burdens for companies, helping them remain competitive in non-defense markets (OUSD[A&S], 2023, pp. 4–5). Established defense contractors are motivated to participate in research OTs, especially to integrate commercial practices, expand into non-defense sectors, or collaborate with NDCs. Meanwhile, 10 U.S.C. § 4022 provides for OTAs to develop prototype projects, with provisions for these prototypes to advance into production OTs (Authority of the Department of Defense to Carry out Certain Prototype Projects, 2021). This transition to production OTs is allowed under the same code subparagraph (f), given that the prototype OT was awarded through a competitive process and met its objectives successfully (DoD, 2018, p. 7).

An agreement officer (AO) is responsible for awarding, administering, and terminating OTAs. As outlined in the DoD OT Guide, an AO is a certified individual empowered to initiate, manage, or end OTs (OUSD[A&S], 2023, p. 34). Candidates for AO positions are expected to demonstrate a high level of responsibility, business insight, and the ability to make decisions in the comparatively flexible framework of OTs. It's not mandatory for AOs to be contracting officers unless specified by their department's selection criteria. Furthermore, the 2018 NDAA, in Section 863, mandates comprehensive training and education for personnel engaged in managing non-contractual, non-grant transactions in the DoD (NDAA, 2017, p. 213). Recent evidence



shows that, to date, training has not proliferated throughout the acquisition communities that are not directly awarding or administering them (Barringer & Miles, 2021).

The memorandum from the Under Secretary of Defense for Acquisition and Sustainment (2018) titled *Authority for Use of Other Transactions for Prototype Projects Under 10, United States Code, Section 2371b*, dated November 20, 2018, emphasized the importance for organizations with OT authority to make sure that AOs are properly assigned by the relevant head of contracting activity and receive the necessary training. It is crucial for these entities to develop and implement controls to prevent AOs from engaging the government in OT agreements that exceed their authorized limits. In accordance with Department of the Air Force Federal Acquisition Regulation Supplement (DAFFARS), only four senior contracting officials have the authority to appoint AOs (DAFFARS MP5301.601(a)(i), 2023). These officials include the contracting directors for Headquarters Air Force Material Command, Space Systems Command, Air Force District of Washington Contracting Directorate, and the Air Force Installation Contracting Center's Air Force Academy operating location.

B. WHAT IS A FAR-BASED RESEARCH AND DEVELOPMENT CONTRACT?

The FAR provides policies and procedures for contracting by federal agencies. FAR Part 35 (2023) governs R&D contracting. FAR 35.001 (2023) defines applied research as

the effort that normally follows basic research but may not be severable from the related basic research; attempts to determine and exploit the potential of scientific discoveries or improvements in technology, materials, processes, methods, devices, or techniques; and attempts to advance the state of the art.

Additionally, FAR 35.001 (2023) defines development as

the systematic use of scientific and technical knowledge in the design, development, testing, or evaluation of a potential new product or service (or of an improvement in an existing product or service) to meet specific performance requirements or objectives. It includes the functions of design engineering, prototyping, and engineering testing; it excludes subcontracted technical effort that is for the sole purpose of developing an additional source for an existing product.



FAR 35.002 (2023) states that the main objectives of R&D contracts are to advance scientific and technical knowledge and use this expertise to achieve both organizational and national goals. This federal regulation notes the distinction between R&D contracts and standard contracts for goods and services, highlighting that R&D projects often start with objectives that are not completely specified due to inherent uncertainties. Assessing the success probability and the effort required for certain technical approaches in R&D can be difficult, and some contracts in this area may not initially seem promising. The contract process is designed to attract leading professionals from the scientific and business communities to participate in these projects, while also creating a system that allows for flexible implementation with minimal administrative constraints (FAR 35.002, 2023).

C. WHAT ARE THE OPENLY KNOWN SIMILARITIES BETWEEN FAR-BASED CONTRACTS AND OTAS?

Both FAR-based R&D contracts and OTA agreements serve as legal, valid contracts used by the DoD to foster innovation and research (OUSD[A&S], 2023, p. 43). Central to both contractual designs are the engagement of diverse participants, from commercial and nontraditional defense contractors to academic institutions, with the intention of developing cutting-edge technologies and solutions. These instruments are intended to be tailored to meet the government's shifting needs and seek to draw in and incorporate innovative talents into the defense industrial base (OUSD[A&S], 2023, p. 4). Although OTAs are frequently praised for their flexibility, FAR-based R&D contracts are not rigid either; rather, they embody adaptability, particularly in their work statements, which cater to the unpredictable nature of research. This flexibility is geared towards empowering contractors with the latitude to innovate, prioritizing the attainment of specific knowledge and objectives over achieving predetermined end results (FAR 35.005, 2023). This cooperative spirit ensures that the results not only embody innovation but also resonate with the government's goals, realized through consistent interactions, reviews, and milestone checks.

A key similarity in both FAR-based R&D contracts and OTAs is the requirement for competition, even if OTAs allow greater flexibility on competitive approaches. The



Competition in Contracting Act (CICA, 1984, p. 682) requires government entities to guarantee full and open competition by choosing the most suitable competitive procedures for every distinct procurement process. This is key to achieving the best value in contracts for property or services. Additionally, for FAR-based R&D contracts, FAR 6.101 (2023) stipulates that contracting officers are responsible for fostering an environment of full and open competition. They must select competitive procedures that align with the efficient fulfillment of government requirements during the solicitation and awarding of contracts. On the other hand, while the DoD OT Guide does not require strict adherence to the formal competition procedures delineated in the CICA and FAR, it does underscore the importance of incorporating competitive practices in OTAs to the maximum extent possible (OUSD[A&S], 2023, p. 44). Agencies have the flexibility to tailor the type and structure of competition conducted under OTA authority to suit their needs. Concurrently, 10 U.S.C. § 4022 facilitates the subsequent manufacturing of prototype initiatives, contingent upon the use of competitive methods for participant selection during the solicitation phase.

Both FAR-based R&D contracts and OTAs offer avenues for negotiating intellectual property (IP) rights, albeit with distinct processes in play. Under the guidelines of FAR 27.4 (2023) and DFARS 227.71 (2023), contracting officers are afforded the flexibility to strike a balance between securing the government's rights to use and disclose innovative technologies emanating from the contract, and duly rewarding contractors for their investment in IP development. To this end, they may employ mechanisms such as the FAR 52.227-14 (2014), Rights in Data—General, or DFARS 252.227-7013 (2023), Rights in Technical Data—Other Than Commercial Products and Commercial Services, clauses. These provisions aim to safeguard the government's rights to utilize IP developed under the contract for governmental purposes, all while upholding the contractor's rights to commercialize their innovations. On a parallel note, OTAs offer a more flexible framework for negotiating IP rights, fostering a collaborative space for the government and nontraditional contractors to tailor terms in alignment with specific prototype project objectives (OUSD[A&S], 2023, p. 20). This stands in contrast to traditional government contracts, which typically exhibit more rigid constraints in IP negotiations. Notably, standard FAR IP clauses do not automatically



apply to OTAs, paving the way for more nuanced, reciprocal discussions aimed at achieving mutually beneficial outcomes in IP rights.

Additionally, both contract types support shared cost structures and advanced payments to apportion risks appropriately. Shared cost structures can be present in both types of agreements, where the government and the contractor share the costs of the R&D effort (FAR 35.003, 2023). With both government and industry having a financial stake, there is an increased emphasis on transparency, responsible use of funds, and achieving milestones, ensuring taxpayer money is used efficiently. Advanced payments are also common, allowing payments on prime contracts and subcontracts for experiments, research, or development work with nonprofit educational or research institutions (FAR 32.403, 2023). This structure serves as a vital incentive for companies embarking on potentially risky R&D projects with considerable upfront expenses, offering financial backing even in the absence of immediate tangible outcomes.

Furthermore, both contract types must adhere to Section 889(a)(1)(B) of the John S. McCain NDAA for FY 2019 (2018). This section restricts executive agencies from initiating, continuing, or renewing agreements with entities that employ systems, equipment, or services incorporating covered telecommunications equipment or services as critical technology or a significant component of the system. Per the OUSD(A&S) policy memorandum, all FAR-based solicitations and OTA solicitations for prototype projects issued on or after this date must include FAR 52.204-24, Representation Regarding Certain Telecommunications and Video Surveillance Services or Equipment (Herrington, 2020). Likewise, all FAR-based contracts and OTA agreements for prototyping projects should incorporate FAR 52.204-25, Prohibition on Contracting for Certain Telecommunications and Video Surveillance Services or Equipment (Herrington, 2020).

D. WHAT ARE THE OPENLY KNOWN DIFFERENCES BETWEEN FAR-BASED CONTRACTS AND OTAS?

A key difference between FAR-based contracts and OTAs is their regulatory framework. While FAR-based contracts adhere to the strict guidelines of the FAR and its supplements, OTAs are governed by 10 U.S.C. § 4021 for research and 10 U.S.C. § 4022



for prototyping. OTAs were established to provide the DoD with the necessary flexibility to integrate business practices aligned with the commercial industry's standards and best practices in its award mechanisms (OUSD[A&S], 2023, p. 4). OTAs enjoy freedom from the comprehensive requirements present in the FAR or various statutes, with notable exceptions being the CICA, Contract Disputes Act, Bayh-Dole Act, Anti-Kickback Act, Cost Accounting Standards, and Truth in Negotiations Act (Halchin, 2011, pp. 19–21). This flexibility allows OTAs to foster new relationships, particularly with those reluctant to engage in FAR-based contracts. They broaden the government's industrial base by involving nontraditional contractors, encourage dual-use projects, and support the development of faster, more cost-effective, and adaptable project designs. Furthermore, OTAs facilitate collaboration with the commercial sector, ensuring DoD needs are integrated into emerging technologies and nurturing innovative partnerships (OUSD[A&S], 2023, pp. 4–5).

Furthermore, OTAs may also be executed through a consortium arrangement. The DoD OT Guide (2023) defines consortium as

a relationship between a government sponsor and a collection of traditional and non-traditional vendors, non-profit organizations, and academia aligned to a technology domain area (i.e., cyber, space, undersea, propulsion) that may be managed by a single entity or consortium member), focused on innovative solutions to government technology challenges that meet the intended scope and purpose of OTs. (p. 35)

The utilization of consortia for OTAs has grown beyond the scope of traditional federally funded R&D centers and universities, as specified in FAR 35.107 (2023), extending to a broader range of industry partners and nontraditional vendors. Consortia are often centered on particular technology areas such as hypersonics, cybersecurity, and electromagnetic spectrum technologies, aiming to deliver vital capabilities to military forces. One significant advantage of engaging with a consortium management firm via an OTA is the manager's ability to provide extra resources for tasks that would traditionally be managed by the government under a FAR-based contract. This collaborative model, dividing responsibilities and ensuring ongoing communication between the government



and the consortium, can lead to substantial time efficiencies (Advanced Technology International, 2019).

E. WHAT ARE THE POTENTIAL RISKS OF OTAS?

The utilization of OTAs, diverging from traditional contracting norms, has garnered significant attention in the realm of federal acquisition research. A distinguishing characteristic of OTAs is their detachment from the constraints imposed by the FAR and the multiple statutes that preside over FAR-based contracts. A 2019 report from the CRS highlighted that OTAs' reduced oversight and exemptions from certain laws and regulations may compromise the protection of government and taxpayer interests. The report further stated that some analysts have raised concerns over transparency and how OTs were being employed. One industry official emailed the CRS, stating, "OTs are a contracting method, not a substitute for good acquisition practices" (Schwartz & Peters, 2019, p. 8). Legislative responses have also mirrored these concerns. For instance, the Stom Thurmond NDAA for FY1999 (1998) highlighted congressional apprehensions, with an emphasis on ensuring that OTAs do not inadvertently subvert conventional management controls integral to the acquisition and budgetary trajectories. This sentiment was echoed 2 decades later in the FY2019 NDAA hearing report (H.R. Report No. 115-676, 2018), when Congress stated,

The committee also urges the Department to reiterate through established guidelines that OTA is not a means for circumventing appropriate use of the FARs, and that full and open competition should be used to the maximum extent possible to maintain a sense of integrity, fairness, and credibility in the Federal Procurement process. (pp. 75-76)

Transitioning to the purview of AOs and their role regarding OTAs, the DoD OT Guide highlights the expansive discretion accorded to AOs in formulating OTAs. Notably, the guide offers cautionary guidance against AOs resorting to the replication of preexisting OTAs, templates, or models, underscoring the potential pitfalls therein (OUSD[A&S], 2023, p. 9). It advocates for AOs to explore a wide range of business solutions, encompassing both standard government and commercial practices as well as novel strategies. However, the responsibility is on the AO to negotiate terms that suitably account for the risks that all parties might face in the project. It is crucial for the AO to



safeguard the government’s sovereign rights and ensure compliance with all relevant laws.

F. WHAT ARE THE FACTORS INFLUENCING FAR VERSUS OTA DECISION-MAKING?

Practically speaking, the government team must assess whether a research OT is the most suitable option for their program or if another OT type or a conventional award mechanism would better serve their needs. The primary consideration should be the end objective of the program. Many teams prematurely opt for an award vehicle, only to realize later that it does not align with their project’s needs. Some questions and considerations identified by Sidebottom et al. (n.d.) include:

- Are the primary goals of this program to improve the state-of-the-art in a field of research or advance the related technology? Are any items created or built during the program primarily intended for testing or validation, not delivery? If so, a Research OT is an appropriate choice. The fact that some items may be created or built during the program does not change the underlying goal of the program.
- If the primary goal and focus of the program is to create prototype items for delivery, the more appropriate choice of vehicles might be a Prototype OT or other more traditional vehicle.
- Research OT may be used to foster development of the best technologies for future defense needs. (Sidebottom et al., n.d., p. 7)

In 2020, the RAND Corporation undertook a case study titled *Prototyping Using Other Transactions* (Mayer et al., 2020). The objective behind this guide was to assist Air Force leaders in grasping how the department harnesses this authority. The researchers aimed to evaluate if the anticipated advantages were truly realized and to provide insights on enhancing the efficacy of OTs. The case study highlights that the decision to utilize an OTA depends on weighing the perceived benefits against the particular circumstances of the prototype project. The flexibility of OTAs can help access innovative solutions from nontraditional sources, tailor agreements, accelerate the process, and utilize cost-sharing. OTAs may be advantageous if the technical approach involves an exploratory, unproven concept that requires refinement. This aligns with the congressional intent to expand access to innovative technology. However, OTAs may not always achieve speed and efficiency when compared to traditional contracts. The funding stream available can also



influence OTA use. Overall, the factors above focus on leveraging OTA flexibility to attract nontraditional participation, enable tailored agreements, and potentially expedite the process to access innovative solutions.

While OTAs allow AOs the liberty to be flexible in their methodology without adhering to a standard set of mandatory regulations, there are certain considerations they ought to bear in mind. The DoD OT Guide (2023) provides a list of considerations the AO should contemplate when using a consortium or making a Prototype or Production OTA award to a consortium. These considerations include:

- How is the consortium structured? How will the structure facilitate the government's planned purpose?
- What is the business model for the consortium? Is there a consortium manager or a lead company? What functions will the lead company or consortium manager perform?
- What expertise or capability will the consortium provide to the government?
- What is the relationship between the consortium and the participants, and what are its implications for how the government will award and manage the OT? Are participants competitors or partners? How will work be distributed among participants?
- Is there an existing consortium available that meets the government's needs?
- How will the government monitor the consortium's performance? Are separate measures of performance appropriate for management of the consortium and for projects awarded under the umbrella of the consortium?
- How will the government ensure the 10 U.S.C. § 4022 statutory requirements are met? What oversight will be put in place to ensure compliance with the statute?
- What costs are associated with the consortium?
- In comparison to a standalone OT award, what benefits or challenges does the consortium award present? Is a consortium the best way to reach the optimal performers? (OUSD[A&S], 2023, pp. 46–48)

The literature review has highlighted the ongoing debate regarding the appropriate balance between standardized acquisition procedures under FAR-based contracts and the flexibility offered by OTAs. While existing scholarship recognizes that OTAs can improve access to innovation and accelerate prototyping, there remains limited empirical evidence on comparative outcomes and risks between FAR and OTA approaches. Our



methodology aims to help fill this knowledge gap through a mixed methods comparative analysis of recent Air Force contracting practices under both frameworks. By systematically evaluating matched sets of FAR contracts and OTAs, we intend to provide data-driven insights on the benefits, structural distinctions, and risks associated with each contract vehicle. The goal is to establish an empirical baseline to guide further inquiry and inform policy discussions on aligning contract selection strategies to program needs.



III. METHODOLOGY

The methodology chapter provides clarification on the procedure and intent behind the comprehensive data gathering process. The methodology formulation was guided by literature as well as the primary and secondary research questions. In this research, we employed a mixed methods approach using qualitative content analysis and systematic comparison to analyze and compare FAR-based contracts and OTAs.

A. DATA COLLECTION

Contract files were collected using official contract award records from DARPA, military services, and other components. Additional reports were retrieved from DoD public repositories such as the Federal Procurement Data System–Next Generation and the Electronic Document Access. While the reporting systems provided a substantial amount of contract data, we also gathered contract documents directly from acquisition professionals using convenience sampling to ensure comprehensive coverage and access to details beyond what is contained within the reporting systems. Our dataset spanned from 2010 to 2020, which allowed us to capture a robust and recent trend analysis over a 10-year period. We included only contracts relevant to the defense sector, and we excluded any outlying commercial contracts to keep the focus on defense-related needs. Due to the limited public availability of OTA contract documents, our final sample was restricted to six sets of OTAs and their closest FAR equivalents that we were able to obtain through our professional network, which provided matched sample pairs amenable to analysis and comparison. The final datasets provided a targeted sample covering six sets of OTAs relevant for our analysis and comparisons. In addition to the quantitative contract data, we collected policy documents, congressional testimony, and industry reports to provide qualitative context on OTA and FAR contracting approaches. This supplementary data offered insights into the implementation, oversight, benefits, and risks of the two mechanisms.



B. SYSTEMATIC COMPARISON

We conducted a systematic comparison of FAR-based contracts and OTAs using an Excel dataset encompassing six sets of FAR-based contracts and OTAs from 2010 to 2020. A systematic comparison involves using an organized, structured approach to compare multiple data points between two or more groups (Uman, 2011). We developed a data matrix of comparative factors using Excel. Each row within the dataset represents one contractual observation, with columns capturing attributes such as contract type, total contract value, product service code, contractor name, government activity, essential contract elements, and Uniform Contract Format (UCF) Sections A through J (table 1 below).

FAR-based contracts and OTAs were paired together for comparison based on similarities in dollar value ranges and industry codes. Variables were selected for inclusion based on their ability to illuminate differences and similarities between FAR and OTA approaches, as determined through the qualitative content analysis methodology (Uman, 2011). This enabled an equivalent comparison of the two mechanisms based on like requirements and scope of value. Binary coded values were used within the dataset to quantify the presence (1) or absence (0) of certain contract elements, such as adequacy of consideration, legality, and inclusion of particular FAR UCF sections.

The Excel dataset included a tab listing assumptions stated for the inclusion and exclusion of certain variables from the comparative analysis. Another tab provided comprehensive definitions of each variable used in the dataset, with cited references supporting the definitions. The definitions are identified in Table 1.



Table 1. Uniform Contract Format Definitions. Source: FAR 15.204 (2023).

Section	Definition
Section A – Solicitation/ Contract Form	<p>(1) Optional Form (OF) 308, Solicitation and Offer-Negotiated Acquisition, or Standard Form (SF) 33, Solicitation, Offer and Award, may be used to prepare [request for proposals].</p> <p>(2) When other than OF 308 or SF 33 is used, include the following information on the first page of the solicitation:</p> <ul style="list-style-type: none"> (i) Name, address, and location of issuing activity, including room and building where proposals or information must be submitted. (ii) Solicitation number. (iii) Date of issuance. (iv) Closing date and time. (v) Number of pages. (vi) Requisition or other purchase authority. (vii) Brief description of item or service. (viii) Requirement for the offeror to provide its name and complete address, including street, city, county, state, and ZIP code, and electronic address (including facsimile address), if appropriate. (ix) Offer expiration date.
Section B – Supplies or Services and Prices/Costs	<p>Include a brief description of the supplies or services; (e.g., item number, national stock number/part number if applicable, nouns, nomenclature, and quantities. (This includes incidental deliverables such as manuals and reports.)</p>
Section C – Description/ Specifications/Statement of Work	<p>Include any description or specifications needed in addition to Section B.</p>
Section D – Packaging and Marking	<p>Provide packaging, packing, preservation, and marking requirements, if any.</p>
Section E – Inspection and Acceptance	<p>Include inspection, acceptance, quality assurance, and reliability requirements.</p>
Section F – Deliveries or Performance	<p>Specify the requirements for time, place, and method of delivery or performance.</p>



Section	Definition
Section G – Contract Administration Data	Include any required accounting and appropriation data and any required contract administration information or instructions other than those on the solicitation form. Include a statement that the offeror should include the payment address in the proposal if it is different from that shown for the offeror.
Section H – Special Contract Requirements	Include a clear statement of any special contract requirements that are not included in Section I or in other sections of the uniform contract format.
Section I – Contract Clauses	The contracting officer shall include in this section the clauses required by law or by this regulation and any additional clauses expected to be included in any resulting contract, if these clauses are not required in any other section of the uniform contract format. An index may be inserted if this section’s format is particularly complex.
Section J – List of Attachments	The contracting officer shall list the title, date, and number of pages for each attached document, exhibit, and other attachment. Cross-references to material in other sections may be inserted, as appropriate.

The dataset structure allowed for a descriptive statistical analysis using Excel functions to calculate descriptive statistics to encapsulate overarching trends. Excel filtering, pivot tables, and data visualization functions enabled analysis of trends over the 10-year period, such as shifts in usage of particular contract types and elements. The dataset provided an organized framework for statistical and visual comparative analysis between matched FAR-based contracts and OTAs.

C. MACRO- VERSUS MICRO-LEVEL COMPARISONS

We engaged in both macro-level and micro-level comparative analyses to analyze the differences and similarities between FAR-based contracts and OTAs. Starting with the macro-level, we carried out a comprehensive descriptive statistical analysis, comparing all instances of FAR-based contracts to all instances of OTAs collectively. This broad overview furnished us with a generalized snapshot, capturing the overarching



trends and patterns across the entirety of both contract types. It allowed us to quantify the occurrence of specific elements, noting their inclusion or exclusion across the FAR-based contract and OTA samples, while abstracting away from the details of individual agreements. This approach yielded valuable insights into the overarching trends governing these two mechanisms.

Shifting our focus to the micro-level, our analysis focused on detailed, pairwise comparisons between carefully matched individual FAR-based contracts and OTAs. These pairs were intentionally selected based on specific criteria, such as comparable contract dollar values or North American Industry Classification System (NAICS) industry classification codes. We resorted to using NAICS codes for this pairing due to the unavailability of specific product service code (PSC) data in the executed contract samples from the early acquisition stages. While PSC codes would have been preferable for a more precise matching based on scope, our approach still ensured a valid comparison by aligning contracts based on industry, which is generally highly correlated with business size and product or service scope. The General Services Administration suggests that this method provides a reliable basis for matching, particularly when considering products or services (General Services Administration, n.d.). This meticulous micro-level matching facilitated an equivalent comparison of FAR-based contracts and OTAs, ensuring that each pair was aligned based on similar criteria. By integrating both macro- and micro-level analyses, our approach provided a comprehensive understanding of the FAR-based contracts and OTAs, highlighting both general trends and specific nuances, and capturing the intricacies of these two contractual mechanisms.

D. CONTENT ANALYSIS

We employed a qualitative content analysis methodology to scrutinize and draw comparisons between the language used in FAR-based contracts and OTAs. Content analysis is a systematic approach for identifying and categorizing themes and concepts within qualitative data (Elo et al., 2014). To probe into the language of FAR-based contracts and OTAs, we utilized Artificial Intelligence (AI) Large Language Models, specifically the ClaudeAI assistant. This tool facilitated an in-depth exploratory analysis,



comparing the phrasing and composition of a sample contract clause from a FAR-based contract with a corresponding article from an OTA that covered a similar subject matter.

The ClaudeAI assistant examined the semantic, syntactic, and structural variations between the FAR clause and the OTA article, assessing elements such as terminology, grammar constructs, sentence structure, organizational flow, and other linguistic attributes. This methodical approach ensured a comprehensive understanding of the textual components, enabling the identification of similarities and differences at various levels. As highlighted by Zertuche (2023), ClaudeAI is powered by advanced natural language processing capabilities, allowing it to analyze textual nuances, connect different sections, evaluate inconsistencies, and understand documents in their entirety. This capability ensured a prompt and thorough analysis, providing valuable insights into the language used in these two types of contracts. However, it is important to exercise caution when utilizing ClaudeAI assistant and other AI Large Language Models, as there is a risk of encountering hallucinations, which can lead to the generation of inaccurate or nonsensical information (Tam, 2023). Therefore, it is imperative to meticulously review and cross-verify ClaudeAI's findings with expert human judgment. Implementing this dual approach ensures the optimal use of ClaudeAI's insights, while also protecting against any inaccuracies introduced during the analysis process.



IV. DATA AND ANALYSIS

The data and analysis chapter builds a crucial connection in this research by transforming the comprehensive data gathered into meaningful insights that provide answers to our central research questions. By building upon the mixed methods approach outlined in the methodology chapter, encompassing qualitative content analysis and systematic comparison, this section lays out findings from our comparison of FAR contracts and OTAs. We dissected the complexities and nuances of these contracting mechanisms, aiming to furnish a clear and comprehensive understanding of their characteristics, differences, and similarities. Shaped by the primary and secondary research questions guiding this study, we structured the analysis to address the complex dimensions of FAR and OTA contracts. Through this comprehensive analysis, we sought to significantly enrich the academic conversation surrounding government contracting by offering deep and well-founded insights anchored in empirical data, while also ensuring they are the product of careful and considerate examination.

A. SYSTEMATIC COMPARISON

We conducted a systematic comparison between FAR-based contracts and OTAs, utilizing an Excel dataset that covered six distinct sets of contract actions. This dataset was rich in parameters, meticulously designed to shed light on both the contrasts and parallels between these two contractual mechanisms. For the purpose of our comparison, we captured a variety of key variables in the dataset, including

- **Contract Type:** Distinguished between FAR and OTA
- **Requirement Type:** Categories such as experimental, prototype, R&D, and service
- **Total Contract Value:** Aggregated monetary value
- **PSC:** Included when available
- **Elements of a Legal Contract:** Mutual assent, valid offer, valid acceptance, adequate consideration, capacity, and legality
- **UCF:** Sections A through J

We employed binary coding for numerous variables, assigning a “1” or “0” to denote the presence or absence of specific contract elements. This binary system



facilitated a quantitative approach, allowing us to draw comparisons across our samples with ease. The dataset's structure was instrumental in calculating descriptive statistics to encapsulate overarching trends. Our analysis revealed a mean contract value of \$16,166,099.00 for FAR-based contracts and a significantly higher \$123,256,904.20 for OTAs. However, the OTA mean is skewed by a single high-value \$102 million outlier consortia agreement. Therefore, to more accurately reflect typical contract values, we compared the median values. The median FAR contract value was \$1,599,040.00 while the median OTA contract value was \$4,786,814.50. The use of medians neutralizes the outsized impact of outliers evident in the means. Nonetheless, even excluding the outlier, the median OTA value remains higher than the median FAR value, indicating typically larger contract sizes. Furthermore, we harnessed the power of Excel's filtering and pivot table functionalities to scrutinize trends and shifts occurring over the 2010–2020 decade. This comparison yielded a structured framework, fostering both statistical and visual comparative analyses. By matching FAR-based contract and OTA observations on a one-to-one basis, we ensured a balanced and equivalent comparison grounded in similar criteria. In essence, the dataset served as a powerful tool, enabling us to systematically quantify and illuminate the macro-level similarities and differences inherent between these two contractual frameworks.

B. MACRO-LEVEL FINDINGS

In this section, we present the findings from our extensive macro-level comparative analysis, scrutinizing the nuances of six FAR-based contracts alongside six OTAs. Through a holistic examination of all available observations, we have crafted a detailed overview, highlighting the extensive differences and commonalities inherent to these two distinct types of contractual agreements. This broad perspective enables a thorough understanding of the distribution of specific elements within both FAR-based contracts and OTAs, ensuring a balanced and insightful analysis. The subsequent discussion sheds light on prevailing trends, unveiling the fundamental patterns that serve to distinguish and define these two forms of contracting, while also offering an overarching insight into their systemic attributes.



Figure 1 presents a comparative analysis of six FAR-based contracts and six OTAs in relation to the UCF. A close examination reveals that Sections A (Solicitation/Contract Form), B (Supplies or Services & Prices/Costs), C (Description/Specifications/Statement of Work), F (Deliveries or Performance), and G (Contract Administration Data) of the UCF experience universal compliance across all FAR-based contracts and OTA agreements, showcasing a unanimous adherence in these areas. However, a divergence becomes apparent in Section D (Packaging & Marking), where four FAR-based contracts maintain compliance, in stark contrast to the OTA agreements, which exhibit no adherence. Strikingly, the OTA agreements do not make any mention of delivery terms, despite the clear identification of deliverables in their respective agreements. Two of the FAR-based contracts and two of the OTAs were for service requirements and would not incorporate deliveries that require packing and marking, adding another layer to the observed differences. Further disparity is observed in Section E (Inspection & Acceptance), with full compliance from FAR-based contracts, whereas only half of the OTA agreements conform.

Of the FAR-based contracts reviewed, only one included Section H (Special Contract Requirements), showcasing its unique adherence to this specific contractual provision. OTAs do not require a distinct Section H since they act as customized agreements overall, with flexible terms and conditions designed to address the particular needs at hand, negating the need for segregated special requirements. This highlights the uniqueness of that particular FAR-based contract in addressing these specialized requirements, without necessarily implying a compliance issue. Moreover, Section I (Contract Clauses) highlights another stark distinction: while all FAR-based contracts comply, only a third of OTA agreements adhere, underscoring the significant divergence in the integration of contract clauses. The data indicates variability in the levels of compliance between FAR-based contracts and OTA agreements across different sections of the UCF, hinting at potential differences in contractual structures and requirements.



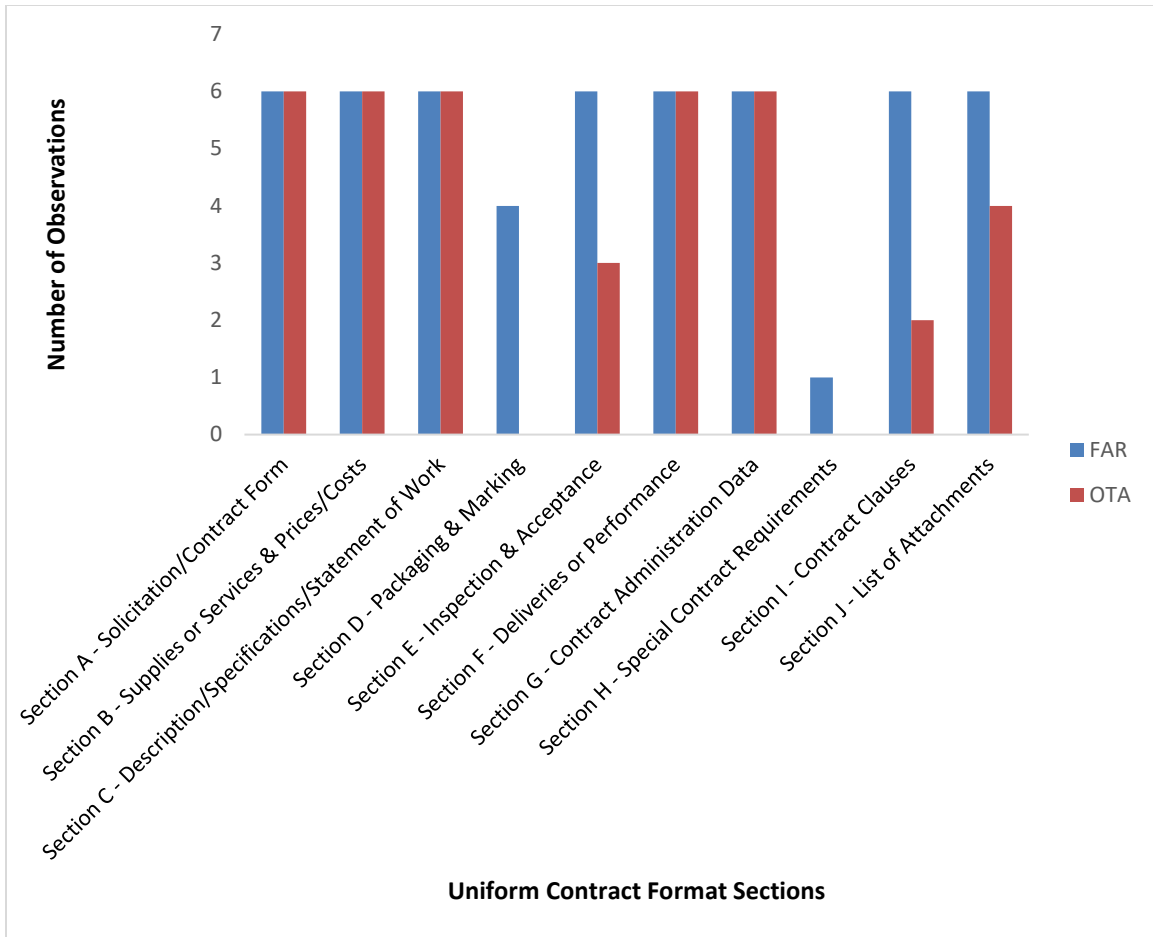


Figure 1. UCF Section Observations by Contract Type

Figure 2 presents a comparative analysis of contract requirement types across six FAR-based contracts and six OTAs. In the FAR-based contracts, there is a predominant focus on R&D, with four instances, complemented by two service type contract actions. On the other hand, the OTAs display a more diverse distribution: one experimental, two prototyping, one R&D, and two service type contract actions. This variety in OTA contracts showcases a broader range of applications and flexibility in addressing different types of requirements compared to the FAR-based contracts.

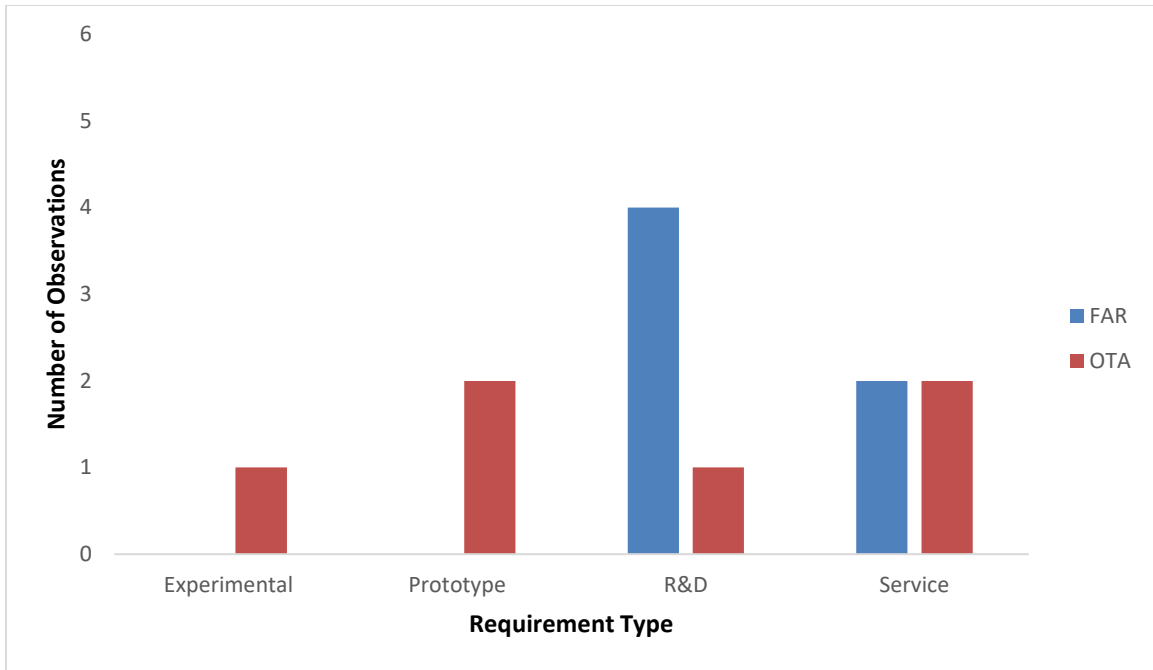


Figure 2. Requirement Type Observations by Contract Type

Figure 3 displays a comparative analysis of six FAR-based contracts and six OTAs, focusing on the contract reimbursement types. Within the FAR-based contracts, the distribution includes one Cost, one Cost-Plus-Fixed-Fee, and four Firm-Fixed Price reimbursement type contracts. Conversely, all six OTAs fall under the Firm-Fixed Price reimbursement category. This data highlights a clear preference for Firm-Fixed Price contracts across both FAR-based contracts and OTAs, though it also illustrates that Cost and Cost-Plus-Fixed-Fee contracts are exclusive to FAR-based arrangements in this dataset. It is important to note that the OTAs were more difficult to obtain than publicly available FAR-based contracts, so the trends observed are only relative to the current sample. The balanced distribution between FAR-based contracts and OTAs, totaling twelve contracts, provides a glimpse into reimbursement arrangement practices, offering some insight despite the limited sample size. However, more research is needed with larger samples to determine if the trends generalize more broadly.

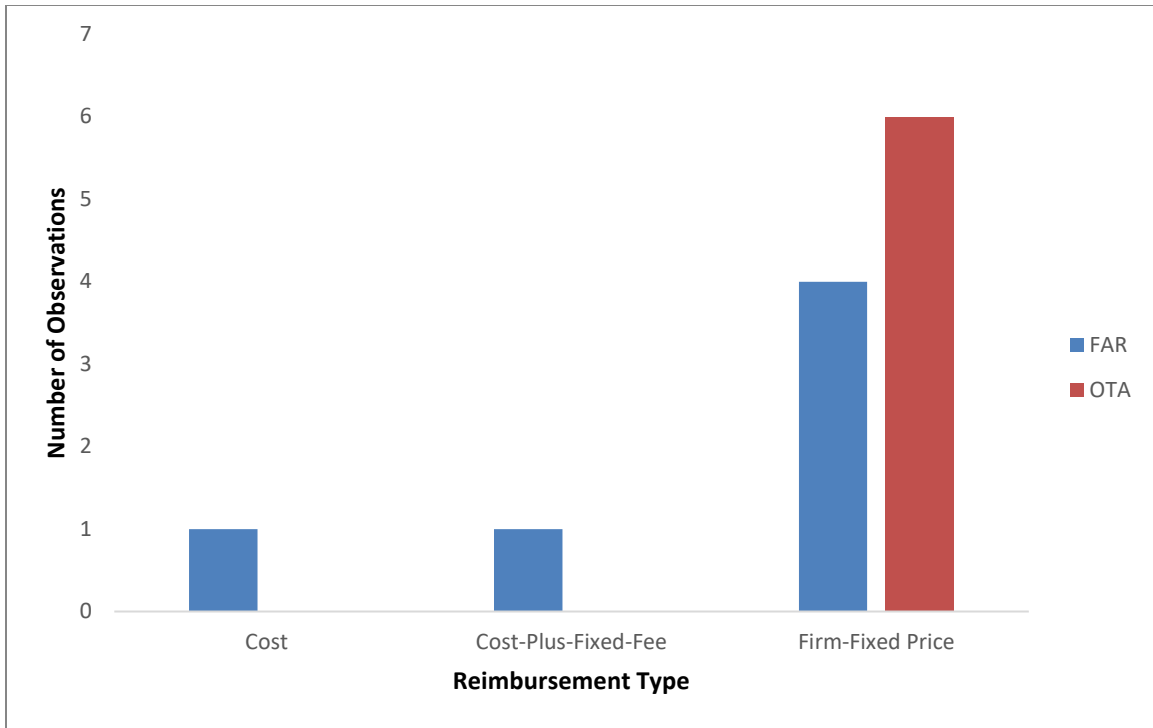


Figure 3. Reimbursement Type Observations by Contract Type

Figure 4 displays a pairwise comparative analysis of six sets of FAR-based contracts and OTAs, showcasing their total values across different sets, represented by row labels 1 to 6. The chart describes that the FAR-based contracts vary significantly in value, ranging from a low of \$149,953 to a high of \$6,214,485, demonstrating a diverse set of financial engagements. On the other hand, OTAs display a more consistent range, though they also exhibit variability, with values ranging from approximately \$4.4 million to \$102 million. Notably, the first pairwise comparison identified the greatest disparity between the two contract types due to the limitations in obtaining OTAs from contracting professionals. The purpose of this figure is to convey the variety of contracts captured in the sample, reflecting a variety of types and values within the dataset, without drawing any inferential conclusions on the nature or efficacy of OTA types or values.

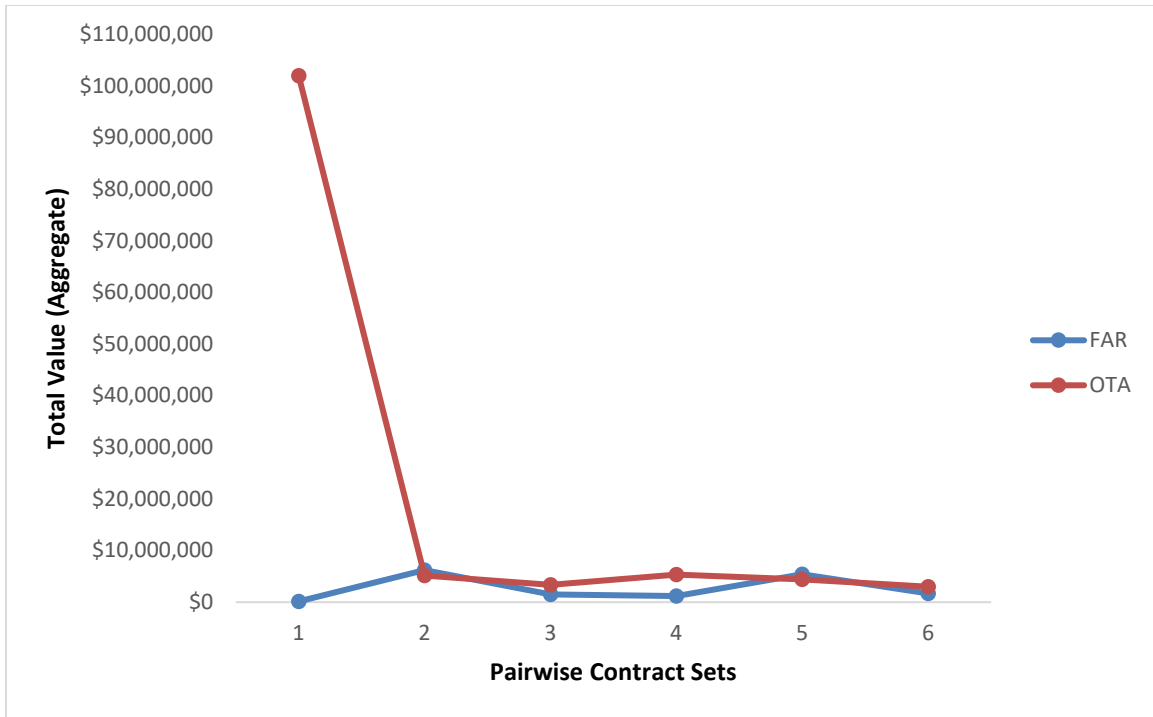


Figure 4. Pairwise Contract Set Comparisons by Total Value

Figure 5 displays a comparative analysis of six FAR-based contracts and six OTAs, identifying the compliance with the six basic elements of a legal contract: (a) mutual assent expressed by a (b) valid offer and (c) acceptance, (d) adequate consideration, (e) capacity, and (f) legality (Legal Information Institute, n.d.). All six FAR-based contracts and six OTAs met the criteria for a legal binding contract action in accordance with legal definitions. This indicates a complete adherence to legal contract standards, showcasing a high level of compliance and legal integrity in the execution of these contracts.



Figure 5. Legal Contract Element Observations by Contract Type

C. MICRO-LEVEL FINDINGS

In the micro-level analysis, we conducted detailed pairwise comparisons, aligning six FAR-based contracts with six OTAs, ensuring deliberate and thoughtful matching. Our initial ventures into one-to-one comparative analysis were manifested in the first two pairings. These early attempts underscored that relying solely on contract value as a matching criterion was inadequate; the first OTA agreement’s value exceeded that of the FAR-based contract by over \$100 million, introducing a stark disparity that complicated the task of making an equivalent comparison.

These initial pairings were instrumental in guiding our methodology, leading us to the realization that utilizing industry classification codes and ensuring closer alignment in dollar values provided a more robust basis for comparison. Nevertheless, we encountered challenges stemming from transparency gaps and disparate reporting requirements between the two mechanisms, posing limitations to the feasibility of conducting a side-by-side, in-depth analysis. These factors, in turn, affected the interpretability of our micro-level pairwise comparisons. To mitigate this concern, we carefully matched each FAR-based contract with an OTA on a one-to-one basis for our micro-level analysis,

taking into consideration similar dollar values and NAICS codes. Specifically, we opted for NAICS Code 541715, which pertains to R&D in the Physical, Engineering, and Life Sciences (excluding Nanotechnology and Biotechnology), as it provided a close alignment between the FAR-based contracts and the OTAs.

In terms of time span, our dataset spanned a decade, from 2010 to 2020, though it is not without its gaps. While certain years within this range are underrepresented due to a scarcity of relevant defense contracts and OTAs, we strived to prioritize the inclusion of more recent agreements from the last 5 years. This approach was taken with the aim of, again, offering a contemporary comparison between FAR-based contracts and OTAs.

Despite these challenges, valuable insights were gleaned from the matched pairs. A recurring theme across multiple OTAs was the omission of FAR-mandated instructions pertaining to the delivery and submission of reports and deliverables. The OTAs often lacked clear specifications regarding packaging, marking, and delivery instructions, and the criteria for inspection and acceptance were frequently ambiguous or entirely absent, in stark contrast to the clearly delineated processes in the corresponding FAR-based contracts. Although the matched pairs were reasonably well-aligned in terms of dollar values and industry classifications, the micro-level comparisons still laid bare the gaps in requirement definitions within the OTAs. This analysis led us to infer that in certain areas, such as deliverables, acceptance, and data rights, OTAs might have opted to trade away clear specificity for open flexibility. Specificity in contractual governance can reach an optimum, and generally follows an inverted-U function (i.e., there is a limit as to how much specificity is needed) based on behavioral and environmental uncertainty (Krishnan et al., 2016). We are unable to account for those levels of uncertainty to draw conclusions as to whether or not this trade of flexibility over specifics is warranted. However, we note it here for completeness.

D. CONTENT ANALYSIS

We utilized a qualitative content analysis methodology to scrutinize the contract language used in FAR-based contracts and OTAs. Leveraging the capabilities of the ClaudeAI assistant, we conducted an in-depth, exploratory textual analysis and compared FAR clauses with its corresponding OTA articles that covered similar subject matter,



taken from a matched set of contracts. The ClaudeAI assistant identified semantic, syntactic, and structural variations between the two texts, providing a comprehensive examination of phrases, terminology, grammar constructs, sentence structure, organizational flow, and other linguistic components. This analysis facilitated the identification of similarities and differences at various levels.

In our initial qualitative content analysis, we leveraged the capabilities of ClaudeAI. During this process, we uploaded a set of FAR-based contracts and OTAs into the website. Subsequently, we presented the following prompt to ClaudeAI:

I am a master's student working on my thesis, which involves a contextual analysis to compare and contrast FAR-based R&D contracts with OTA contracts. I am providing you with a document for each type of contract: Attachment 1 contains a FAR-based R&D contract, and Attachment 2 includes an OTA contract. Based on these documents, I would like you to conduct a detailed contextual analysis, focusing on the clauses in the FAR-based contract and the articles in the OTA contract, to identify similar key terms. Could you please present your findings in a side-by-side comparison format, highlighting the similarities in context between the two types of contracts?

ClaudeAI responded with insights derived from the qualitative content analysis, offering a comprehensive comparison between the FAR-based contract and OTA, exposing the similarities in key terms and contexts. The results of the first pairwise comparison set are summarized in Table 2.



Table 2. ClaudeAI Qualitative Content Analysis Results

Subject Area	FAR-Based Contract	OTA
Contract Structure	<ul style="list-style-type: none"> • Organized into sections (e.g., Section A – Solicitation/Contract Form, Section B – Supplies or Services and Prices/Costs, etc.). • Incorporates FAR clauses by reference and full text. 	<ul style="list-style-type: none"> • Organized into articles (e.g., Article 1 – Introduction and Definitions, Article 2 – Scope of Agreement, etc.). • Does not incorporate FAR clauses
Contract Purpose and Scope	<ul style="list-style-type: none"> • Section C describes the contract purpose as research, development, test, and evaluation for an advanced radar system • Provides detailed statement of work outlining specific tasks and performance requirements 	<ul style="list-style-type: none"> • Article 2 describes purpose as experimentation for a rocket cargo transportation service • Provides high-level statement of work focused on objectives and milestone demonstrations
Changes/Modifications	<ul style="list-style-type: none"> • Section E provides process for bilateral modifications 	<ul style="list-style-type: none"> • Article 5 provides process for bilateral modifications
Payment	<ul style="list-style-type: none"> • Section B provides detailed contract pricing and payment terms tied to completion of contract line item numbers (CLINs) • Section G provides detailed invoicing instructions 	<ul style="list-style-type: none"> • Attachment 3 provides milestone payment schedule tied to completion of milestone events • Article 6 provides high-level invoicing instructions
Data Rights	<ul style="list-style-type: none"> • Incorporates data rights FAR clauses by reference in Section I • Details specific data delivery requirements in Section D 	<ul style="list-style-type: none"> • Article 7 provides tailored data rights terms
Dispute Resolution	<ul style="list-style-type: none"> • Incorporates disputes FAR clause by reference in Section I 	<ul style="list-style-type: none"> • Article 15 provides dispute resolution procedures
Termination	<ul style="list-style-type: none"> • Incorporates FAR termination clauses by reference in Section I 	<ul style="list-style-type: none"> • Article 3 provides termination procedures

ClaudeAI also provided the following:

In summary, while both contracts cover similar subject matter, the FAR-based contract is structured around FAR requirements with detailed terms and statements of work. The OTA contract uses more flexible articles



tailored to the specific project, with less prescription and detail compared to the FAR-based contract. The key contexts are comparable but implemented through different frameworks.

To illustrate, a comparison between a FAR quality assurance clause and the related OTA section revealed that the OTA language was notably more ambiguous, particularly concerning the government's inspection and acceptance rights. While the FAR clause provided clear and explicit guidelines for the process, its OTA counterpart was markedly less specific. Furthermore, our exploratory content analysis brought to light instances in which certain FAR clauses were completely absent from the OTA, with the latter consistently omitting instructions related to the delivery and submission of reports, mandates that are typically enforced under FAR.

Through its advanced textual analysis capabilities, the ClaudeAI assistant systematically uncovered nuances in language and composition between the six sampled FAR and OTA excerpts. The results of our content analysis identified the gaps, ambiguities, and inconsistencies present in the contractual language of the two mechanisms. However, the reliability of the information on the remaining five pairwise content analysis was compromised after the assistant began to hallucinate post the initial analysis. Therefore, it's imperative to meticulously review and cross-verify ClaudeAI's findings with expert human judgment. Implementing this dual approach ensures the optimal use of ClaudeAI's insights, while also protecting against any inaccuracies introduced during the analysis process. By adopting such a balanced methodology, a more refined comparison of contractual language can be achieved, thereby enhancing the clarity and effectiveness of both FAR and OTA contracts.

Our research has unveiled key structural distinctions between FAR-based contracts and OTAs, through a systematic comparison and qualitative content analysis of a limited sample. While both models adhere to fundamental legal tenets and incorporate comparable core content, OTAs demonstrate greater latitude in requirements, oversight, and specificity to promote tailored flexibility. As we conclude our analysis, the subsequent section synthesizes our central findings, offering recommendations on optimizing the utilization and oversight of each contract vehicle based on their respective advantages. By summarizing the overarching results regarding similarities, differences,



benefits, limitations, and risks, we aim to provide data-driven insights to guide future acquisition decisions and contract selection tailored to particular program needs and maturity levels.



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V. SUMMARY, RECOMMENDATIONS, LIMITATIONS, AND CONCLUSIONS

This study systematically compared six matched sets of FAR contracts and OTAs from 2010–2020 to address two key research questions related to their similarities, differences, and associated risks. The analysis revealed noticeable yet nuanced distinctions between the contract types in areas like compliance, flexibility, and risk exposure.

Regarding our primary research question, “To what extent were OTAs and FAR-based contracts similar and different based on a systemic evaluation?,” both models adhered to fundamental legal tenets and incorporated comparable content related to key areas like statement of work, modifications, intellectual property, disputes, and termination. However, OTAs exhibited lower compliance rates for certain sections related to delivery, acceptance, and standardized clauses. While OTAs utilized ambiguity to enable flexibility, they included fundamentally similar information to FAR contracts through less standardized terminologies and frameworks. Ultimately, OTAs tended to focus on customized flexibility within U.S. Code guidelines, while FAR contracts highlighted strict compliance with federal regulations and procedural detail.

In terms of our supplemental research question, “What were the potential risks associated with OTA agreements compared to FAR contracts?,” the ambiguity and reduced oversight associated with OTAs imposes a potential compromise in the protection of government interests compared to extensive, more risk adverse FAR regulations. Requirements related to deliverables, data rights, and acceptance criteria were vague, exposing the government to greater performance and cost risks. Additionally, OTAs provided AOs with substantial discretion when negotiating flexible terms, which without proper training and controls could lead to inadequate risk mitigation. This analysis suggests that although OTAs offer valuable flexibility, they also pose increased accountability risks, warranting continued debate and scrutiny regarding their appropriate use and the acceptable level of associated risk.



In conclusion, while some differentiating elements emerged between FAR and OTA frameworks, the analysis did not uncover dramatic deviations in their fundamental purpose and content. However, this research established an evidence-based foundation to guide further inquiry into factors that may influence the more appropriate use of each contract vehicle based on programmatic needs and risk tolerance.

A. RECOMMENDATIONS

Based on the findings and comparative analysis outlined in this research, opportunities exist to optimize OTA utilization and oversight across the Air Force enterprise. By instituting data-driven frameworks, standardized processes, coordinated audits, immersive training, and general education models, OTAs can deliver enhanced value through responsible innovation and accountability. We put forth the following recommendations encompassing comparative analytics, metrics-based justifications, multi-agency audits, workforce development, and general familiarization to empower the Air Force to maximally employ OTA flexibility while upholding rigorous governance. If applied comprehensively, these measures will transform OTAs into a strategic force multiplier spurring exponential efficiencies, next-generation capabilities, and modern acquisition approaches through rigorous yet agile contracting tailoring and oversight.

1. Comparative Analyses of FAR and OTA Contracts

We recommend a continuation of comparative analyses be conducted within the Secretary of the Air Force for Acquisition—Contracting (SAF/AQC) Transformational Innovation directorate. These analyses should consist of comprehensive FAR and OTA data repositories, standardized data collection metrics, and designated analytical teams. The lack of such structured repositories and mechanisms for OTA data collection and analysis significantly constrained the depth and scope of our research, underscoring the necessity for these resources. By continuing research efforts to an extensive range of matched FAR and OTA pairs spanning programs and portfolios on key performance parameters, deeper insights can be generated on the efficacy of tailoring terms, waiving regulations, and generating value under each method. For instance, maintaining statistical metrics such as percentage of reused FAR clauses, number of waived FAR clauses,



demonstrated cost or schedule efficiencies gained from OTA flexibilities can help validate that OTAs offer clear added benefits versus traditional contracting approaches. Establishing robust comparative analysis capabilities requires substantial upfront investments of time and resources. The burden of manually collecting standardized OTA data and constructing structured reporting mechanisms requires extensive manual compilation efforts. Given our firsthand encounter of major constraints of accessing and evaluating OTA data throughout this research, substantial investments of time and dedicated resources for centralized data collection protocols will be imperative. However, the significant long-term payoffs from such analytics in optimizing OTA utilization and oversight will enable the tracking of metrics over time to identify opportunities and systemic deficiencies. To operationalize these analyses, the SAF/AQC Transformational Innovation directorate should oversee the coordination, collection, analysis, reporting and application of OTA insights Air Force wide. Comparative analytic efforts would enhance OTA utilization and oversight based on evidence-based recommendations.

2. Metrics Tracking and Justification Requirements for OTAs

We recommend implementing standardized metrics tracking and justification templates for all OTA awards to validate appropriate usage relative to FAR-based approaches. In line with the GAO 21–501 report recommendation 4, it is essential to focus on establishing and executing a structured method for the monitoring of OTAs, especially those relevant to events of national significance, along with tracking their related financial commitments (Mak, 2021, p. 52). Program Managers and AOs pursuing OTAs should submit formal justification documents articulating the specific innovations, cost savings, performance enhancements or other benefits expected from tailoring terms that could not reasonably be achieved by modifying a traditional FAR-based contract vehicle. These records would catalogue metrics like percentage of reused FAR clauses, number of waived clauses, quantitative efficiencies gained over FAR models, and qualitative benefits. Program managers may view the responsibility to establish standardized metrics tracking and justification templates, which involves manually compiling performance data and creating extensive documentation, as excessively administrative and could impede on the speed and efficiency which OTAs are designed to



provide. While inevitable resource investments will be required upfront, doing so will enable long-term and more streamlined evaluations of OTA usage and value. Furthermore, maintaining readily available evidence demonstrating OTA advantages provides data-driven rationale for approving official decisions while enhancing accountability and transparency.

3. Consistent Auditing of OTAs Across Oversight Bodies

Given concerns over abuse of flexibility provisions under OTAs, we recommend the implementation of a regular audit schedule, a coordinated analytical framework, and a congressional reporting process. These measures should encompass clear guidelines that mandate review criteria, frequency, responsible agencies, and required deliverables specific to OTAs. A 2021 DoD OIG report revealed that OTs often were not awarded in line with existing laws and regulations, a problem largely stemming from inadequate guidance and training (OIG, 2021, p. i). This audit was instrumental in identifying deficiencies in OTA practices, reinforcing the need for our recommendation of routine audits to ensure OTA actions comply with legal and regulatory standards. The focus of these audits should include verifying alignment with legislative authorities, doctrine, and regulations; assessing efficiencies achieved through tailored terms; and ensuring robust access controls and financial execution. The DoD can significantly enhance the consistency and effectiveness of OTA oversight, while also streamlining enterprise reporting processes, by establishing a uniform audit approach across organizations such as the OIG and Air Force Audit Agency and by adopting shared standards.

4. Expanded Workforce Education and Training on OTA Utilization

For the development of a comprehensive training program incorporating immersive learning methods to address the significant gaps in workforce expertise in managing OTAs as the DoD OIG audit identified (2021), we advocate that the USD(A&S) establish policy similar to DoD Instruction 5000.66 – Defense Acquisition Workforce Education, Training, Experience, and Career Development Program (OUSD[A&S], 2022). It is important to note that, as per the 2018 NDAA, there is currently no mandated training requirement for AOs, with the legislation only suggesting



that personnel “are afforded opportunities for adequate education and training” (NDAA, 2017, p. 251). The recommendation for an enhanced training program includes integrating online modules, in-person workshops led by subject matter experts, interactive case studies, and mentorship initiatives. The DoD OIG (2021) audit identified critical deficiencies in DoD contracting personnel’s approach, emphasizing inconsistencies in awarding OTAs, improper tracking of OTAs, and a general lack of structured guidance and training for managing OTAs. Moreover, the audit revealed a lack of consistent negotiation strategies for consortium management organization fees, indicating the need for tailored OTA training (OIG, 2021, p. i). Our proposal for mandated and enhanced training aims to build core OTA competencies throughout the enterprise, empowering program teams to exploit OTA flexibilities effectively while ensuring compliance with legal and regulatory obligations. Training and education curriculums should cover a broad spectrum of skills, including trade space analysis, customizing award terms for innovation, financial management, progress monitoring, and strategic transition planning, all designed to translate theoretical understanding into practical, actionable expertise.

5. General OTA Familiarization for Related Functional Areas

Given that OTAs impact diverse specialty fields from engineering to finance, familiarization modules customized by career field should be instituted across the enterprise. Training would encompass OTAs’ unique authorities, risks, benefits, and oversight needs while aligning concepts to the specific role. For example, test personnel would learn OTA-relevant model-based systems engineering guidelines and engineering best practices while finance folks would cover financial execution and audit protocols. Our recommendation aligns with GAO 19–556 report recommending the need for OUSD(A&S) to appoint a responsible official to create job specialty descriptions (DiNapoli, 2019, p. 28). The appointment will facilitate the identification of non-acquisition personnel who contribute to service acquisitions and to devise a timetable for this process. Additionally, it’s imperative for component acquisition executives to relay the training requirements of non-acquisition staff to the Defense Acquisition University, integrating this into the yearly cycle of planning, programming, budgeting, and execution



(DiNapoli, 2019, p. 28). By aligning introductory OTA concepts to occupational competencies, the wider acquisition corps is empowered to provide informed, coordinated insights on OTA decisions.

B. LIMITATIONS AND AREAS OF FURTHER RESEARCH

Our study encountered several limitations, particularly in terms of accessing comprehensive data on OTAs. Unlike FAR-based contracts, which are more readily accessible through public reporting systems, OTAs proved to be hard to find. We predominantly relied on convenience sampling methods, directly engaging with acquisition professionals to gather OTA documents. This approach, while practical, introduced a potential sampling bias, raising concerns about whether the OTAs in our dataset accurately represent the broader spectrum of such agreements. This problem was further exacerbated by the fact that many of the OTAs that were available exist within classified environments.

We also faced constraints in terms of sample size. Although our access to FAR-based contracts was extensive thanks to federal reporting systems, we had to limit our dataset to match the number of OTAs we were able to obtain, resulting in an equal number of FAR contracts and OTAs in our final sample. Each category comprised six contract actions. This limitation is noteworthy because the smaller OTA sample size could potentially impact the generalizability and interpretability of our findings.

The limitations we faced, encompassing issues related to OTA data access, sample size discrepancies, and intermittent year coverage, undoubtedly have implications for how our results should be interpreted. While we have made every effort to account for and control these limitations through careful methodology design and comparative framework development, they underscore the persistent difficulties associated with researching OTAs in comparison to FAR-based contracts. These challenges are primarily rooted in issues of data availability and transparency, highlighting the need for the development and exploration of additional data access and sampling strategies in future research endeavors to enhance the validity and generalizability of findings. Future research should explore more diverse sampling strategies and methods to enhance data availability, with the goal of strengthening the validity and breadth of research outcomes.



C. CONCLUSION

In undertaking this research, our goal was to impartially examine and compare FAR contracts and OTAs to inform acquisition professionals' decision-making processes regarding the selection of an appropriate contract vehicle for certain requirements. Our aim was to shed light on the structural differences and similarities between the two methods by identifying variations in language, compliance, flexibility, specificity, and other attributes. While our analysis did not uncover significant differences in the core purposes of FAR and OTA contracts, we highlighted notable distinctions in areas like oversight processes, standardization of terminology, adherence to uniform formats, and accommodation of diverse requirement types. By taking a holistic view, our study sought to establish an empirical baseline regarding the characteristics, appropriate applications, benefits, and limitations inherent in both contract vehicles.

Through this comprehensive comparative analysis, our findings revealed clear patterns in how OTAs prioritize tailored flexibility whereas FAR contracts emphasize procedural rigor and consistency. We found that OTAs enable greater customization and latitude through the use of flexible frameworks and less standardized language compared to the legalistic FAR terminology. However, both models adhere to fundamental legal requirements and serve comparable core functions in providing binding contractual agreements. An interesting trend we observed was that OTAs exhibited lower compliance rates for certain uniform contract format sections related to delivery, acceptance, and oversight while accommodating a broader spectrum of research, prototype, and experimental requirement types compared to a predominant R&D focus within the FAR contracts. While OTAs offer adaptability, our analysis underscores that FAR-based contracts promote discipline through standardized structures.

Based on the insights gleaned from this research, we put forward several recommendations aimed at optimizing the utilization and oversight of OTAs and FAR contracts across defense acquisition programs. We suggested actions encompassing more extensive comparative analysis, controlled head-to-head experiments, enhanced workflow education, strengthened statutory auditing, and metrics tracking. Our goal was to provide data-driven guidance to help acquisition leaders tailor contract selection



decisions based on technical objectives, performance requirements, and other contextual factors. A delicate balance needs to be achieved between maximizing innovation through flexible OTA approaches and ensuring accountability through procedural rigor. Our research reinforces that further research on this subject is essential to refine empirical guidance on matching projects to the appropriate contract vehicle and utilization model. With improved comparative data and education, the DoD, not just the Air Force, can more effectively leverage the complementary advantages of both OTAs and FAR contracts.



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