IBM Center for The Business of Government

Other Transactions Authorities:

After 60 Years, Hitting Their Stride or Hitting The Wall?

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FOREWORD

On behalf of the IBM Center for The Business of Government, we are pleased to release this new report, *Other Transactions Authorities: After 60 Years, Hitting Their Stride or Hitting The Wall?,* by Jason Knudson, Stan Soloway, and Vincent Wroble, writing through "Hacking for Defense," a defense innovation academic curriculum piloted at Stanford University and taught at over 50 universities globally.

The term "Other Transaction Authority" (OTA) stems from statutory provisions that allow certain federal agencies to enter into transactions with commercial entities using nontraditional procurement methods and contract terms. While OTAs have been used by NASA since 1958 and within the Department of Defense since 1989, they have experienced significant growth in recent years following expansion under the 2016 National Defense Authorization Act (NDAA).

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In this report, authors Knudson, Soloway and Wroble address how OTAs have evolved over the last several decades; how different Defense agencies have used OTAs; what that experience teaches other agencies about using OTAs effectively; and the impact of OTAs on the COVID-19 vaccine initiative. The report also identifies key challenges for OTA use, including cybersecurity, workforce skills, and how OTAs enable production of public goods and services.

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Throughout the analysis, the authors address key questions regarding OTAs, including:

- To what extent do agencies use different strategies to award OTAs?
- How effective are OTAs in achieving their stated goals of attracting new and innovative solutions and providers to government?
- To what extent do OTAs align with the tenets of public procurement?
- How prepared are government agencies to utilize OTAs effectively?
- How does the changing technology landscape impact the need for or value of OTAs?

The report concludes with findings and recommendations on how to improve OTAs, including how they can best be advanced as part of a larger procurement innovation landscape.

The report builds on the Center's longstanding research on ways to improve public procurement, including *Mobilizing Capital Investment to Modernize Government*; *Buying As One: Category Management Lessons from the United Kingdom*; *Beyond Business as Usual: Improving Defense Acquisition Through Better Buying Power*; *and Eight Actions to Improve Defense Acquisition*.

We hope that this report provides government leaders and stakeholders with insights on how best to proceed with using OTAs to drive innovation and improve mission outcomes through government procurement.

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EXECUTIVE SUMMARY

In the more than three decades since "Other Transactions Authority" (OTA) was authorized at the Department of Defense (DOD), OTAs have become a vital part of the defense research process.

DOD—and now other agencies—engage in OTAs under a legal authority that allows certain federal agencies to engage in research and acquisition agreements not subject to most clauses of the Federal Acquisition Regulation (FAR). OTAs expand the pool of organizations engaged in the government market, by eliminating procurement requirements that often keep small and nontraditional contractors from doing business with federal agencies.

Historically, OTA usage focused solely on research and development. Upon completion of a successful OTA prototype, a contract for full production then reverted to traditional FAR coverage. But the FY 2016 defense authorization bill authorized the use of OTA terms and conditions for the life of a program, recognizing the growing and counterproductive gap in technical capabilities between the government and the commercial sectors. This change sparked a rapid increase in the use of OTAs, which by FY 2020 grew more than tenfold over just a few years. While a significant portion of the most recent increase emerged due to pandemic-related needs—particularly in the procurement of protective equipment and vaccine development—the overall growth in OTA use has been extraordinary.

Growth of this nature does not come without questions and challenges. Indeed, for OTAs to sustain their momentum over the longer term, agencies and stakeholders must understand the extent to which OTAs comply with the tenets of public procurement, and implement appropriate adjustments to ensure they meet the tests of confidence and trust necessary.

This report seeks to build such understanding based on interviews with more than 40 individuals in government, academia, and the private sector—including current and former senior acquisition executives, OTA consortium leaders, legal experts, and DOD contracting personnel—as well as reviews of a set of redacted, randomly selected OTAs to provide greater insight into their actual terms and conditions.

The report concludes that OTAs represent invaluable tools and offer an increasingly common, viable alternative to traditional, FAR-based procurements. As OTA use grows—indeed, if OTAs are to become an even more common mechanism—the OTA process itself will need to mature as well, to ensure that OTAs are in optimal alignment with the key precepts of public procurement. In particular, OTAs need to consider socioeconomic objectives, workforce capacity, and capability.

This does not mean that traditional FAR approaches to these issues should apply to OTAs. That would be counter-productive, inconsistent with the intended objectives of OTAs. Moreover, the requisite process and policy enhancements can be achieved without defeating the purpose of OTAs. As OTAs continue to grow, continued adjustments will ensure trust and confidence from the public and policymakers alike.

The report makes the following principal findings for more effective implementation of OTAs:

1. OTAs do not represent a significant departure from the principles of public procurement—competition, transparency, and accountability. This suggests that OTAs can serve a broader set of government needs than has occurred to date.

2. The advent of "production authority", the single most important advance in OTA policy in decades, has yet to meet its intended goal of incentivizing more innovation and more nontraditional contractors to participate in the transition from prototype OTAs to scale contracts—and equally importantly, to remain a part of the government's solutions ecosystem. Instead, anecdotal data indicates that the majority of nontraditional contractors walk away from the process at the point of transition, principally due to the addition of traditional FAR or "FAR-like" clauses at that juncture.

3. Current challenges with OTAs emerge principally from the realities of the traditional acquisition culture, workforce capability gaps, and underinvestment in workforce development. The Navy, a principal user of OTAs, has determined that acquisition professionals steeped in traditional procurement rules have difficulty transitioning to an OTA environment, and has developed an OTA-unique "agreements" workforce. The Defense Advanced Research Projects Agency (DARPA) requires that OTA agreements officers have contract certification, but also demonstrate special proficiencies in the OTA process. And despite being the largest user of OTAs, the Army has essentially disbanded its special OTA training unit.

4. Substantial improvement in data collection and access will foster the kind of insight into OTAs needed to fully assess their efficacy. Significant data gaps exist, and available data is not widely shared. This makes it difficult to answer key questions or track true outcomes.

5. At DOD in particular, "color of money" issues (e.g., funds for research and development vs. procurement vs. operations and maintenance)—as well as the time and resource requirements of the overall requirements and budgeting processes—inhibit the smooth transition of prototype OTAs to scale operations and make it difficult to assess the rate of this transition.

This report concludes by offering the following recommendations:

- Remove FAR clauses from OTAs
- Improve clarity around technical data rights
- Enhance OTA cost data and report publicly where appropriate
- Develop socioeconomic policies compatible with OTAs
- Adopt the Section 809 Panel recommendations on commercial buying
- Launch and fund organizational and workforce development initiatives, including:
    - Expand the OTA workforce
    - Establish an agile acquisition workforce
    - Train senior leadership
    - Unify OTA training to include all relevant parties, with a special focus on the legal community
    - Use direct practitioners as principal "trainers"
- Establish DOD-wide standards for alternative dispute resolution
- Improve oversight of consortiums and sharing of consortium data

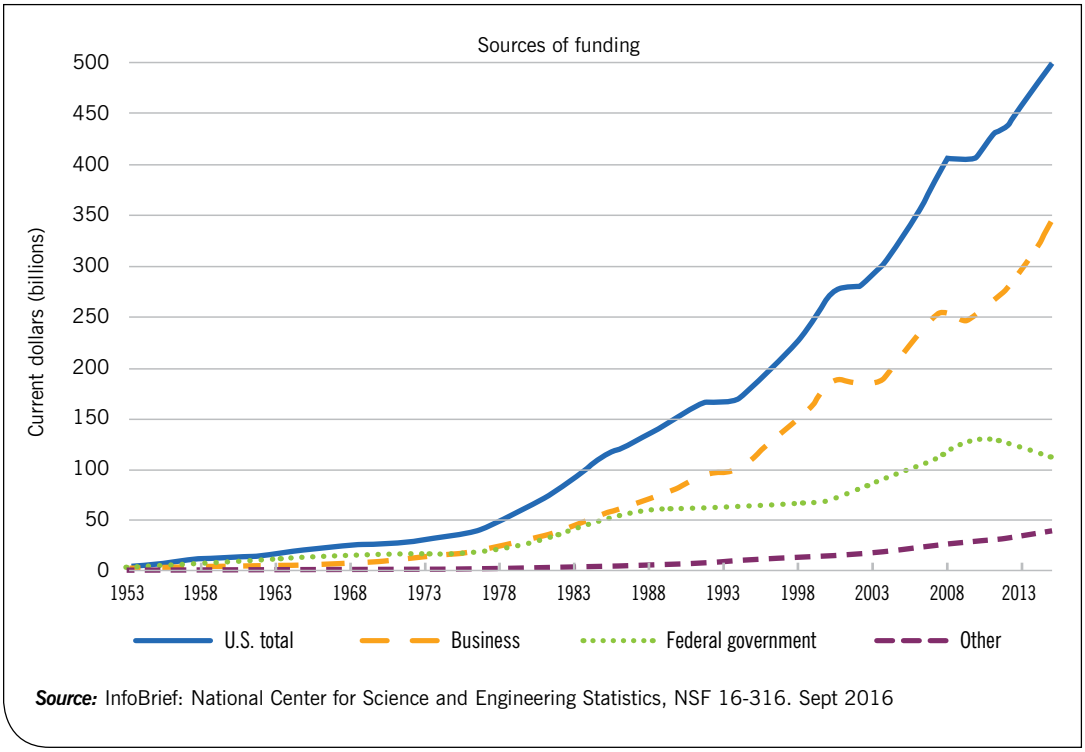
INTRODUCTION

The twentieth century saw a revolution in research and development (R&D). Through the first three-quarters of the century, the U.S. government funded many of the most significant developments in technology.

By the middle of the 1970s, private sector investment in research and development began to exceed that of the U.S. government.[1] Since that time, by most estimates, for every dollar of federally-funded R&D, private companies have grown to invest four to five dollars. The implications of this transformation have been enormous.

First, the shift in investment resulted in a radical change in the ownership of new technology. Where the U.S. government had long been the principal progenitor of new technology, that is no longer the case. Basic research, in areas for which a market does not yet exist or commercial applications are not yet clear, still relies on federal support. But private sector funding, even for highly aspirational and still undefined capabilities, has dramatically increased. And even where basic technology exploration has been largely government funded, expansions and applications of those technologies, often in ways never previously considered, is now predominantly funded by the commercial sector (see Figure 1).

Figure 1—U.S. Research and Development by Sources of Funding, 1953-2015[2]



Source: InfoBrief: National Center for Science and Engineering Statistics, NSF 16-316. Sept 2016

1. Boroush, Mark. "U.S. R&D Increased by More Than $20 Billion in Both 2013 and 2014, with Similar Increase Estimated for 2015." *InfoBrief: National Center for Science and Engineering Statistics,* NSF 16-316. Sept 2016. https://www.nsf.gov/statistics/2016/nsf16316/nsf16316.pdf.
2. Ibid.

An increase in private sector R&D has been the defining reason for the need for OTAs.

This dynamic takes on a new urgency in a world where product development is increasingly customer-centric; where a relatively small number of new technologies lead to a vast array of applications; and where a wide array of organizations has demonstrated a willingness to radically upend business models and structures to better serve their customers.

The last 40 years have been marked by countless efforts to adapt federal acquisition—the primary business channel through which the government buys from the private sector—to this reality. Many acquisition reforms since the 1990s were designed to adapt government processes to the new world of technology. However, the government's current engagement with the private sector remains rooted in a structure and culture that pre-dates these changes. This has resulted in drastic problems in speed, cost, and quality for products and services provided to government, and a landscape littered with examples of problems that can result. Nowhere were some of these gaps more evident recently than in the government's challenges across the scope of its response to the COVID-19 pandemic—in supply chain, benefits distribution, and other areas. This challenge was neatly summed up by Caroline Baxter, a former Rand Corporation analyst, who said in reference to one U.S. Army procurement for masks "that the system worked 'as designed' is bad news."[3]

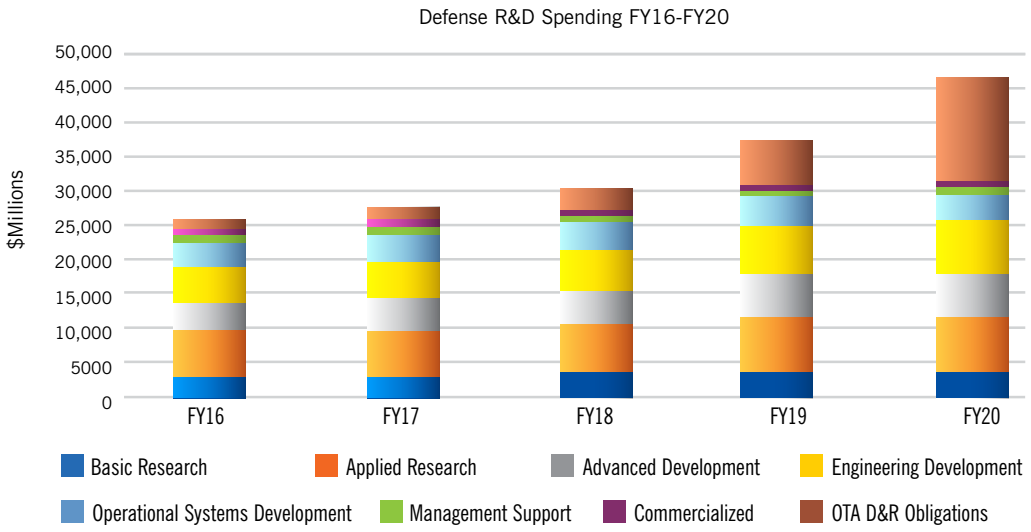
Presciently, some two decades before this shift in R&D investments occurred, the government and Congress developed a tool for collaborative R&D with private companies. With the creation in the 1950s of the new space agency—NASA—Congress also created "Other Transactions Authority" to support the government's ability to access and exploit the full range of technologies for the burgeoning space program.[4] The most notable characteristic of an OTA lies in its flexibility. OTAs are not subject to the majority of laws and federal acquisition regulations that apply to traditional government contracts. As such, they allow government to enter into business agreements more reflective of those across the commercial sector. They give government access to technology and firms that it would be unable to reach through standard procurement processes.

For several decades OTAs were limited to NASA, before expanding in the 1980s to DOD. More recently, other agencies have also received OTA authority such as the Departments of Homeland Security, Health and Human Services, and Transportation. Each agency has slightly different sets of limitations on their use. Despite expansion of the authority, OTA usage continued to be modest at best, with spending in any given year in the hundreds of millions—only a fraction of the government's overall tens of billions in R&D spending.[5]

Over the last six years, enabled mostly by statutory changes that allowed OTAs to be used for the life of a program (including production/implementation), usage has grown more than tenfold[6] and OTAs have become a major part of the DOD's research and development portfolio (see Figures 2 and 3).

3. Caroline Baxter. "'The system worked as designed' is bad news," *DefenseNews,* 9 Feb 2021. https://www.defensenews.com/opinion/commentary/2021/02/09/the-system-worked-as-designed-is-bad-news/.
4. "National Aeronautics and Space Act of 1958," Public Law #85-568, 72 Stat., 426. 29 Jul 1958. https://history.nasa.gov/spaceact.html.
5. General Accounting Office. "Federal Acquisitions: Use of 'Other Transaction' Agreements Limited and Mostly for Research and Development Activities." *GAO Report to the Ranking Member, Committee on Science, Space and Technology, House of Representatives.* Jan 2016. https://www.gao.gov/assets/680/674534.pdf.
6. Cornilie, Chris. "Pentagon OTA Spending Could Top $7 Billion in FY 2019." *Bloomberg Government*. 8 Aug 2019. https://about.bgov.com/news/pentagon-ota-spending-could-top-7-billion-in-fy-2019/.

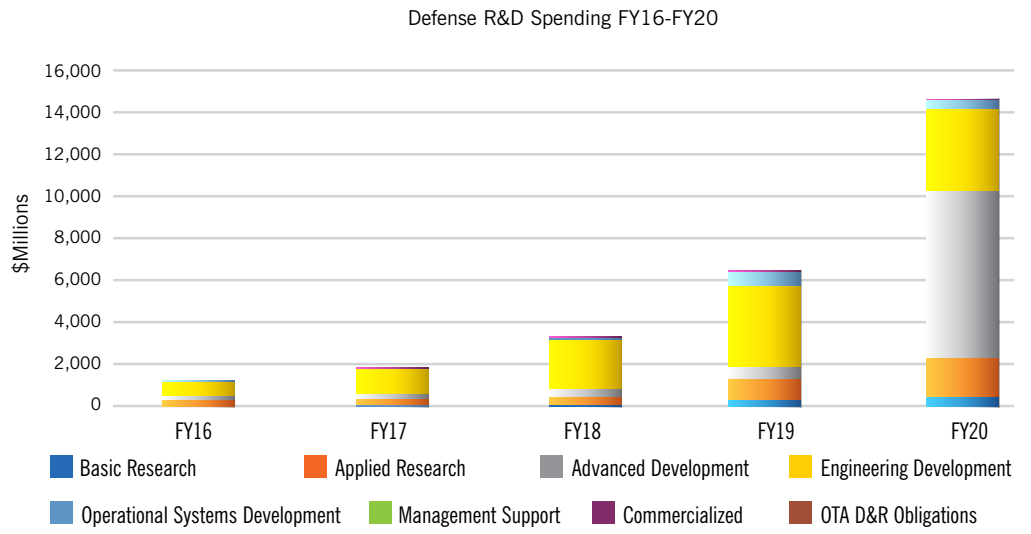
Figure 2—Total Defense R&D spending from 2016-2020



OTAs have had an increasing impact on DOD R&D spending.

Source: FPDS, USASpending

Figure 3—DOD OTA Spending From 2016-20[7]



OTA spending has grown at a rapid pace in recent years with particular emphasis on development.

Source: USA Spending.gov, Federal Procurement Data System

7. USA Spending.gov, Federal Procurement Data System.

Today, OTAs are used to identify and access capabilities for addressing a large array of needs. OTAs are principally associated with new weapons systems, but also increasingly utilized for new applications for emerging technologies to transform core business practices—for example, supply chain, and accounting.[8] OTAs also played critical roles in the early-stage development of RNA technology, and the late-stage development and rapid procurement of new medicines and health care tools to address the COVID-19 pandemic.

The growth of OTAs raise a range of questions, and some controversy. In an acquisition system accustomed to strict rules and clear guardrails, OTAs present an interesting and often conflictual challenge to the traditional acquisition model. Now that OTAs have taken a meaningful place in the acquisition ecosystem, those challenges and questions have also taken center stage.

The dramatic growth in OTAs has also generated a growing number of reports, articles, and opinion pieces. Most of the discussions have been binary, focusing on the "appropriate" use of OTAs as alternatives to traditional federal procurements under the Federal Acquisition Regulation (FAR). But few have delved into the practical elements of OTA implementation or provided context necessary to inform future OTA policy and execution. How the actual implementation of OTAs has proceeded is, however, the most important question in order to assess the efficacy of the future for OTAs.

To that end, this report seeks to explore the degree to which OTAs align with fundamental precepts of public procurement, and where such alignment is lacking to begin a high-level discussion of how gaps can or should be filled. The paper raises the question of whether OTAs can or should become more mainstream, providing a viable and less exotic alternative to traditional FAR-based procurements. This is not to suggest either irrelevance or even inadequacy of the FAR. The FAR serves a specific purpose and has its own strengths, core values, and protections to ensure that acquisitions conducted through FAR processes meets the tenets of public procurement. In the same manner, but with different methods, OTAs should be similarly measured against the tenets of public procurement, and where lacking develop OTA-specific methods of meeting those needs. The mapping of FAR-based approaches, clauses, and methodologies to OTAs is not the best way of meeting this objective.

The report offers context—based on research, data, and extensive interviews with a broad array of subject matter experts—to inform how government and industry address OTAs in a meaningful and practical way. The report does not represent an exhaustive set of answers; rather, its findings focus on the issues that matter most to meeting the government's obligations and missions.

8. Rhys McCormick. "Department of Defense Other Transaction Authority Trends: A New R&D Funding Paradigm?" *Center for Strategic and International Studies,* 8 Dec 2020. https://www.csis.org/analysis/department-defense-other-transaction-authority-trends-new-rd-funding-paradigm.

To that end, the report addresses four basic questions:

- Do OTAs achieve their objective—of opening the government's market aperture by attracting new market entrants and capabilities?
- Are OTAs "real" contracts, with real deliverables and transparency?
- How and where are OTAs similar to, or different from, traditional, FAR-based government contracts? What essential components of the FAR are generally not present in an OTA?
- Does the government have adequate workforce capabilities and resources, as well as training and development processes, to ensure the responsible and effective use of OTAs?

Finally, this report focuses almost exclusively on the Department of Defense. DOD is the government's most prolific user of OTAs, and DOD's experience reflects how the impacts of recent changes to the OTA statutes have been most pronounced. Thus, except for some brief discussion of how OTAs played a crucial role in addressing the COVID-19 pandemic, the research centered on DOD. Nonetheless, based on anecdotal evidence and discussions, the same issues and opportunities facing DOD are common across other agencies with OTA authority—in particular the Department of Homeland Security—where the advent of OTA production authority is only just beginning.

Facts First

Before getting into a more detailed discussion about OTAs, this next section dispels several myths that surround them.

1. **OTAs are contracts.**[9] They are not FAR-based contracts, but the "agreements" represent binding contracts with deliverables, accountability, incentives, and penalties. The term "agreements" applies to OTAs principally because, in the parlance of government contracting, the term "contract" typically refers to a FAR-based contract. Nonetheless, OTAs are contracts by any other definition.

2. **OTAs do not and are not intended to solely enable access to small or emerging companies.** While many companies that receive OTAs are small, emerging, or both, this is neither a prerequisite nor intent of the program. OTAs can go to scores of larger companies doing cutting-edge work in critical new technology areas, including supply chain, AI, machine learning, hypersonics, and 5G. Companies not doing meaningful amounts of business with the government are legitimate as OTA awardees, regardless of size.

3. **OTAs are intentionally not limited to cases of R&D for "new" technologies.** In part because of the imbalance in R&D spending between public and private sources, OTAs increasingly help to assess the degree to which government can modify or adapt an existing, commercial technology for use.

4. **OTAs can be used even when a company with a history as a large government contractor does the majority of the work.** These cases generally require cost sharing and/or significant participation by a nontraditional contractor. For this reason, measuring the "effectiveness" of OTAs based on how many awards go to large, established government contractors can be highly misleading. If the OTA provides a viable route through which a traditional contractor can bring new capabilities to the government that would likely be otherwise inaccessible, then the OTA achieves a key intended outcome.

5. **"Significant" participation by a nontraditional defense contractor cannot solely reflect measurement in dollars.** Participation can also reflect a nontraditional defense contractor supplying a key technology or subsystem that creates a significant improvement in capability and performance, or a material reduction in cost or schedule.[10]

6. **OTAs are not monolithic.** The government utilizes at least two main methodologies in the solicitation and award of OTAs, with modifications implemented at the buying office level. These include the consortium model as the most common, and the commercial solutions opening (CSO) model developed by the Defense Innovation Unit (DIU)—both core components now being replicated in other agencies and increasingly applied to traditional FAR procurements.

7. **OTAs are used by a growing number of federal agencies, for an increasing number of projects outside of defense** (see Figure 4).

9. Castellano, Nathaniel. "'Other Transactions'" are Government Contracts, And Why it Matters." *Public Contract Law Journal,* Vol. 48, No. 3, Spring 2019. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3435062.

10. U.S. Air Force, Office of Transformational Innovation. "Other Transaction Authority (OTA) Overview." 2015. https://www.transform.af.mil/Portals/18/documents/OSA/OTA_Brief.pdf?ver=2015-09-15-073050-867.

Figure 4—Agencies Authorized to Use OTs[11]

Agency	OT Authority	Agency Specific OT Requirements, Limitations, and Restrictions
NASA	51 U.S.C. § 20113(e)	No limitations or restrictions.
DOD*	10 U.S.C. § 2371	Authorizes Research OTs and Prototype OTs. See DoD Other Transactions for detailed requirements, limitations, and restrictions.
	10 U.S.C. § 2371b	
DOE	42 U.S.C. § 7256	Limited to RD&D projects. Cost sharing agreement required. Authorized for RD&D and prototype projects.
HHS	42 U.S.C. § 247-7e	Limited to RD&D projects. Cost sharing agreement required. Authorized for RD&D and prototype projects.
DHS	6 U.S.C. § 391	Prototype projects require a non-traditional contractor and cost sharing agreement.
DOT	49 U.S.C. § 5312	Limited to RD&D focused on public transportation.
FAA	49 U.S.C. § 106(l)	No limitations or restrictions.
TSA	49 U.S.C. § 114(m)	No limitations or restrictions.
DNDO	6 U.S.C. § 596	No limitations or restrictions.
ARPA-E	42 U.S.C. § 16538	No limitations or restrictions.
NIH	42 U.S.C. § 285b-3	Limitations and restrictions differ based on specific research programs.
	42 U.S.C. § 284n	
	42 U.S.C. § 287a	

Source: Acquisition Innovation in the Digital Age. "What is an "Other Transaction"," *Mitre*.

How Far From the FAR?

This section poses the key questions surrounding OTAs with regard to the degree they align with the main precepts of public procurement and the Federal Acquisition Regulation. The FAR contains rules and procedures for the proper execution of most federal procurements. Two primary issues arise:

1. To what extent are OTAs consistent with the FAR?
2. Where they differ, can OTAs still achieve the objectives of public procurement?

To address those questions, we reviewed a set of Other Transaction agreements to understand the degree to which the OT agreements generally aligned with or departed from the broad precepts of public procurement and the core elements of the FAR. Where agreements tended to deviate from the FAR, we also sought expert input and advice as to whether commercial analogs to the FAR clauses would achieve the same outcome.

In the late 1990s, an internal DOD study of selected OTAs found that—from the perspective of terms, conditions, and compliance—the vast majority of agreements largely mirrored contracts awarded under FAR Part 12 (Commercial Buying). Since Part 12 addressed many of the same issues that gave rise to OTAs, this made perfect sense. It also served to confirm that OTAs

11. Acquisition Innovation in the Digital Age. "What is an 'Other Transaction,'" *Mitre.* https://aida.mitre.org/ota/.

were being done responsibly. Despite the freedom under which OTAs operated, the agreements were contracts that reflected what Congress, through Part 12, reiterated as core requirements of public procurement.

However, since that study was conducted, more than 150 contract clauses have been added to Part 12. As the Panel on Streamlining and Codifying Federal Acquisition Regulation ("Section 809 Panel") reported last year, these clauses have created an ever-expanding set of barriers to market entry. They have significantly reduced the effectiveness of Part 12 by bringing its rules closer to those of traditional federal procurement, instead of a commercial procurement model.[12] For that reason, the Section 809 Panel recommended a new construct for commercial buying. The proposed new construct restates objectives inherent in the creation of Part 12, including flexibilities that are essential to achieving the Part 12's goals. But as it exists today, Part 12 no longer serves as a yardstick for directly measuring OTAs.

In addition to this analysis, Figure 5 compares major provisions of FAR-based contracts and OT agreements across multiple procurement dimensions.

Figure 5—Comparison of Key Procurement Elements

	OTHER TRANSACTIONS	TRADITIONAL
Accounting	"When structuring the OT agreement for an expenditure-based or resource-sharing type project, the Government team should consider the capability of the awardee's accounting system. Agreements that impose requirements that will cause an awardee to revise or alter its existing accounting system are discouraged."	"The contracting officer shall insert the clause at FAR 52.230-2, Cost Accounting Standards, in negotiated contracts, unless the contract is exempted (see 48 CFR 9903.201-1), the contract is subject to modified coverage (see 48 CFR 9903.201-2), or the clause prescribed in paragraph (c) of this subsection is used." (30.201-4)
Audits	"Except as provided in 10 U.S.C. §2371b, audits and access to financial records are subject to negotiation. Generally, fixed amount agreements should not require any type of audit provisions. When audits may be necessary, the Government team has the flexibility to use outside independent auditors in certain situations and determine the scope of the audits."	"Normally, for contractors other than educational institutions and nonprofit organizations, the Defense Contract Audit Agency (DCAA) is the responsible Government audit agency." (42.101) "If the Contractor has been required to submit certified cost or pricing data...the Contracting Officer...in order to evaluate the accuracy, completeness, and currency of the certified cost or pricing data, shall have the right to examine and audit all of the Contractor's records" (52.215-2)
Competition	"Both OT statutory authorities require the use of competitive practices to the maximum extent practicable…If an agency wishes to award a follow-on from a Prototype OT into either a Production OT or a procurement contract without re-competing, the solicitation documents and the original OT award must have been competitive."	"10 U.S.C.2304 and 41 U.S.C.3301 require, with certain limited exceptions, that contracting officers shall promote and provide for full and open competition in soliciting offers and awarding Government contracts." (6.1)

12. Defense Technical Information Center. "Report of the Advisory Panel on Streamlining and Codifying Acquisition Regulations." *Commercial Buying.* Jan 2018. https://discover.dtic.mil/wp-content/uploads/809-Panel-2019/Volume1/Recommendation_01.pdf.

Figure 5—Comparison of Key Procurement Elements cont.

	OTHER TRANSACTIONS	TRADITIONAL
IP Rights	"IP rights are fully negotiable under all types of OTs. The negotiated IP clauses should consider the project goals, including any likely commercialization of the research or production and follow-on support of the prototype, and balance the relative investments and risks borne by the parties both in past development of the technology and in future development and maintenance of the technology."	"The Government shall have at least a nonexclusive, nontransferable, irrevocable, paid-up license to practice, or have practiced for or on behalf of the United States, any subject invention throughout the world. The Government may require additional rights in order to comply with treaties or other international agreements." (52.227-13)
Protests	"While bid protests are rare for OTs, agencies should be mindful of the possibility. Agency-level protests are possible if the agency choses to include language in its solicitation describing the procedures. GAO has limited jurisdiction to review OT decisions and protests to GAO regarding OT awards are rare. Protests to the U.S. Court of Federal Claims are also possible but are rare occurrence."	"Without regard to the protest venue, contracting officers shall consider all protests and seek legal advice, whether protests are submitted before or after award and whether filed directly with the agency, the Government Accountability Office (GAO), or the U.S. Court of Federal Claims." (33.102)

Source: DOD guide to OTAs 2018 and the Federal Acquisition Regulation 48 CFR 1, respectively.

OTAs and the Tenets of Public Procurement

This report examines OTA compliance, both as a system and as individual agreements, with five core tenets of public procurement.[13] [14]

- Competition
- Transparency and accountability
- Intellectual property and the protection of the government's rights
- Disputes and protests
- Socioeconomic preferences and diversity

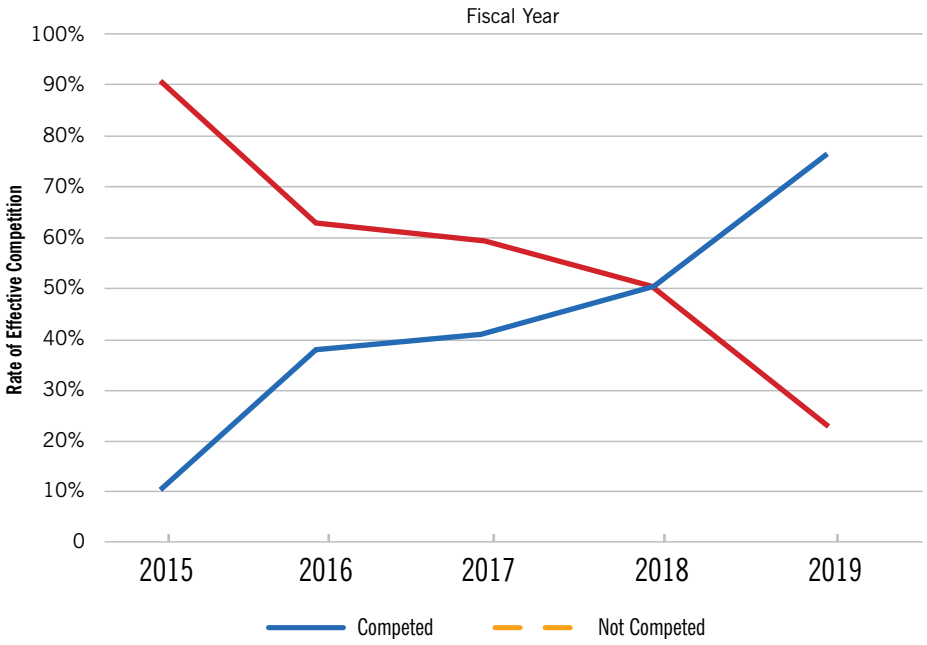
Competition

The vast majority of OTs are awarded through a competitive process. As in all other federal procurement (absent rare exemptions), competition represents a standard component of the OTA process. When measuring for "effective competition"—where multiple independent firms submit proposals based on price, quality, and service—OTAs have become increasingly competitive in recent years (see Figure 6).

13. National Institute of Governmental Purchasing. "Values and Guiding Principles of Public Procurement." 23 Oct 2010. https://www.uppcc.org/Portals/0/Documents/VGPS_2014May.pdf.

14. Organization for Economic Cooperation and Development. "OECD Principles for Integrity in Public Procurement." 2009. https://www.oecd.org/gov/ethics/48994520.pdf.

Figure 6—Rate of Effective Competition for DOD OTAs from 2015 to 2019[15]



The dollar growth in OTAs has coincided with increased competition for OTAs

Source: FPDS; CSIS analysis

Whereas OTAs may not have experienced adequate competition in the past, by 2019 about 75 percent of OTAs resulted in competitive awards. To be clear, OTAs are not subject to "full and open" competition, as defined in the Competition in Contracting Act (CICA). As with many federal contracts for information technology and services of all kinds, OTs frequently adopt a form of "limited competition," particularly when procured through an existing consortium or one created for a specific need. (More background on consortiums follows later in this report.) In those cases, only members of the consortium know of and can bid on the relevant opportunity.

In that sense, consortium awards follow a process similar to that of any conventional multiple award contract (MAC). When a consortium posts an opportunity with its members, any member may submit a bid. Because most consortia have large numbers of members (sometimes in the thousands), they generate meaningful competition and meet the requirements of the Competition in Contracting Act—especially compared with the GSA Multiple Award Schedules, where the government can satisfy competition requirements by making its best effort to obtain just three bids.

However, consortia can limit competition (like some MACs), especially as their numbers grow and market position expands (57 percent of OTA dollars go through the five largest consortia).[16] Competition is still limited to those companies in the consortium. Further, consor-

15. Rhys McCormick. "Department of Defense Other Transaction Authority Trends: A New R&D Funding Paradigm?" *Center for Strategic and International Studies,* 8 Dec 2020. https://www.csis.org/analysis/department-defense-other-transaction-authority-trends-new-rd-funding-paradigm.

16. Rhys McCormick. "Department of Defense Other Transaction Authority Trends: A New R&D Funding Paradigm?" *Center for Strategic and International Studies,* 8 Dec 2020. https://www.csis.org/analysis/department-defense-other-transaction-authority-trends-new-rd-funding-paradigm.

tia require payments to enter, for both profit and nonprofit members. In return for handling contracting and other significant administrative tasks for members, and exposing government needs to a wide audience, consortia leads receive a membership fee (that can be as low as a few hundred dollars or well into the thousands per year) and a contract administration fee. Some consortia present a challenge for smaller companies that cannot afford the fee structure. That said, consortia have every incentive to expand their memberships to the broadest possible range of companies.

Some entities, most notably the Defense Innovation Unit (DIU—originally DIUx), do not work through consortia. DIU uses an OTA process of its own creation called the Commercial Solutions Opening (CSO). The CSO reduces the barrier to entry by posting opportunities on a publicly facing website, similar to broad agency announcements found on the FedBizOps website. These allow any company, of any size, to respond. Responses are only a few pages, and lead to a series of downselects that may include face to face pitches and ultimately competitions. CSOs often result in multiple initial awards to different companies, with subsequent downselects based on performance. CSO solicitations broadly encourage novel applications of commercial technology.

In that sense, the DIU model clearly complies with the requirements of CICA. In fact, all of its CSOs are open to any company of any size, though the model has challenges. For example, once DIU enters into a production OTA (following a successful prototype), other DOD components can essentially "tag on" to the agreement. This has raised some concerns; in the Rean Cloud case (discussed later in this section), U.S. Transportation Command (DIU's customer) announced that the production OTA would be available to all components of DOD. This is expressly permitted in the policies issued by DOD in creating DIU, but questions have emerged as to whether the policy goes too far. Thus far, Rean Cloud stands as the only case where this issue has arisen.

Both the DIU/CSO and consortium models clearly meet the rules and ethos of competition in government contracting. Both cast wide nets and, as reported data show, open the door to a broad and diverse array of offerors. But they still suffer the same challenge as many government procurements: potential offerors need to know they exist and how to access their offerings. Whether by subscribing to DIU's RSS feed or joining a functionally relevant consortium, informing the broadest possible community of capabilities is a challenge.

Transparency and accountability

Transparency and accountability are widely seen as crucial attributes of responsible and effective public procurement. And assessing the degree to which it exists requires viewing the question through several different lenses:

- **Does the government get what it paid for?** Based on a review of multiple OT agreements and interviews with acquisition professionals who have used them, OTAs prove to be at least as transparent and accountable as traditional government contracts. As noted earlier, the agreements include expected outcomes and deliverables, with outcomes clearly defined and limited in scope. Indeed, OTAs embody two key attributes that most experts find of great value across government acquisition: They are largely performance-based, and most are built and designed to be agile (in a programmatic or management sense).

Further, many of our interviewees also pointed out that the question of whether the government gets what it paid for must be viewed in its proper context. By definition, an OTA supports development and prototyping, intentionally focusing on the uncertain. As such, the measure of whether the government "gets what it paid for" does not rely on whether the capability worked as intended or met a government need. The measure is whether, in the course of the research and prototyping process, the OTA provider 1) followed the terms of the agreement (contract), and 2) delivered an answer as to the viability of the capability and how well that capability met user needs.

Stated another way, a development and prototyping effort's end goal involves validation or refutation of a hypothesis: "For the problem A, solution B can solve, or significantly help solve, the problem." Both successful prototypes that enter production and unsuccessful prototypes that are not carried forward satisfy the purpose of the agreement.

Most experts interviewed also believe that OTAs demonstrate validation or invalidation more clearly and more quickly than traditional procurements. This stems from OTA problem statements that are typically more limited in scope and simply articulated. DIU's Commercial Solutions Opening usually puts forward a one-paragraph problem statement.

In sum, by combining the principles of performance-based acquisition with tight and focused problem statements, OTAs can deliver greater and more immediate visibility into whether the government gets what it paid for.

- **Does the government get adequate cost insight?** In government contracts, visibility into costs to the taxpayer is an unavoidable and important question. Achieving accurate insights into where and how tax dollars are spent drives oversight, influences future government spending, and fosters public trust. Ensuring that OTAs offer adequate cost insights is vital to their long-term success.

  While OTA cost reporting differs from that of most government contracts, OTAs of any significant size (over five million dollars) are subject to government audit processes. However, as with almost all procurements conducted under the rules of FAR Part 12 for commercial buying, the audits follow Generally Accepted Accounting Principles (GAAP) rather than government-unique Cost Accounting Standards (CAS).

  While GAAP does not provide cost detail and breakdowns in precisely the same way as CAS, it does provide—outside of government procurement—the standard accounting system for businesses and organizations worldwide. Further, CAS has proven to be among the most problematic barriers to entry to the government marketplace, due to its high cost and its requirement that companies who work in both the government and commercial marketplaces maintain two disparate accounting systems. Most importantly, CAS represents a tool designed for a time when the government was the single, monopsony buyer for many products and services—which necessitated flexibilities in Part 12 and for OTAs. But the absence of CAS does not equate to the absence of audit rights or cost insight.

  Critics of the expansion of OTAs into production often point to GAAP as a main concern. They argue that once a proven prototype scales into a larger, government-unique solution, its "commerciality" disappears and the government becomes a monopsony buyer—thus creating a need for CAS. However, a majority of experts interviewed for this report have a different view. Because OTAs have limited scope and incremental development, by the time a capability is ready for production or integration into a larger system, substantial cost history and other market data provide a clear, effective, and de-risked framework for future cost projections and cost assessments.

- **Do OTAs provide accountability for corporate behavior?** Accountability in government contracting involves more than delivering a product or service in a timely, quality manner at a reasonable cost. The government has established standards to ensure that both agencies and industry partners have internal processes and procedures to preclude them from engaging in improper or illegal practices. Traditional FAR contracts include compliance provisions ranging from whistleblower rights and drug-free workplace requirements to ethics programs and anti-kickback requirements. Typically, none of these clauses appear in an OTA.

  The lack of such clauses raises the question of whether OTAs have sufficient safeguards to ensure that both the government and firms are protected from malign behavior during the selection process or in execution of the agreement. While a valid question, many FAR-based compliance requirements for ethics have commercial analogs and many FAR requirements appear elsewhere in federal law. For example, the FAR prohibits bribery—also illegal under 18 USC Section 201.

  More broadly, balancing the public interest with utilizing commercial-like contracting to access the commercial marketplace presents a constant tension across federal contracting. That tension, and its often-troubling ebbs and flows, has resulted in the dramatic increase in clauses under FAR Part 12.

  Interestingly, few interviewees raised concern about OTAs not following the full range of government-unique compliance clauses. They recognized that most if not all FAR clauses in this area appear in commercial contracts (and by reference in OTAs). And while OTA agreements officers have freedom to negotiate contract terms and conditions, our interviewees saw no evidence that the absence of explicit FAR clauses has led to them ignoring important protections. Indeed, as suggested in the 1990s study referenced earlier—which found that OTAs generally looked a lot like contracts written under FAR Part 12—anecdotal evidence suggests that agreements officers and their leadership approach OTAs with a seriousness of purpose regarding appropriate oversight and insight. Nonetheless, the vast majority of experts we spoke to stated that the cultural discomfort with any deviation from the FAR continues to limit the government's ability to take full advantage of OT authorities, and may well present the clearest threat to expanded use of OTAs.

  Indeed, interviewees were acutely concerned about the risk aversion that characterizes federal contracting. They echoed that when questions arise about balancing risk, the default tends to fall back on standard FAR clauses and greater rigidity. Several interviewees reported that more FAR clauses are written into OTAs for production, and the OTA guidance published by one Navy command actually includes recommended FAR clauses in the command's OTAs—even though OTAs should be exempt from the FAR. As one result, the Navy has opted not to require that "agreements officers" be warranted "contracting officers."

  As OTA use increases, and because they do not follow the conventional FAR process, there are concerns that any ethics or similar violation could cause Congress to quickly reverse course and limit OTA use. Accordingly, ensuring that all agreements officers develop a comprehensive understanding of the best means by which to guard against such violations is imperative. But to reiterate, the experts we spoke to indicated that the advance presumption that OTAs need to incorporate the traditional plethora of government compliance requirements would be self-defeating and unnecessary.

  More on these issues appears in the workforce and culture section of this report.

- **Do OTAs deliver on their promise of innovation/new capabilities?** OTAs bring new capabilities to the government. Stated another way, OTAs have meaning if they deliver innovation or new capabilities. While the evidence strongly suggests that OTAs provide a path toward that goal, specific data that might help answer this core question is rare.

The more than two dozen OTA consortiums report regularly to DOD on who receives awards, whether the prime recipients are traditional or nontraditional contractors, and the degree to which subcontracting dollars go to nontraditionals. However, this data (or summary) are neither publicly released nor widely shared within the DOD procurement community. Where that data lives, and how to access it to help answer this core question, is opaque at best. Clearly, this must change to support long-term sustainability for OTAs.

Available data does suggest that OTs serve as effective funnels for new capabilities by attracting nontraditional contractors. A November 2019 Government Accountability Office (GAO) report found that 88 percent of OTAs had nontraditional participation, and only one percent of OTAs were made under the exceptional circumstances clause (which allows a traditional contractor to do all of the work). DIU data documents a preponderance of nontraditional contractors winning work through their offerings. Data for consortium OTAs suggests similar success. Consortium Management Group, one of the largest consortia, reports that three-quarters or more of the total dollars flowing through it go to nontraditional contractors—even if the funds first flow through a prime partner, and despite the fact that only about one-third of their 1,500 members are nontraditional contractors. ATI, which manages almost half of OTA consortia, reports that 75 percent of their 4000-plus members are nontraditional contractors, and that roughly 75 percent of the prime contractors on their OTAs are nontraditional. However, project-level data remains elusive.

Further, as shown in answering whether the government "gets what it pays for" with OTAs, the issue of dollars may be of secondary importance. A relatively small investment can result in a major impact on a program or solution. As such, any measure involving OTA dollar flow must also include a case-by-case assessment of overall impact to ensure a full perspective. Yet, while indicators regarding new players and capabilities entering the market via OTAs are generally positive, whether those nontraditional firms remain a part of the government ecosystem remains less clear.

Intellectual property and the protection of the government's rights

In a 2015 speech at Stanford University, Secretary of Defense Ash Carter sought to set the record straight regarding DOD's views on intellectual property: "We need the creativity and innovation that comes from start-ups and small businesses, and we know that part of doing business with them involves protecting their intellectual property."[17]

The government has long sought to harmonize its R&D efforts with those of the commercial marketplace, and there are clear provisions in law and in the FAR that allow negotiation of such rights. While terms like "dual use" and "civil military integration" have been common lexicon for decades, issues associated with IP remain. The 1980 Bayh-Dole Act sought to incentivize the commercialization of capabilities developed through government funded R&D. However, the Act did not directly address capabilities independently developed and then adapted or modified for government use.

Trepidation still exists in private sector firms over protection of IP rights, and IP concerns often drive nontraditional companies away from doing business with government. These concerns include technical data rights in both the FAR and DFAR.[18] At the same time, when the government funds R&D, it has the right to maintain some control or access for the technical data involved. What those rights include has long been a challenge among the public and private

17. Secretary of Defense Ash Carter, "Rewiring the Pentagon: Charting a New Path on Innovation and Cybersecurity," U.S. *Department of Defense, Secretary of Defense Speech,* 23 Apr 2015. https://www.defense.gov/Newsroom/Speeches/Speech/Article/606666/drell-lecture-rewiring-the-pentagon-charting-a-new-path-on-innovation-and-cyber/.

18. U.S. Department of Defense. "Defense Federal Acquisition Regulation Supplement: Subpart 227.71—Rights in Technical Data." 28 Dec 2017. https://www.acq.osd.mil/dpap/dars/dfars/html/current/227_71.htm.

sectors, including traditional contractors. And uncertainty around those rights is among the most significant issues that discourage nontraditional, commercial companies from engaging with the government on even modest degrees of developmental work.

The OTA agreements reviewed for this report showed this issue as anticipated but not fully addressed. While the government almost always reserved the right to specific IP created directly with government funding for the immediate use case, ongoing IP rights became a matter of negotiation for any follow-on work, importantly including transition to production. But according interviewees with experience on transitioning OTAs reported few cases where those negotiations proved fruitful, which resulted in nontraditional firms exiting the market.

While more data would more fully enable assessing the scope of this challenge, many nontraditionals that entered the market via an OTA have chosen to exit the market rather than risk losing control of their IP. While government does benefit from the new capability for the initially identified purpose, the resulting exit often leads to a loss of access to the skills and resources that created that capability. Further research could help to clarify and refine intellectual property and technical data rights in an OTA environment. Absent such knowledge, real expansion will continue to present a challenge.

Disputes and protests

Exempting OTAs from federal acquisition regulations also exempts them from rules on bid disputes and protests. This reflects a significant departure from the norm for public procurement. Federal acquisition rules governing pre- and post-award bid protests have no real corollary in the commercial sector, and because of the costs, time delays, and uncertainty they create, present major barriers for nontraditional entry into the government market.

While bidders view bid protests as tools to address perceived wrongdoing in a source selection process, protest rights lie at the core of federal procurement—protests ensure that the government procurement decision has been made in the best interests of the government. While many have advocated for significant changes to protest policies, they are widely seen as important to meeting the intent of the procurement process. Also, the statutory construct of bid protests rests on their applicability to “procurements,” meaning source selections subject to the Competition in Contracting Act (CICA). Because OTAs are not subject to CICA (although, as established earlier, well-done OTAs generally meet CICA requirements), most procurement officials and stakeholders believe that OTAs are exempt from bid protests. That is normally but not entirely true.

The protest issue gained some clarity from GAO in May 2018, under "In The Matter of: Oracle America, Inc". This became the most significant OTA protest to date and is known colloquially as the “Rean Cloud” case. Mentioned earlier in this report, the Rean Cloud case involved an OTA issued by Army Contracting Command New Jersey (ACC NJ) on behalf of the Defense Innovation Unit, for work done on cloud-based software for use by U.S. Transportation Command. The General Accountability Office determined that the ACC NJ OTA’s structure violated the rules upon which the OTA authority was built. GAO did not claim jurisdiction over whether the award decision was appropriately made.

GAO ruled that TRANSCOM (United States Transportation Command) had not made clear in the initial offering that a successful prototype might lead to a larger implementation contract. Even more significantly, GAO found that the decision to enter production came prior to successful completion of the prototype. In short, “Oracle (the protestor in this case) has established that GAO will delve into allegations of non-compliance with the underlying OTA

enabling statute."[19] The Rean Cloud case exists as the first major protest where GAO asserted jurisdiction over OTAs, to the extent that an OTA was or was not executed in a manner consistent with authorizing statutes, rules, and the issuing OTA agency's own published processes.

At the same time, GAO did reject certain claims made by the plaintiff. For example, the plaintiff argued that the Army must employ a FAR-based procurement unless this option is not "feasible or "suitable." GAO rejected this assertion, noting that in cases where the "other transaction authority is authorized by statue or regulation, our office (GAO) will not review the agency's decision to exercise such authority."[20] GAO also upheld that the definition of completion of a prototype did not match the definition Oracle sought to impose, but was defined by DOD. As a result, TRANSCOM had the right to declare a prototype sufficient for transition to production at any time, even prior to completion of all portions of the prototype OTA.

The decision on Rean Cloud helped clarify a number of questions relating to OTA protests at GAO.

1. As long as OTA solicitations indicated that the prototype OTA could justify a production OTA agreement, DOD is fully authorized to execute those kinds of contracts.

2. DOD does not need to have a preference for FAR-based contracts over OT agreements.

3. GAO will only assert a review of OTAs when DOD may not have followed its own processes in deciding to use an OTA.

4. GAO has no jurisdiction over OTAs authorized by statute or regulation.

5. Declaring when a successful prototype occurs as justification for follow-on production is not subject to external interpretation and is a decision left to the holder of the agreement.

Despite the narrowly tailored ruling, GAO received significant pushback for granting standing to hear the case at all, including from former deputy undersecretary of defense for industrial policy, Bill Greenwalt—who during his tenure on the Senate Armed Services Committee was instrumental in developing OTA policy. Greenwalt noted, "During debates on expanding OTAs, Congress did not consider nor grant GAO any role in overseeing OTAs."[21] The managing associate general counsel of the GAO responded by noting that GAO did not consider who the Army picked to win the OTA but examined the statutory requirements only, and noted, "If an agency does not satisfy the statutory conditions for the use of this authority, the agency has no authority to avoid the competition laws."[22]

While the Rean Cloud decision caused a delay in U.S. Transportation Command's effort to migrate legacy applications to the cloud, the decision also demonstrated that many initial concerns over GAO's involvement with OTAs were unfounded. The decision also restated GAO's limited role in hearing OTA protests. The decision resulted in improved policies and practices for drafting OTAs with greater clarity, particularly for instances in which the OTA includes follow-on production authority.

19. Government Accountability Office. "Decision Matter of Oracle America, Inc." 31 May 2018 https://www.gao.gov/assets/700/692327.pdf.
20. U.S. Government Accountability Office. "Decision. Matter of: Oracle America, Inc." 31 May 2018. https://www.gao.gov/assets/b-416061.pdf.
21. Bill Greenwalt. "GAO Decision Threatens U.S. Military Dominance; Reject it, *Breaking Defense,* 27 Jun 2018. https://breakingdefense.com/2018/06/gao-decision-threatens-us-military-dominance-reject-it/.
22. Kenneth Patton. "GAO Says Oracle Protest Did Not Make Policy; Criticizes Greenwalt Op-Ed," *Breaking Defense,* 9 Jul 2018. https://breakingdefense.com/2018/07/gao-says-oracle-protest-did-not-make-policy-criticizes-greenwalt-op-ed/.

Beyond GAO's limited jurisdiction, how the courts would entertain OTA bid protests remains unclear, with decisions centered more on technicalities than jurisdictional issues. For example, in a case involving SpaceX, a court ruled that SpaceX was factually incorrect in asserting that an Air Force OTA award was tied to a "procurement." But the court did not commit to hearing other OTA protest cases.[23] Other federal courts may hear cases on OTAs, depending on how federal contract actions surrounding OTAs evolve.

Regarding contract disputes, federal circuit courts have stated repeatedly that even if a contract did not result from a "procurement," contract disputes and claims could nonetheless be heard by the court: "[A]ny agreement can be a contract within the meaning of the Tucker Act, provided that it meets the requirements for a contract with the government, specifically: mutual intent to contract including an offer and acceptance, consideration, and a government representative who had actual authority to bind the government."[24]

That notwithstanding, interviewees with practical experience negotiating and executing OTAs reported tremendous faith in alternative dispute resolution (ADR), which has proven successful when used elsewhere in federal procurement. As such, ADR clauses are common in OTAs as effective tools that provide a path to resolution while avoiding costly and lengthy litigation.

Socioeconomic preferences and diversity requirements

OTAs are exempt from rules and laws associated with small business and other federal socioeconomic preference programs. This is intentional, since OTAs were initially vehicles for emerging technology, generally small in scale and used in limited circumstances. Because they are exempt from federal socioeconomic preference programs, little data exists to determine the percentage of OTA dollars flowing to businesses that would qualify in one or more preference program. Given the nature of OTAs, a significant percentage likely goes to small businesses. But no data proves or disproves that thesis.

If OTA use continues to grow, a number of interviewees acknowledged that the issue and role of socioeconomic preferences will need to be addressed in the OTA process. The lack of relevant OTA data makes it impossible to assess either the current state of play or whether socioeconomic standards for prime or subcontracting are achievable or appropriate for OTAs. Nonetheless, if OTAs continue to grow as a viable acquisition option, and as noted in the "recommendations" section of this report, socioeconomic questions will need to be addressed.

23. The United States Court of Federal Claims. "Space Exploration Technologies Corp., Plaintiff, v. The United States, Defendant, v. Blue Origin, LLC, et al., Defendant-Intervenors." 26 Aug 2019. https://ecf.cofc.uscourts.gov/cgi-bin/show_public_doc?2019cv0742-77-0.

24. United States Court of Appeals for the Federal Circuit, "Trauma Service Group, Plaintiff-Appellant, v. The United States, Defendant-Appellee," 16 Jan 1997. https://caselaw.findlaw.com/us-federal-circuit/1279624.html.

OTA Implementation: A World of Differences

The bulk of federal acquisition executed under the FAR—and at DOD, the Defense supplement (DFAR)—follow standard rules, processes, and contract formats and requirements. As a result, teaching new members of the acquisition workforce to work with FAR and DFAR occurs through formal training and certification programs, principally via the Defense Acquisition University.

However, the adoption and application of OTAs varies widely across the individual DOD services. Given that the services have equal authority from Congress to use OTAs, understanding the differences in OTA use between the service branches demonstrates challenges and opportunities facing OTAs. Senior acquisition leaders and other OTA practitioners discussed differing practices and cultures in interviews for this report, as well as how they interpreted congress's intentions, and their own sense of the rate of adoption of OTAs within their service.

Experience with OTAs across the DOD services follows.

Department of the Army

The Army has the most experience with OTAs. Army contracting officers and legal advisors have long used OTAs and have successfully executed them from Army Contracting Command offices and through the Army's various and established consortia. ACC's workforce includes many qualified agreements officers who follow robust local processes. In recent years, the Army opened up their consortiums for use by the other services and experienced rapid growth. However, the high workload has become problematic; as the contracting entity, ACC shoulders the costs and risks associated with these acquisitions. ACC since began trying to reduce workload by asking other services to share burden and risk.

The Army has also provided education on OTAs for other defense acquisition commands. In 2016, Army OTA agreements officers were invited to SOCOM (Special Operations Command) to train SOCOM staff. This group dubbed themselves the "Acquisition Innovation Roadshow" (#AIRS), later changed to #FUTAIRS after the establishment of the Army Futures Command. (AFC).[25] This group traveled to over 100 locations and trained over 5,000 acquisition professionals over three-and-a-half years. During this time, the only other place a defense acquisition professional might receive formal training on Other Transactions came from a Defense Acquisition University course on alternative acquisition pathways. That DAU course only went to senior acquisition professionals, and not the larger universe of frontline contracting professionals typically responsible for such agreements.

While the Army has executed the bulk of OTAs in the past few years, and has the most professionalized and experienced OTA workforce, their culture also tends to favor inflexible processes. The Army runs on regulation, doctrine, and a formal organizational structure, and often resists change from the outside. The Army also appears to depend more on the consortium model and had the fewest OTA agreements executed through the DIU Commercial Solutions Openings process. Moreover, reorganization of AFC resulted in the elimination of #FUTAIRS, and the disbanding of its OTA team.

This makes the creation of Army Futures Command especially compelling, as it seeks to shift the Army's longstanding culture and approach to acquisition generally and OTAs in particular. AFC seeks to leverage the start-up/emerging technology community near its Austin, Texas,

25. Ben McMartin. "Introducing Public Procurement Perspectives," *Public Spend Forum,* 28 Jan 2020. https://www.publicspendforum.net/blogs/benmcmartin/2020/01/28/public-procurement-perspectives/.

location, and in other innovation centers across the U.S. AFC's success in doing so remains too soon to tell. Its effectiveness will hinge in large part on the degree to which AFC can accomplish its initial goals—to break molds, change cultures, and chart a more open path.

Department of the Navy

Navy acquisition processes and organizational structure differs greatly from that of other services, largely because the department of the Navy includes both the Navy and the Marine Corps. Like the other services, the Navy and Marine Corps have a combined senior acquisition authority at the service secretariat level that controls policy, organization, systems commands, and program executive offices across the Navy and Marine Corps.

But unlike the Army or Air Force, outside of the Navy's Supply Corps (which focuses on sustainment and not development of new capabilities), the Navy does not have a dedicated, professional, active duty military career path for acquisition professionals. Instead, the Navy relies on a civilian workforce distributed among various systems commands and warfare centers to manage the acquisition and contracting pipeline. Active duty and reserve Navy and Marine Corps officers can join the acquisition community at the O-4/Lieutenant Commander/Major level or above with an average of 10-14 years of experience.

The Department of the Navy is also the only service that operates all of its research, development, and engineering commands as working capital funds (WCFs).[26] The Army's WCF covers two areas, industrial operations and supply management. The Air Force's Working Capital Fund manages two activity groups, consolidated sustainment and supply management, and serves as the executive agent for the Transportation Working Capital Fund, operated by U.S. Transportation Command. The Navy and Marine Corps, however, manage five working capital fund activities: depot maintenance, base support, supply management, transportation, and research and development (R&D includes all Naval Warfare Centers and the Naval Research Laboratory).[27]

Working capital funds provide stability over mission funding, because after establishment a WCF can be self-sustaining through rates for overhead, operating, and administrative expenses. As long as work on a program continues, the WCF can support performance and does not rely on annual appropriations. Thus, for the Navy—where shipbuilding and systems R&D have traditionally involved a long and expensive process—the support infrastructure of shipyards needs protection by ensuring continued work to keep them afloat via a WCF strategy. And although Marine Corps requirements align more closely with the mission-funded nature of the other services, the Corps too operates under a WCF model. In other words, from the perspective of alternative approaches to acquisition and innovation, the Navy has prioritized stability over flexibility in executing R&D funding.

The Navy has also taken a different path toward modernization and innovation. In 2016, instead of investing in external innovation efforts, the Navy doubled down on existing R&D infrastructure by seeking to better harvest ideas from the "deckplate" and send them to experts for action. Even as other services ramped up innovation initiatives, the Navy's focus shifted away from "innovation" and into "high velocity learning" and lean systems approaches. As part of this shift, the Navy eliminated the Chief Naval Officer's Rapid Innovation Cell,

26. Department of the Navy. "Fiscal Year (FY) 2020 Budget Estimates: Justification of Estimates, Navy Working Capital Fund (NWCF)," March 2019. https://www.secnav.navy.mil/fmc/fmb/Documents/20pres/NWCF_Book.pdf.
27. Congressional Research Service. "Defense Primer: Defense Working Capital Funds," *In Focus,* 29 May 2019. https://crsreports.congress.gov/product/pdf/IF/IF11233/2.

Strategic Studies Group, and the Naval Innovation Advisory Council, and invested those resources back into the Office of Naval Research and the Systems Commands.[28]

Because of the combination of these strategies, the Navy's use of OTAs has lagged the other services, even as Navy leaders have actively supported Other Transactions and the department has created several successful Other Transactions consortiums (including the Information Warfare Research Project (IWRP) and Strategic & Spectrum Missions Advanced Resilient Trusted Systems). Demand has steadily increased for Navy led OTA consortiums, leading IWRP to increase its ceiling to $400 million.[29]

The Department of the Navy has issued supportive directives, delegated OTA authority to Systems Commands,[30] and launched the first pilot in which DOD personnel without DAWIA certification could become agreements officers—though Navy officials reported that this has not had the expected workforce uptake. Systems commands have implemented FAR-based approval mechanisms for OTA contracts and enforced the use of standard FAR clauses in OTA agreements. As other services accelerate investments in organizations like the DOD's DIU, the Air Force's AFWERX, and Army Futures Command as catalysts for innovation, the Navy's newest agile innovation organizations remain more focused on existing R&D infrastructure. Nor do they have the same authority as DIU, AFWERX, or Army Futures Command to rethink how the Navy acquires and fields technology.

In sum, despite the leadership emphasis, the Navy's investment in OTAs continues to lag. DIU's 2019 Annual Report shows the combined Navy and Marine Corps investment in DIU Commercial Solutions Openings OTA Prototypes from 2016-2019 as the lowest of the services including the Air Force, Army, OSD/Joint Staff, and Combatant Commands.[31]

Department of the Air Force

The Air Force often appears as closer to a corporate structure than a military structure. What the Army accomplishes by doctrine and organization and the Navy through distributed command and control and mission authority, the Air Force accomplishes by applying bureaucracy and specialization. The Air Force has increased its use of Other Transactions, but mostly leverages third parties like Army-led consortium managers and DIU channels; the Air Force is the primary consumer of DIU Commercial Solutions Openings.[32] In January 2021, the Air Force recompeted and awarded the Space Enterprise Consortium (SpEC) to NSTXL, an OTA consortium with a ceiling of fifteen billion dollars.[33]

The Air Force leads DOD in organizing for innovation. Starting with the decision to invest heavily in resourcing DIU, the Air Force could shape the contract and engagement strategies that DIU employs today. A majority of personnel in the founding unit at DIUx were Air Force reservists working in Silicon Valley or Air Force officers on tours at the Hoover Institute at

28. Roger Misso. "What Happens to Naval Innovation Deferred?" *Center for International Maritime Security,* 15 Jun 2016. https://cimsec.org/happens-naval-innovation-deferred/.
29. Brenda Marie Rivers. "Navy OKs $400M Ceiling Increase to Advanced Technology International-Managed Info Warfare Consortium Program," *GovConWire,* 18 Aug 2020. https://www.govconwire.com/2020/08/navy-oks-400m-ceiling-increase-to-advanced-technology-international-managed-info-warfare-consortium-program/.
30. Scott Maucione. "Navy gives OTA authority to all systems commands," *Federal News Network,* 26 Sept 2018. https://federalnewsnetwork.com/navy/2018/09/navy-gives-ota-authority-to-all-systems-commands/.
31. Defense Innovation Unit. "2019 in Review," *Annual Report,* 2019. https://assets.ctfassets.net/3nanhbfkr0pc/ZF9fhsMe6jtX15APMLaIl/cd088a59b91857c5146676e879a615bd/DIU_2019_Annual_Report.pdf.
32. Ibid, 11.
33. Sandra Erwin. "After further review, Space Force confirms selection of NSTXL to manage industry consortium," *Space News*, 15 Jan 2021. https://spacenews.com/after-further-review-space-force-confirms-selection-of-nstxl-to-manage-industry-consortium/.

Stanford. The Army and Marine Corps sent minimal personnel to the DIUx, and the Navy initially embedded the Naval Innovation Advisory Council (NIAC) with early DIUx as separate but distinct from the joint organization.

The critical moment in the Air Force's cultural transition to a culture of innovation came from a speech by Chief Master Sgt. of the Air Force Wright in 2018, about the need to free airmen to innovate by eliminating the "frozen middle."[34] Air Force Chief of Staff Goldfein and Secretary of the Air Force Wilson amplified this message across the Air Force, and the Air Force's acquisition workforce became the center of gravity for the effort. This accelerated innovation in two key places. First, Kessel Run, the Air Force's first scaled Agile DevSecOps Software Factory, was initially funded from a Commercial Solutions Opening OTA out of DIUx. Kessel Run displaced Northrop Grumman in 2017 on a contract to upgrade to the Air Operations Center, which had increased costs from $374 million to $745 million and was three years behind schedule.[35] Kessel Run led to a rapid expansion of agile software development programs in DOD including Platform One, Space Camp, and the Navy's Black Pearl.

Second, the Air Force had bold leadership from the assistant secretary of the Air Force for acquisition, technology, and logistics (SAF AT&L), Dr. Will Roper. Dr. Roper came to the Air Force after leading the Strategic Capabilities Office under Secretary of Defense Carter. Dr. Roper became a critical supporter of defense acquisition and acquisition reform in the Air Force. This included rapid SBIR authority executed by AFWERX, the entry of SpaceX into the defense space realm, agile software development on weapons systems and aircraft, and the emergence of the U.S. Space Force. The Space Force is creating their own acquisition command under the Office of SAF AT&L.

The Air Force has the advantage of organizing around a centrally controlled, mission funded acquisition structure. In the Air Force, senior functional managers direct mission funded resources between programs in their offices. This structure allows the Air Force to move funding between priorities rapidly. However, central control means that funding largely supports the senior functional manager's interests. The Air Force will need care in institutionalizing the creative use of OTAs and new acquisition pathways, because the same flexibility that created the Air Force's culture of innovation can quickly lead to reprioritizing resources elsewhere.

What Does Congress Say?

In recent years, Congress has strongly advocated for expanded use of OTAs and other acquisition alternatives. Multiple statutory changes through defense authorization bills have specifically promoted use of OTAs.

The biggest and most impactful change came from the FY 2016 NDAA provision that expanded OTA authority to include follow-on production. Previously, Other Transaction Authority only covered R&D; once a capability developed enough to warrant full production, a traditional FAR-based contract followed. This transition presented a significant disincentive to nontraditional contractor engagement. As noted earlier, concerns about the protection of intellectual property, imposition of cost accounting standards, and many other government-unique business practices continued to present daunting barriers. Recognition of these challenges, and discussions about extending OTA authority with the same terms and conditions to apply

34. Kaleth O. Wright, "Thawing the Middle: Chief Wright encourages all Airmen to build a culture of innovation," *Airman Magazine,* video of speech by Chief Master Sort. of the Air Force, 6 Aug 2018. https://airman.dodlive.mil/2018/08/06/thawing-the-middle/.
35. Valerie Insinna. "Air Force cancels Air Operations Center 10.2 contract, starts new pathfinder effort," *Defense News*, 13 Jul 2017. https://www.defensenews.com/air/2017/07/13/air-force-cancels-air-operations-center-10-2-contract-starts-new-pathfinder-effort/.

through full production, started as far back as the late 1990s. At that time, data showed the vast majority of prime OTAs going to a handful of major defense contractors (who provided a capability funnel for nontraditional contractors). While consistent with the spirit and rules of the OTA process, that imbalance catalyzed discussions about expanding OTAs into production.

Follow-on production authority under the FY 2016 NDAA allowed OTAs to fully cover concept to prototyping to production without touching a FAR-based contract.[36] In 2017, the NDAA expressly authorized the Small Business Innovation Research program (SBIR) to award prototype OTAs, clarified OTA approval levels, increased thresholds for approval, and mandated education and training requirements. The 2017 NDAA also promoted widespread OTA education.

Following the 2017 law, the Army Contracting Command saw an uptick in cross-service usage of their OTA capabilities, but overall OTA adoption did not significantly increase. In the 2018 NDAA, responding to the perceived underutilization of OTAs, Congress mandated significantly increased collection, storage, and reporting of OTA usage data.[37] In the 2019 NDAA, Congress again signaled support for continued use of OTAs, stating in the conference report:

> The committee recognizes the need for agility and innovation in the procurement process. The committee believes that, when used appropriately, other transaction authority (OTA) of section 2371 of title 10, United States Code, can provide the necessary flexibility to give the Department of Defense a competitive edge in the commercial marketplace. . . . The committee supports the department's continued use of OTA to rapidly explore cutting-edge technologies and reduce barriers to attract nontraditional defense contractors. The committee also acknowledges the department's guidance that OTs should be used appropriately by individuals possessing the requisite level of business acumen and judgment to operate in a "relatively unstructured environment.[38]

In light of this, most legislative experts interviewed for this report expressed frustration that the military services have yet to take full advantage of the flexibilities Congress has provided. Similar concerns have been raised publicly by key congressional staff, who continue to seek insights into how best to catalyze increased usage and guard against abuse of the process. However, interviewees across the spectrum also noted that some reluctance to fully exploit the flexibilities in OTAs stems from a fear that if mistakes are made (as invariably occur with innovation), the response from Congress and the oversight community could be quick and harsh, potentially including removal of the OTA authority. The future of OTAs is caught in a kind of duality; despite congressional guidance to innovate and press forward, the system continues to resist and distrusts the consequences of failure.

36. National Defense Authorization Act for Fiscal Year 2016," Public Law #114-92, 129 Stat. 727. 25 Nov 2015. https://www.govinfo.gov/content/pkg/CPRT-113HPRT92738/pdf/CPRT-113HPRT92738.pdf.
37. "National Defense Authorization Act for Fiscal Year 2018," Public Law #115-91, 131 Stat. 1288. 12 Dec 2017. https://www.congress.gov/bill/115th-congress/house-bill/2810/text.
38. House of Representatives, Report of the Committee on Armed Services on H.R. 5115. 115th Congress, Report 115-676. 15 May 2018. https://www.congress.gov/115/crpt/hrpt676/CRPT-115hrpt676.pdf.

OTAs in the COVID-19 Pandemic

In 2019, Richard Dunn, the former DARPA general counsel who pioneered the use of Other Transaction Authorities, wrote: "What is the most important OTA? Most likely, it is an OTA that hasn't been invented yet."[39] While the most important OTA remains a matter of opinion, the OTAs with the greatest impact on the American public are clear. Before the COVID-19 pandemic, few people outside of the medical community knew of mRNA vaccines. However, OTAs provided the funding vehicle for RNA research since at least 2003. When the pandemic hit, OTAs played a key role in reducing the time from research to production.[40]

In 2003, with both the 9/11 attacks and the nationwide anthrax scare of 2001 fresh in the nation's memory, DARPA began to conduct early stage research into how DNA and RNA could help to create vaccines. One of DARPA's earliest awards in this field was an Other Transaction for a prototype using an RNA synthesis method for gene sequence assembly. When making the award, DARPA noted:

> The ability to quickly convert any long contiguous stretch of DNA sequence information into an actual isolated molecular entity will have a profound impact on not only long-term biomedical research studies but also the ability to rapidly generate antidotes against an infectious or deadly agent that either emerges naturally from our environment or is deliberately engineered for use as weapons for war or terrorist attack (thus supporting the national security of the USA.)[41]

While the original goal was an antidote for a biological weapon developed by a terrorist group, the value of rapid vaccine development became clear to those in the medical research community—especially after the 2007 H5N1 Bird Flu outbreak and the 2013-16 West African Ebola outbreaks. In response, DARPA created and funded two defined programs to harness nucleic-acid-based (DNA and RNA) anti-infective technologies:

- The Autonomous Diagnostics to Enable Prevention and Therapeutics: Prophylactic Options to Environmental and Contagious Threats (ADEPT-PROTECT) ran from 2012-2017.
- The Pandemic Prevention Platform (P3), which started in 2017. The P3 program aimed to make technologies first invented in ADEPT-PROTECT functional at large scales.

OTAs were used in both ADEPT-PROTECT and P3, along with traditional research grants.[42] [43]

In addition to providing funding for development of mRNA vaccine technology, OTAs were also critical in rapidly acquiring COVID-19 vaccines. Both the Pfizer and Johnson & Johnson

39. Richard Dunn. "The Most Important Other Transaction Agreement" *Strategic Institute: Innovation in Government Contracting.* 26 August 2019. https://strategicinstitute.org/other-transactions/important-transaction-agreement/.
40. Stanley, Brooke et al. "Other Transaction Authorities Given Greater Flexibility to Foster Innovation in Coronavirus Response." *Covington: Inside Government Contracts.* 13 Apr 2020. https://www.insidegovernmentcontracts.com/2020/04/other-transaction-authorities-given-greater-flexibility-to-foster-innovation-in-coronavirus-response/.
41. Department of Defense, "Annual Report on Cooperative Agreements and Other Transactions Entered into During FY 2003 Under 10 USC 2371. https://www.acq.osd.mil/dpap/Docs/policy/otherTransactions/Congressional%20Report%20FY03.doc.
42. DARPA. "Autonomous Diagnostic to Enable Prevention and Therapeutics: Prophylactic Options to Environment and Contagious Threats (ADEPT-PROTECT)." DARPA-BAA-13-03. 1 Nov 2012. https://beta.sam.gov/api/prod/opps/v3/opportunities/resources/files/5f8c79fca51c087bf1699de4998c4db0/download?api_key=null&status=archived&token=.
43. DARPA. "Pandemic Prevention Platform (P3) Biological Technologies Office HR001117S0019." Broad Agency Announcement. 6 Feb 2017. https://govtribe.com/file/government-file/hr001117s0019-hr001117s0019-dot-pdf#web-viewer.

COVID-19 vaccines were purchased using OTAs. Yet despite OTAs success in developing mRNA vaccine technology—and specifically acquiring these COVID-19 vaccines—there has been some criticism of OTAs, specifically in regard to intellectual property rights similar to those discussed earlier in this report.

Under traditional contracts, when new technology is developed with the government, the Bayh-Dole Act gives the government a series of four "march-in" rights where the government may license a company's technology to a competitor without the inventing company's permission.[44] The most controversial of the march-in clauses allows a government march-in if "the contractor or assignee has not taken, or is not expected to take within a reasonable time, effective steps to achieve practical application of the subject invention in such field of use."[45] Two important related considerations arise:

- In contracts for which the Bayh-Dole Act applies, technology must "be available to the public on reasonable terms."
- Because OTAs allow negotiation of individual IP clauses, some OTA vaccine agreements had their practical application clause shortened to "available to the public" or "available to the public for a regulatory approved product."

In the summer of 2020, concerns were raised that the government had forfeited pricing and march-in rights for some COVID-19 vaccines as a result of using OTAs.[46] However, this is not the case. A 2016 report by the Congressional Research Service (CRS) noted that "march-in rights have never been exercised during the 35-year history of the Bayh-Dole Act. In particular, the National Institutes of Health (NIH) has received six march-in petitions and has denied each one." Furthermore, CRS noted that in 2002, then former Senators Birch Bayh and Bob Dole wrote an op-ed in *The Washington Post,* which stated, "Bayh-Dole did not intend that government set prices on resulting products. The law makes no reference to a reasonable price that should be dictated by the government."[47] According to the authors of the Act, march-in rights under Bayh-Dole were never intended to apply to pricing. Over the now 40-year history of the Act, march-in rights have never been used. Accordingly, the use of OTAs during the COVID-19 pandemic did not reduce the government's IP protection rights in any practical sense.

Consortiums: Conundrum or Not?

Consortiums have become an increasingly popular business structure for Other Transactions. The establishment of a consortium involves a formalized group of for-profit companies, nonprofits, and universities interested in working with the government within a given subject area, including land systems, medical technology, explosives and ammunition, computers and cybersecurity, and aviation. Consortiums work by allowing entry to any firm interested in becoming a member, for a nominal annual fee that can range from as low as five hundred dollars to well into the thousands (waived for universities and academic institutions). This fee covers costs incurred by the consortium management group. Members of the group can then compete for research, development, and production awards that the government gives through the consortium.

44. Kelly, Daniel J. "IP Rights Under NASA and DOD "Other Transaction" Agreements—Inventions and Patents." *Thomson Reuters Briefing Papers,* Aug 2018. https://2yrr8n1h5wj043subb2ardvg-wpengine.netdna-ssl.com/wp-content/uploads/2019/10/Kelly-Daniel-IP-Rights-Under-NASA-and-DOD.pdf.

45. Cornell Law School Legal Information Institute. "35 U.S. Code § 203 — March-in Rights." https://www.law.cornell.edu/uscode/text/35/203.

46. Knowledge Ecology International. Other Transaction Agreements: Government Contracts that Eliminate Protections for the Public on Pricing, acmes and Competition, Including in Connection with COVID-19 *Vaccines and Treatments.* KEI Briefing Note 2020:3. June 2020. https://www.keionline.org/wp-content/uploads/KEI-Briefing-OTA-29june2020.pdf.

47. Thomas, John R. "March-In Rights Under the Bayh-Dole Act," *Congressional Research Service,* 22 Aug 2016. https://fas.org/sgp/crs/misc/R44597.pdf.

Consortiums rapidly grew in popularity, as they allowed government organizations to access the benefits of OTAs without having to train or staff personnel for in-house expertise. Consortiums now serve as the preeminent vehicle for OTAs, with the majority of dollars awarded for OTAs going through consortiums.

Consortium selection

If an organization has been granted OTA authority, the organization may conduct a bidding and selection process to create a consortium. These consortiums focus on a specific area of need. For example, the Vertical Lift Consortium focuses on helicopters and tilt rotors, while the C5 Consortium focuses on command, control, computers, and related fields.

The initial stages of forming a consortium involve the government sending out a request to prospective consortium managers. Managers can work for either nonprofit or for-profit organizations, although a preference for nonprofit consortium management has more recently emerged. Consortium management organizations compete on their governance model, their fee structure (costs), and the companies included in their prospective consortium. Consortium management firms can also propose a preexisting group that they believe meets the government's needs.

The consortium model provides a standing group with expertise in a given subject area for a relatively low cost. In addition, because consortium management firms compete based on the companies they bring to the table, widespread market analysis and research is conducted by the consortium management firms during the bidding process. This enables finding companies that have not traditionally done business with the government.

After the government organization selects a consortium management group, the group acts both as a contract administrator and in general management roles for firms in the consortium. For the government, the consortium management group helps in award processing, compliance review, and agreement delivery, which includes tracking, approval, and close-out. For their industry members, the consortium management group provides facilitation and liaison with government agencies, as well as guidance for firms to maintain compliance with DOD rules and regulations, including the Joint Certification Program pertaining to technical data.

Benefits of consortiums

Consortiums offer a number of benefits to the government. These include having a more collaborative approach in the drafting of initial contract requirements, which then affords a greater research and prototype acquisition speed and reduces the training and expertise needed to manage OTAs.

In addition, despite the efforts of defense reformers, entering into agreements with the government still raises challenges for many small companies. Consortium management firms can guide newcomers to federal contracting, especially valuable in expanding the government's technology and industrial base. Consortiums also provide benefits to universities and research-focused institutions—they bring a better understanding of problems and technologies that interest the government, which helps guide future research priorities.

Concerns with consortiums

Despite the benefits of consortiums, their growing use has raised several concerns. The first involves a lack of publicly available data on allocation of funds within the consortium between traditional and nontraditional contractors. While such data is known within the individual consortium management firms, and generally provided to the sponsoring government organization,

the data is not often disseminated. As noted in this report's earlier section on competition, the lack of hard data to demonstrate how well OTAs fulfill their mandated role in encouraging the participation of nontraditional firms and organizations creates issues for both senior procurement executives and for congressional overseers. This becomes an even more critical question because while consortiums do meet the statutory requirements for "competition," only their members can bid on opportunities. This increases the importance to demonstrate that the model in fact delivers new capabilities and players.

The other main concern with consortiums involves their fee structure. While fees to enter consortiums are often nominal, they can reach levels that present a barrier to entry for small, emerging companies and thus create a market-limiting effect. In addition, several consortium management organizations also take a percentage of the award as a management fee. While a normal business practice, some senior acquisition officials have expressed frustration with the lack of visibility into these fee schedules.

Finally, while most interviewees supported consortiums as they currently exist, many expressed concern about the potential for replication between consortium groups—where two or more consortiums have broadly similar membership lists. As is the case with the continued debate over the number of highly similar Government-Wide Acquisition Contracts (GWACs), concern is growing among some OTA experts about redundancy in consortia.

Similar issues were expressed by experts at consortium management organizations as well. As one individual noted, "The last thing we want to do is become a barrier to entry." To combat this dynamic, existing consortiums have increased cases where they seek to expand their portfolios and address new OTA requests. Whether this trend will grow, streamline the process, or enhance government access to the broadest possible universe of capabilities remains to be seen. But this report's assessment of the four aviation-related consortia shows only modest overlap. Specifically, analysis of the four aviation consortiums reveals:

- 2,512 total members, including members with multiple memberships
- Of the total, 75 percent were members of only one consortium.
- Only 25 firms or nonprofits with membership in all four consortiums—these are primarily large defense contractors (such as BAE Systems, Raytheon, Rolls Royce, and Science Applications International Corporation) as well as some large and especially active research universities, including Penn State and Georgia Tech.
- 57 had memberships in three of the four consortiums.
- 183 had memberships in two of the four consortiums.

Growing Pains: Emerging Challenges to OTAs

As OTA use expands, including through the use of new production authority, three specific areas of concern could challenge the growth and effective use of OTAs: production, cybersecurity, and workforce skills/culture. Of these, workforce training and the broader acquisition culture may well represent the largest challenges to OTA expansion, both in monetary terms and for the types of projects. After reviewing these challenges, this report presents potential solutions in the "recommendations" section.

Production Authority: What Is It Producing?

The most significant change to the OTA landscape in recent years was the advent in 2016 of the authority to continue OTA use into production ("production authority"). Prior to that change, OTAs only provided nontraditional contractors a path to prototype and not a path to market. Under the previous statutes, once a capability was proven and ready for production, the traditional FAR rules applied. This led to limited enthusiasm for OTAs, outside of DARPA.

The research for this report found nearly ubiquitous concern about challenges that emerge as an OTA transitions to production, which is both illuminating and disturbing. To be fair, this new phase remains in early stages as production authority is only five years old, but initial indications suggest reason for concern. According to almost every expert interviewed for this report, transition to production represents the most problematic portion of the OTA process. This is unsurprising, as transition to production brings a range of new challenges, including maintenance, sustainment, and technical support not required for a prototype. These issues have caused some production programs run through an OTA, such as a "robotic mule," to be rebid to address concerns.[48]

In addition, in far too many cases nontraditional contractors exit the market at the time of transition. According to the preponderance of interviewees, "FAR creep" (i.e., the introduction of FAR clauses at the time of transition to production) is the norm—and drives nontraditional firms away. This occurs most often based on the treatment of intellectual property. As noted elsewhere in this report, the inability to reach mutually acceptable terms for IP (beyond the immediate use case covered by the OTA) causes a large proportion of nontraditional firms to sell or license their product for government use to a traditional contractor partner, and then return to their commercial roots. Further, there is concern, although little data, about the potential imposition of government-unique CAS requirements on production OTAs. For reasons discussed earlier, that too can present an insurmountable barrier for nontraditional contractors.

This does not include the very large HoloLens production OTA recently awarded to Microsoft, which occurred after the interviews for this report concluded. Nonetheless, this award—like an earlier award to a team comprised of Microsoft, Accenture, and AT&T, and remains an anomaly. Whether more awards of this size led by traditional contractors will occur, particularly but not only in the Space Force arena, remains to be seen.

Finances can also pose a challenge for OTAs to move from research and prototype to production. While OTAs have expanded to production authority, the budgeting and funding process has not kept up. DOD "color of money" (R&D vs. procurement vs. operations and maintenance) issues, and overall DOD requirements and budgeting processes, inhibit the smooth transition of OTAs from prototype to production. In simple terms, while R&D funding is relatively available, procurement dollars are much harder to obtain and generally take three years

48. Yasmin Tadjdeh. "Army Has Another Go at Robotic Mule Program," *National Defense,* 30 Mar 2020. https://www.nationaldefensemagazine.org/articles/2020/3/30/army-has-another-go-at-robotic-mule-program.

to work their way through DOD's "Planning, Program, and Budgeting System" (PPBS). This challenge affects many of the department's efforts to drive innovation and more rapidly field new capabilities. Whether through mid-tier acquisitions, OTAs, or other means, the PPBS (first brought to DOD in the 1960s) does not often account for funding needed to transition prototypes to full-scale production in a timely manner. As a result, some commands are extending "prototypes" into unusually large field trials and even deployments.

The practice of designating colors of money to certain activities brings an imbalance in the types of funding available to certain organizations and commands. Organizations like Air Force Research Labs or the Office of Naval Research have excess amounts of money designated for research and development and prototyping, but nearly no money for transition, scaling, or operation of a capability. Conversely, an operational unit such as the 101st Airborne or Fleet Forces Command has almost exclusive access to operations and maintenance funding, and nearly no access to research and development or prototype funding. As a result, research organizations cannot directly transition successful OTA prototypes to production for the operational organizations that benefit from OTA success. This also creates several additional issues, including accurately tracking the flow of funds through the R&D/prototype/production lifecycle.

OTAs in and of themselves do not have to align with the colors of money in the PPBS system. While most OTAs use R&D funding, an OTA could also be used for an operational prototype using operations and maintenance (O&M) funding, or even sustainment funding for novel use consistent with the OTA statutes. This creates several new issues, including accurately tracking the flow of funds through the R&D/prototype/production lifecycle.

As a result, while OTAs clearly enable DOD to attract new capabilities, the use of production authority in OTAs does not appear to have yet translated to a significant, continued expansion of the industrial base. This rate of change may appear acceptable, since the government still receives new capabilities and technologies. However, the government could also find itself locked out of dynamic and evolving market segments, and risks losing access to the intellectual and engineering capital that drives emerging markets. In other words, the government risks losing access to its seat at the customer table, where suppliers draw product and capability roadmaps and explore the art of the possible. The data on production remains limited, and no reliable data documents the scope of this challenge. Yet, while the authority is still relatively too new to draw firm conclusions, red flags have been noted by virtually every expert interviewed.

Cybersecurity: Are The Public and Commercial Sectors Aligned?

Cybersecurity in government contracting has taken on increased urgency in recent years. Several breaches of government contractors have involved traditional contracts, including significant data theft from the F-35 Joint Strike Fighter Aircraft program. This is not new—in 2013, Undersecretary of Defense for Acquisition, Logistics and Technology Frank Kendall noted in testimony to Congress: "A lot of that is being stolen right now and it's a major problem for us. . . . What it does is reduce the costs and lead time of our adversaries to doing their own designs, so it gives away a substantial advantage."[49] More recent incidents, prominently including the Solar Winds attack, have further crystalized these challenges. As a result, how OTA agreements treat cybersecurity has come under scrutiny.

49. Mike O'Brien. "Pentagon Admits F-35 Data Theft is a 'Major Problem'," *Institute for Defense and Government Advancement,* 20 Jun 2013. https://www.idga.org/archived-content/news/pentagon-admits-f-35-data-theft-is-a-major-problem.

Unlike traditional DOD contracts, where cybersecurity standards are laid out in the DFARS (Defense Federal Acquisition Regulation Supplement), OTAs have not previously been subject to a uniform set of cybersecurity regulations. Instead, any cybersecurity requirements have been largely left to negotiations on each individual OTA. While interviewees noted that some consortiums have attempted to standardize cybersecurity policies, this has mostly occurred through recommendations rather than binding requirements, and lacks uniformity across consortiums. One initial step to address this gap involves the DOD's 2020 creation of the Cybersecurity Maturity Model Certification program (CMMC), which seeks to standardize guidelines for compliance with government cybersecurity standards. Notably, CMMC applies to both standard procurement contracts and OTAs.

CMMC expands cybersecurity requirements throughout the supply chain. In addition, CMMC will eventually apply to all businesses, regardless of size. In announcing the final version of the CMMC, Under Secretary of Defense for Acquisition and Sustainment Ellen Lord explained the logic behind the CMMC's broad reach: "We know that the adversary looks at our most vulnerable link, which is usually six, seven, eight levels down in the supply chain."[50]

CMMC creates two challenges to OTA implementation and expansion. The first is common to OTA and FAR-based procurements: cost reimbursement. CMMC allows many companies performing contracts for the government to receive reimbursement for work to bring systems into compliance. But this does not apply to companies that work under firm-fixed-price (FFP) agreements. Firms with FFP contracts need to assess and include the costs of compliance in their pricing—no simple feat, especially given the nascence of the CMMC program. Since many OTAs use FFP structures, unknown costs and risks can disincentivize nontraditional company participation.

Second, while there is clear need for CMMC (or a "CMMC-like") cyber regime, discussion continues as to whether CMMC's specific requirements represent the only path to adequate cyber hygiene and protocols. CMMC was not designed to become a commercial standard. Commercial companies that base cyber protocols on requirements associated with standards like Sarbanes-Oxley may not prepared to accept the CMMC. Further, the government may lack adequate resources to execute CMMC reviews in a timely manner; this could challenge OTAs or any other acquisition process designed to substantially speed up the procurement process.

Workforce: Ultimately, It Comes Down to People

Every individual interviewed for this report ultimately came back to the same issue: people. All cited the need for enhanced workforce training and development as the most significant key to the future of OTAs. This comes as no surprise. For decades, discussion and debate have occurred about how best to prepare the acquisition workforce for a dramatically changed world. While changes have been made, interviewees found them inadequate for traditional acquisitions, let alone alternatives like OTAs. Moreover, many also suggested that a lack of workforce resources led directly to the wide use of consortiums—much as the explosion of multiple award contracts across the government market emerged in part due to limited workforce resources.

Partially in reaction to this reality, the Navy, which previously attempted to ensure that its agreements officers were FAR-based contracting officer ranks, is training specialized cadres of agreements officers without regard to FAR contracting qualifications. And while DARPA—the

50. Ellen M. Lord, Kevin Fahey, and Katie Arrington, News Conference on Cybersecurity, *Department of Defense,* 31 Jan 2020. https://www.dvidshub.net/video/737134/dod-officials-discuss-cybersecurity-standards.

longest and most successful institutional user of OTAs—requires its agreement officers to be GS-1102 contracting professionals, DARPA also makes entry into the agreements officer ranks aspirational and highly selective.

As discussed earlier in this report, the Army's highly successful Acquisition Innovation Roadshow demonstrated the importance of specialized workforce training and development. Although that program has ended, the Defense Acquisition University (DAU) has expanded its OTA course offerings, and in 2020 launched an OTA simulation course where prospective agreements officers could draft an OTA between the government and a simulated firm.[51]

Despite these important and positive steps forward, much works remains. DAU's initiative needs to expand significantly, for as OTA usage continues to grow and be used well, so too will the workforce development requirements. Moreover, as with all acquisition policy and practice, challenges affect a broader population than the contracting community. Lawyers, program managers, logisticians, financial management professionals, and, even end-user customers all constitute critical parts of the equation. And they too can benefit from the same kind of developmental initiatives as their contracting counterparts. The disconnects between and among these various functional communities appear across the acquisition spectrum; addressing them is essential to the efficacy of OTAs. The number of courses on OTAs designed for the legal community has increased in recent years; however, these courses only go to the small number of students attending the JAG (Judge Advocate General) Center and School. And no evidence shows that other functional communities have availed of specialized OTA courseware or development opportunities.

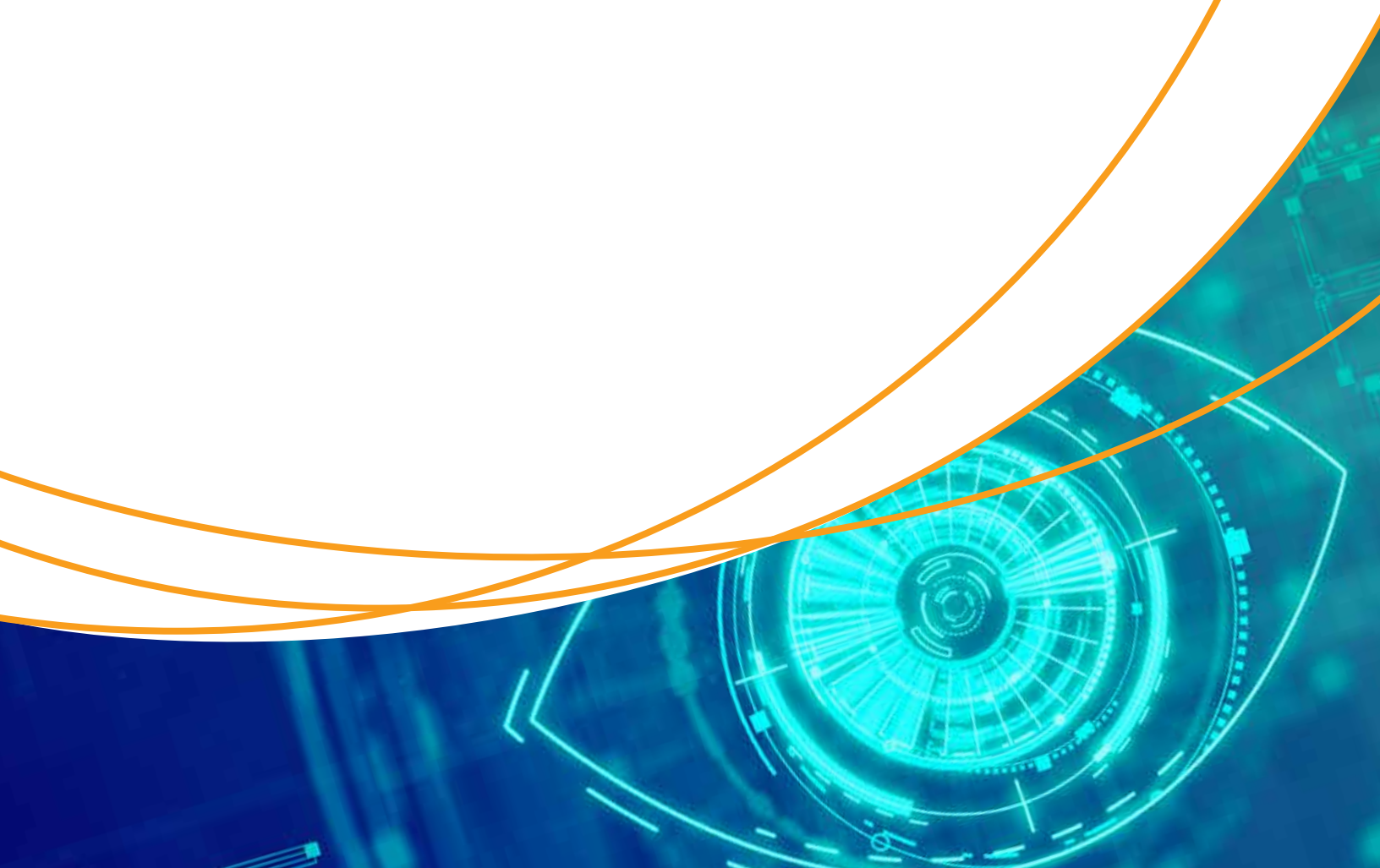
Cross-functional training and development is not unique to OTAs. For years, surveys have cited disconnects among various stakeholders in the acquisition process as among the most acute concerns—in each community. The disconnects often result in a lack of trust and collaboration between core functions, increased dependence on existing templates, and more and more local variations. All of these challenges are present in the OTA process.

An example of the impact of these disconnects is seen in the role of agreements templates in the OTA process. Nearly every government agency using OTAs has templates, including agencies recognized as experts on the subject. While widespread use of templates is not inherently flawed, two major problems can occur:

- First, while some organizations (such as DARPA) use templates as a time and resource-saving tool, other agencies use templates to fill gaps in contracting and OTA knowledge and experience.
- Second, a dependence on OTA templates constricts the negotiating and contracting flexibility that OTAs were designed for. Several interviewees noted greater use of templates without modification. While this increases speed and decreases risk, it undercuts the flexibility in negotiation that is critical to the value of OTAs.

51. Defense Acquisitions Unit. "New OTA Simulation Workshop," 4 Dec 2020. https://www.dau.edu/training/career-development/contracting/blog/New-OTA-Simulation-Workshop-.

Recommendations: Where Do We Go From Here?



This report addresses one overriding question: can OTAs become a widely accepted and utilized tool, one that might eventually achieve parity with FAR-based procurement? While there are areas in which OTAs are not appropriate (such as in the procurement of either pure off-the-shelf commodities or highly complex systems), research for this report suggests that for all other types of procurements, the answer could be yes.

The evidence shows that OTAs are generally consistent with the most significant elements of the ethos of public procurement. They are competitive, at least as transparent as FAR-based contracts, include defined deliverables, and enable the government to hold companies accountable for both delivery and compliance with sound ethical practices. But while gaps exist, and while filling those gaps will be essential to the future path for OTAs, this report's research has not identified any gaps antithetical to public procurement. Moreover, several gaps, ranging from the handling of intellectual property to workforce skills and development, are common across the acquisition ecosystem.

Given the critical importance of the government accessing and capitalizing on the full array of capabilities across the marketplace; given the need for the government to be a more consistent "customer" at the product and technology development table; and given the countless ways in which new technologies, and new applications of existing technologies constantly impact every facet of how work gets done and missions achieved—OTAs offer immense value that is essential to maintaining U.S. government competitiveness in a world of nontraditional innovation.

It is too soon to tell if OTAs can achieve their full potential. Still, the government can take steps to achieve that objective. For OTA use to grow significantly and for the government to benefit from their full value, refinements and improvements must be made. As a starting point for a broader discussion, this report offers the following recommendations.

Remove FAR Clauses From Future OTA Agreements

According to several interviewees, much of the government's legal risk in OTAs lies in the use of FAR clauses, and to a lesser degree the use of templates. Clear, governmentwide policy could ensure that FAR clauses may not be used in OTAs, except and unless the agreements officer provides justification to and receives approval from a more senior contracting official. Dropping in such clauses is too often an easy default in response to uncertainty. This tendency could be reversed so that FAR clauses for OTAs appear only in rare circumstances.

Removing FAR clauses from OTAs does carry risk, which will increase as OTAs grow in number and scope. To mitigate this risk, overarching and consistent policy can apply to areas particularly prone to defaults FAR clauses. Clear and consistent policy statements will provide OTA agreements officers and vendors with a clear understanding of where they can and cannot compromise in negotiations. Where conflicts emerge, a consistent process for elevation to senior acquisition official would also help. In the end, the default must always be not to include standard FAR clauses in OTAs, but rather to require use of available alternatives for achieving the same or similar goals.

Improve Clarity around Technical Data Rights

The long-term efficacy of OTAs lies in large part in the development of consistent, clear, and balanced IP policies and clauses. One standard OTA-specific clause (FAR-based or not) on intellectual property would be too simplistic, reflecting neither the diversity of capabilities procured under OTAs nor the wide range of IP protection required by companies negotiating

OTAs. Clearer guidance is needed, reflecting the differences between IP developed prior to the commencement of an OTA, and that developed in direct connection to government-funded activity. Further, the policy could clarify that government rights only apply to the immediate use case for which the specific OTA was developed.

As with the broader proposal regarding elimination of standard FAR clauses, this involves policy exercise, education, and leadership. The OTA workforce must be confident that the decisions they make—particularly when they deviate from standard FAR clauses—will have support from the top.

Enhance OTA Cost Data and Report Publicly Where Appropriate

Too often, assumptions about the efficacy of OTAs come without benefit of good data. As noted in this report, reliable and accessible data on dollar flow and impact are minimal at best. Yet, such data is essential to building both greater understanding and support for expanded use of OTAs.

The OTA sponsor or consortium reports most of the requisite data. Coalescing data that does not include classified or sensitive projects and making it publicly available can help increase transparency. Further, agencies with OTA authority could issue an annual report to Congress that contains reasonably detailed information on OTAs awarded, prime and lower tier recipients, the percentage of "nontraditional" participation, and other relevant data—including level of adoption of commercial business practices and industry standards, access to technology solutions, and the transition rate of funded research/prototyping.

Develop Socioeconomic Policies Compatible with OTAs

OTAs and socioeconomic programs may initially appear at odds. However, closer inspection reveals that OTAs and socioeconomic objectives work towards the same goal of providing a broader, more varied, and ultimately healthier innovation and industrial base doing business with the government. To that end, the government could establish a process to determine which socioeconomic goals can reasonably be applied to OTAs, and how best to leverage OTAs to achieve these goals. Consistent with the previous recommendation, more extensive data would enable better understanding of the current state of play.

The development of new strategies in this area will be complex. A set of initial parameters could guide that effort:

- Policies should only apply to OTAs in excess of five million dollars.
- Policies should be objective or incentive based, rather than prescriptive.
- OTA recipients should report on how firms falling under one or more socioeconomic preference categories contribute to the OTA in three key metrics: funding, nature of work performed, and technical contributions.
- Exemptions should be made if a nontraditional contractor is the main OTA participant.

Adopt the Section 809 Panel Recommendations on Commercial Buying

In its comprehensive report, the Section 809 Panel made a series of recommendations designed to improve and enhance the government's ability to procure commercial items and services. In many ways, the Panel's recommendations reflect an updated perspective on how best to achieve the goals set forth in the acquisition reform legislation of the 1990s, which as noted above have

been significantly diluted over time. While Part 12 commercial buying is technically separate and distinct from OTAs, the two share common attributes. OTAs in the 1990s were found to bear significant resemblance to FAR Part 12 contracts, as Part 12 was initially conceived. To develop the kind of cultural and practical awareness and understanding of how best to enable the government to reach the commercial marketplace, reestablishing alignment between the two is vital.

Launch and Fund Organizational and Workforce Development Initiatives

DOD is currently organized, trained, and staffed in a way that that limits the full potential of Other Transactions. DOD's acquisition workforce and processes were created to execute in traditional processes and siloed practices. When given new acquisition authorities, the workforce defaults to existing experience and training, even if counter to the intent of the new authority. As James Geurts, former assistant secretary of the Navy for Research, Development and Acquisition, told us, longtime contracting officers find it extremely difficult to become comfortable with the flexibilities offered by OTs. To that end, DOD and the services could launch a joint initiative to link top, experienced acquisition talent with innovative acquisition tools, including several components outlined below.

Expand the OTA workforce

Demand for OTAs, both from firms that will only engage with government through OTAs and government organizations seeking increased flexibility in procurement, is outpacing the ability of the workforce to create these OTAs. DOD, as the primary user of OTAs, should take steps to expand the OTA workforce through training and hiring skilled professionals. In addition, given the increasing use of OTAs by other parts of the federal government, training outreach should include other federal agencies.

Establish an agile acquisition workforce

DOD should establish "Agile Acquisition Operations Corps" at the enterprise level and across the services. This corps would receive separate baseline training from FAR-based acquisition training based; agile training would include the tenets of commercial contracts, commercial intellectual property rights, and the use of Other Transactions and other rapid acquisition contract vehicles. FAR certification training need not be a prerequisite for this training.

Research, development, acquisitions, engineering, and operational commands should pair this agile acquisitions corps with teams consisting of specially selected and trained contracting and agreements officers, program managers, lawyers, and technical experts. These specialized teams could pursue unique, targeted, complex, and unconventional acquisitions. The teams could also prototype and test new acquisition processes, including new methods of OTA implementation—which, if successful, could be extended for adoption to the conventional acquisition workforce.

Train senior leadership

Significant knowledge of and demonstrated experience in both FAR-based acquisitions and OTA-based acquisitions should be required for advancement into senior management and senior acquisition executive roles, especially in commands with significant research and development and acquisition missions.

Unify OTA training to include all relevant parties, with a special focus on the legal community

Over the past two years, both legal and acquisition trainers for OTAs used simulated OTA processes as a valuable instruction tool. Simulated OTA agreement drafting was used at the U.S. Army Judge Advocate Center and School in 2018 and 2019, and the Defense Acquisition University instituted a similar method of instruction in late 2020. However, OTA training would have greater impact if multiple communities could participate in OTA simulations. Training on the differences that OTAs bring from traditional contracts can best be sustained by multifunctional development, avoiding the risk that those who receive special training all too often lose the benefits of that training when they return to organizations and cultures in which no one else has a similar perspective.

In the private sector, cross-functional development and training represents the norm. And obviously, today's technologies enable such training to occur virtually, greatly reducing travel time, cost, and other resources. Just as many have long advocated for acquisition as a whole, cross-functional training is key to the successful execution of OTAs.

Use direct practitioners as principal "trainers."

The professionalization of OTA training through the Defense Acquisition University has introduced effective OTA training to more individuals. In addition, DAU's inclusion of OTA instruction has improved the understanding of OTAs and how they can be integrated with the larger defense acquisition system. However, DAU courses in OTAs have not typically included instruction from direct practitioners—acquisition professionals whose primary job involves negotiating OTAs. This was a significant and valuable part of the Acquisitions Innovation Roadshows. Revising DAU's course format for OTAs to include sessions of instruction or comment from direct practitioners would improve training and education.

Establish DOD-wide Standards for Alternative Dispute Resolution

OTAs are exempt from most traditional protest statutes, but are subject to some Government Accountability Office (GAO) and court jurisdiction. And as with any other business arrangements, disputes can arise. To facilitate the use and growth of OTAs, a unified alternative disputes resolution (ADR) process could be established across DOD agencies and components. With the overlap among consortia (though modest), and the increased OTA emphasis on business-related systems and technologies that any service can tap into, a clear and accepted ADR process will help to avoid unnecessary delays due to court or similar actions, while still allowing appropriate paths for redress.

Improve Oversight of Consortiums and Sharing of Consortium Data

The consortium model remains and will likely continue to dominate for OTAs across government. Additional transparency will foster greater confidence and trust in the model. The government, through the GAO or another independent body, could conduct an overall assessment of the consortium model and process every three years. That assessment should look at the degree to which the consortia efficiently meet the government's mission needs, whether they expand the industrial base supporting the government, and whether they have transparent and well understood cost and fee structures. Many consortia are relatively new, and additional entities routinely start up. As the use of OTAs grows, continuously assessing the consortium model's evolution will help ensure that it serves national needs.

CONCLUSION

The Road Ahead

Today, Other Transaction Authority is used for a variety of government needs, from national security to health to business systems and operations. The evidence in this report supports the thesis that OTAs drive real value for the government, while also maintaining faith with the essential components and ethos of public procurement. And while the road has had challenges and not every agreement may have worked precisely as intended, the research for this report suggests that those problems or challenges have either been appropriately handled, or could be addressed through improved policy, practice, and workforce development.

At the same time, the promise of OTAs, particularly their potential for production authority, has neither been achieved nor is clearly on the road to achievement. While not enough prototype-to-production examples exist to definitively determine the effectiveness of the authority, ample evidence suggests that, in these early stages, production authority OTAs do not work as intended. Too many nontraditional contractors appear to be exiting the market rather than face the burdens of a transition to production that, as more than one interviewee put it, "looks a hell of a lot more like a FAR contract than a commercial deal."

Significant steps must be taken to ensure that OTAs achieve their objectives. These steps include recognizing that meaningful growth in OTAs could quickly outstrip the supply of qualified acquisition personnel; that dependence on FAR clauses is, in the long run, counter-productive; that the consortium model, while a crucial and effective method for government-to-business collaboration, must be continually evaluated and right-sized; and that OTA differences do not mean avoiding key components of federal procurement, such as including cybersecurity policy and socioeconomic goals. To the contrary, the growth of OTAs will necessitate extensive consideration of how best to achieve those goals without obviating the purpose and benefits of OTAs.

So, what is the road ahead for OTAs? Given that most OTAs are structured in a way consistent with the ethos of public procurement; and given decades of evidence demonstrating that the government and its industry partners still struggle mightily to access and capitalize on the full array of existing and emerging capabilities available in the marketplace; and given that OTAs have proven to be one important path into the market for these capabilities—the future for OTAs could be bright and likely robust. However, the path forward could take a number of forms.

Some favor integrating OTA flexibilities into the FAR itself. Such an approach finds that to be the best way in which to "mainstream" the authority. Yet aside from the fact that the very philosophy behind OTAs differs from that of the FAR, thereby creating a cultural mismatch, history has shown that acquisition flexibilities incorporated into the FAR tend to dilute over time. As noted elsewhere in this report, the original construct of FAR Part 12, created to address many of the same challenges as OTAs, has been loaded with more than 150 new and mostly government-unique clauses since its inception in the mid 1990s. Similarly, as noted in this report, OTAs themselves suffer from the same problem as they transition to production. One Navy command actually has a set of "recommended" FAR clauses that should be incorporated into OTAs from the start.

As an Army general once said in a different context, "We should only refer to lessons observed since we've never learned a thing"—in other words, trying to marry OTAs with FAR-based procurements will likely fail. This report finds that the processes, culture, and skills needed for suc-

cessful OTAs all vary significantly from those associated with the FAR, leading to recommendations around workforce development and training. This also leads to three principal conclusions:

1. OTAs should retain their clear and distinct identification apart from FAR-based procurements.

2. Recommendations in this report provide a path for OTAs to become relative equals to traditional FAR procurements, and thus be utilized across an increasingly wide spectrum of government missions and needs.

3. The FAR itself should include OTA-like pathways as best practices. These pathways should complement OTAs, not replace them.

Regardless of the future of OTAs, some critical foundational components within the OTA process can also be utilized in FAR-based procurements—in fact, this is already happening. The Defense Innovation Unit's "Commercial Services Opening" (CSO) process is now statutorily authorized, and beginning to be used in a range of agencies, prominently including DHS and GSA. In many ways, the CSO process epitomizes the kind of performance-based acquisition strategies that government leaders have advocated for decades. Likewise, the trend toward "show me don't tell me" proposals derive in part from how many OTAs have been awarded at DIU and elsewhere. These kinds of practices can improve outcomes and merit inclusion in federal acquisitions of all kinds.

In many ways, the course of Other Transaction Authority is at an inflection point. The value of OTAs in research is longstanding, well understood by the workforce, and fully supported by Congress. But the future of OTAs in production remains less clear. The revolution in who develops and owns new technology, and who guides its development, continues to have profound effects on the government and on national security. OTAs provide a powerful tool in helping the government address this evolution. The extent of this power remains to be seen.

Much as technology develops at a pace that exceeds how the government can adapt to it, so too has OTA use grown at a pace faster than the culture and capabilities of government to adjust. This report notes challenges and gaps in the current OTA ecosystem. However, the potential exists to not only directly address those challenges and fill those gaps, but also to take federal acquisition to meet the increasingly dynamic levels and changes that the twenty-first century demands.

APPENDIX I: HISTORY

The creation and expansion of Other Transaction Authorities can be traced to three periods of technological concern in the United States. The launch of Sputnik in 1957 and the subsequent Space Race led to the creation of OTAs. The semiconductor scare and dot.com boom of the 1980s and 1990s resulted in the Department of Defense receiving Other Transaction Authority. Finally, the rise of China and concerns about a new technological arms race led to an expansion of OTAs to encompass production.

In the late 1980s, the Department of Defense recognized that the dynamic that mandated that NASA be able to move flexibly in their relevant marketplaces was also essential for the DOD.[52] To some extent, the acquisition reforms of the 1990s were designed to address this issue. This included the expansion of OTAs from NASA to the DOD and other agencies. In addition, a special revision to the Federal Acquisition Regulation (FAR Part 12) was specifically created to enable the government to utilize commercial best practices when acquiring commercial goods and services.

With the 1994 National Defense Authorization Act (NDAA), Congress granted the Defense Advanced Research Projects Agency (DARPA) permanent authority to utilize Other Transaction Authority for research and prototyping related to weapons systems. At the same time, Congress established new flexibilities under FAR Part 12 for the acquisition of commercial items and services. By the late 1990s, discussions were underway to expand OTA use, specifically to allow their continuation beyond prototyping and into production. This also began to raise awareness of what existing OTAs, constructed with very few rules, actually looked like.

In 1999, an internal DOD report found that a typical OTA looked a lot like a contract written under FAR Part 12, with alternative, negotiated language substituted for prescriptive FAR provisions. This finding had two salutary effects. First, it was solid evidence that—contrary to what some might have believed—OTAs were well constructed contractual documents, even if they were exempt from the traditional FAR. Second, the similarity between OTAs (which were at the time only approved for prototypes and research) and FAR Part 12 (which was used for acquisition) suggested a potential path forward to enable successful prototypes to move into production using an OTA as the contractual vehicle. However, it would be over 15 years before this production authority was finalized.

The Age of the Future Combat System (2003-2009)

The modern history of OTA use began in 2003 when a joint DARPA/Army program transferred to full Army control. As former DARPA General Counsel Richard L. Dunn noted in our interview, Boeing was chosen as the lead system integrator under an Other Transaction agreement, which was negotiated to look as close to a FAR contract as possible. This program was the ill-fated Future Combat Systems (FCS), at the time the largest program of record in the Army, and combined dozens of modernization efforts, including tanks, munitions, aircraft, and computer networks.[53]

52. "CARTS: Consortia Analysis and Recommendations Trade Study," *Potomac Institute for Policy Studies,* Dec 2017. https://potomacinstitute.org/images/studies/CARTSsm.pdf.
53. Christopher G. Pernin et al. "Lessons from the Army's Future Combat Systems Program," *Rand Corporation,* 2012. https://www.rand.org/pubs/monographs/MG1206.html.

In 2005, with the program already facing enormous cost increases and delays, the Senate Armed Services Committee (SASC) held hearings in which a number of witnesses and committee members asserted that FCS's problems were, in large part, driven by the fact that it lacked many of the protections found in a standard procurement contract. Congressional pressures caused FCS to be restructured from an OTA to a procurement contract, where it existed for another four years before being cancelled outright in 2009 with the government incurring significant termination liability. But Dunn suggests that the focus on FCS's status as an OTA missed the real issues. As he and others have pointed out, FCS had numerous problems that were more significant than anything tied to it being an OTA.

Nonetheless, there is no doubt that the FCS experience soured other services interest in Other Transactions. Both the Navy and the Air Force stopped any significant OTA training for their workforces, and the Defense Acquisition University barely touched on the topic with just a single class on alternative acquisition methods for only the most senior acquisitions and contract officials. In effect, the message to the workforce was, "Sure OTAs exist, but why would you take the risk?"

Rapid Capability Development (2003-2009)

Concurrent with the development of FCS, DOD was responding to the emerging tactical needs of the wars in Iraq and Afghanistan through tailored and creative acquisitions methods.[54] The Mine-Resistant Ambush Protected (MRAP) program was developed in between 2005 and 2007 as an Urgent Operation Need to counter the 75 percent of all casualties in the combat operations from improvised explosive devices (IED). This program used an Indefinite Delivery Indefinite Quantity (IDIQ) award process with multiple awardees and a concurrent, competitive testing process. As the Army's number one priority at the time, the MRAP was considered an enormous success.[55] As a result, many desired capabilities seeking to avoid the long and involved joint requirements process submitted Immediate Warfighter Needs (IWN) and Joint Urgent Operational Needs (JUON) requirements.

The need to rapidly respond to requirements spawned the Rapid Response Capabilities Office at the Office of the Secretary of Defense Level, and Rapid Capabilities Offices at the service level. Unfortunately, as more capabilities were jammed through the JUON process, the DOD and Congress began pushing back on JUON requests. There was an unmet need for rapid and flexible acquisition paths for core requirements in the services that the normal FAR couldn't meet, and that rapid capabilities were not designed for. To meet this need, many program offices began to look again at Other Transactions.

Defense Innovation and the Third Offset

The recent history of Other Transactions has to be understood in the context of the events that were occurring in the Department of Defense between 2009 and 2016. In 2009, the United States was still in the hot stages of both the Iraq and Afghanistan Wars. Military and civilian deaths were rapidly rising in the war zones as insurgent forces learned U.S. tactics and adapted to them quickly. Improvised explosive devices (IEDs) were becoming increasingly sophisticated, and the U.S. came to realize that the equipment they were sending to support the troops was not sufficient for the battlefield on which they were fighting.

54. Government Accountability Office. "Rapid Acquisition of Mine Resistant Ambush Protected Vehicles," 15 Jul 2008. https://www.govinfo.gov/content/pkg/GAOREPORTS-GAO-08-884R/html/GAOREPORTS-GAO-08-884R.htm.
55. Michael E. Bulkley and Gregory C. Davis. "The study of the rapid acquisition Mine Resistant Ambush Protected (MRAP) vehicle program and its impact on the warfighter," *Naval Postgraduate School,* Jun 2013. https://calhoun.nps.edu/handle/10945/34636.

During this same period, President Obama's administration arrived and promised to modernize government by bringing in the same technology and minds that were so wildly successful in changing the way the world communicated with each other. Congress had passed the Affordable Care Act (ACA), a massive restructuring of healthcare policy and execution. Among other things, the Act required the government to implement a nationwide system of healthcare exchanges to be accessed by a single website, Healthcare.gov. The rest is well-known history. The launch of the site was a disaster and teams of technology experts, including some of the original site designers, engaged in a months-long sprint to fix the system.

In the end, the healthcare.gov debacle generated important learnings. For one thing, the scope and pace of the program was, like FCS had been, too much for the system to handle. In addition, the structure itself was bulky at best and widely disconnected at worst. In addition to multiple government stakeholders, there were more than four dozen contracts with companies to provide various pieces of the complex puzzle—and they were unable to communicate with each other.

Awareness of both the importance of new thinking and a lack of technology skills in the government led to a new emphasis on bringing contemporary digital acumen to the rest of the government. The results were many, including the United States Digital Service, 18F at GSA, and the Defense Digital Service within the Department of Defense.[56] While their launches and operations to date have not been without controversy or challenges, they did and continue to have a palpable effect on government technology strategy and thinking, including at the DOD.

At the same time, Secretary of Defense Ash Carter, a theoretical physicist who spent much of his life working between government and academia, and the Deputy Secretary Bob Work were also concerned with the DOD's technological abilities. Their principal strategic plan, The Third Offset, specifically established technological dominance, including information dominance, as the keys to DOD's mission going forward. As a result, Carter established the Strategic Capabilities Office, the Office of the Defense Innovation Officer, and the Defense Innovation Unit Experimental (DIUx) in Silicon Valley, Austin, and Boston. All of these efforts were designed to jumpstart DOD's technical "recovery" and superiority.[57]

The OTA Consortium Age (2009-2016)

Despite the program's collapse, Future Combat Systems did have a lasting, positive impact. The Army had taken significant steps to create an infrastructure of people and skills to deal with the enormous number of acquisition actions that would have flowed through FCS. Recognizing the needs the program created, Army Contracting Command invested in developing a force of lawyers, program managers, and contracting officers who had significant knowledge of, and experience with, Other Transactions. Army Contracting Command also had agreements with multiple Other Transactions consortia that were to have supported nearly all procurement areas the FCS might have needed.

This is where the consortium model really began to mature. The Army's OTA consortium process competitively awarded an OT agreement to a consortium management firm (generally, but not always, a not-for-profit company) focused on a specific functional need. In turn, the consortium was responsible for recruiting and maintaining a group of companies with exper-

56. Jack Moore. "Invasion of the Innovators," *Government Executive.* Summer 2015. https://www.govexec.com/feature/invasion-innovators/.

57. Secretary of Defense Ash Carter, "Remarks Announcing DIUx 2.0," U.S. *Department of Defense,* Speech 11 May 2016. https://www.defense.gov/Newsroom/Speeches/Speech/Article/757539/remarks-announcing-diux-20/.

tise in the relevant field. When an RFP came out, all companies within the consortium were (and still are) able to propose solutions. The management firm would then maintain the direct contract relationship with the Army, with the winning bidder(s) as subcontractors to the consortium manager.

With the collapse of FCS, Army Contracting Command found it had excess, trained, OTA capacity, so they invited the other services to participate in their existing OTA consortium model. Since the OTAs were largely already awarded to the consortia, all they had to do was present a solicitation to the consortium of their choice in order to get rapid responses to their needs. Between 2009 and 2016, the predominant method of issuing Other Transaction agreements was through an OTA consortium (consortiums are still the vehicle for the majority of OTAs as of 2021). The majority of consortia were managed by Army Contracting Command, and as a result, regardless of which service initiated the OTA solicitation, Army Contracting Command had responsibility for OTA execution. Over those years, ACC's OTA expertise grew, and other services increasingly capitalized on that capacity.

But this also created a challenge as OTA use grew. The Navy and the Air Force were using Army Contracting Command Agreements Officers to execute the Other Transactions, rather than their own workforce. As such, they were not developing a capacity to do them internally. This atrophied capability in using Other Transactions extended to the program managers, contract officers, legal officers, and executive management of the Navy and Air Force. By 2016, the Navy and Air Force had largely lost the expertise at all levels to do OTAs.

APPENDIX II: LEGISLATIVE HISTORY

The first use of Other Transaction Authorities came with the National Aeronautics and Space Act of 1958 passed by the 58th Congress. The Act is best known for founding the National Aeronautics and Space Administration (NASA). In addition, the Act 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 and on such terms as it may deem appropriate" without regard to Regulations 31 U.S.C. 529, which at the time was the main body of law regarding federal contracting. While the term "other transactions" is included in the law, it was neither defined in the law nor discussed in any of the committee reports or other relevant congressional documents.[58]

The Department of Defense and OTAs

OTAs remained the exclusive purview of NASA for over 30 years. However, in the late 1980s, due to growing investment in research and development by private sector companies (especially in the computer and semiconductor industries), it became clear that the DOD's approach to research and development was inadequate. This was due to the fact that before 1989, the DOD saw its research and development authority as limited to procurement contracts and grants, and DOD policy only allowed grants to be given to nonprofit institutions and universities. In addition, many companies in the technology sector lacked either the accounting systems to be eligible for government contracts or the desire to set up the type of accounting system that would make them eligible.

1990: Section 251 of the National Defense Authorization Act for FY 1990 and FY 1991 expanded the OTAs from solely NASA to include the Defense Advanced Research Projects Agency (DARPA) on a two-year trial basis. "The Secretary of Defense, in carrying out advanced research projects through the Defense Advanced Research Projects Agency, may enter into cooperative agreements and other transactions with any person, any agency or instrumentality of the United States, any unit of state or local government, any educational institution, and any other entity."[59] At the end of those two years, it was made permanent.

1994: The next major change in the DOD's Other Transaction Authority came with the fiscal year 1994 National Defense Authorization Act. That year, DARPA's Other Transaction Authority was expanded to include prototypes relevant to weapons or weapons systems. This created the prototype OTA, which now falls under 2371 B.[60] (This change from a note to a separate section was made in the 2016 NDAA.)

58. Nancy K. Sumption. "Other Transactions: Meeting the Department of Defense's Objectives," *Public Contract Law Journal,* Vol. 28, No. 3, pp. 365-413, Spring 1999. https://www.jstor.org/stable/25754363?seq=1.
59. "National Defense Authorization Act for Fiscal Years 1990 and 1991," Public Law #101-189, 103 Stat. 1359. 29 Nov 1989. https://www.congress.gov/bill/101st-congress/house-bill/2461/text.
60. "National Defense Authorization Act for Fiscal Year 1994," H.R. 2401. Public Law #103-160, 107 Stat. 1712. 30 Nov 1993. https://www.congress.gov/bill/103rd-congress/house-bill/2401/text.

2001: Major policy change came in the FY 2001 NDAA (P.L. 106-398). This was the first major limitation in the use of OTAs for prototyping. Section 803 of the FY 2001 NDAA required at least one nontraditional defense contractor to significantly participate in the project. The exceptions were if over 30 percent of the cost of the project was paid for by someone other than the federal government, or if the senior procurement executive determined, in writing, that exceptional circumstances justified the use of OTAs.[61]

2015: Prior to the 2015 NDAA (P.L. 113-291), prototype authority existed only for prototypes related to weapons or weapons systems. In Section 812, the scope of prototype authority was further expanded to include prototypes "directly related to enhancing the mission effectiveness of military personnel . . . supporting platforms, systems, components, or materials."[62]

2016: Follow-on production authorities were expanded, and restrictions were eased when "all significant participants in the transaction other than the federal government are small businesses or nontraditional contractors" and the definition of nontraditional defense contractor was slightly changed.[63]

2018: The 2018 NDAA (P.L. 115-91) allowed approved nonprofit research institutions to enter into OTAs for prototype projects. Section 862 granted all of the DOD the authority to pursue basic applied and advanced research and development projects under Title 10 Sections 2371 and 2371b. In addition, Section 867 established a preference for OTAs over traditional contracting methods in the "execution of science and technology and prototyping programs."[64]

2019: In the Department of Defense Appropriations Act, 2019 (P.L. 115-245), the conference report expressed significant concern with the lack of transparency, particularly in the use of follow-on production authority. The DOD was required to provide a quarterly listing of each active OT agreement, which included information on the budget implications and data, the funding service and the organization responsible.[65]

61. "National Defense Authorization Act for Fiscal Year 2001," H.R. 4205. Public Law #106-398, 114 Stat. 1654. 30 Oct 2000. https://www.govinfo.gov/content/pkg/PLAW-106publ398/pdf/PLAW-106publ398.pdf.
62. "Carl Levin and Howard P. "Buck" McKeon National Defense Authorization Act for Fiscal Year 2015," Public Law #113-291, 128 Stat. 3791. 19 Dec 2014. https://www.govinfo.gov/content/pkg/CPRT-113HPRT92738/pdf/CPRT-113HPRT92738.pdf.
63. "National Defense Authorization Act for Fiscal Year 2016," Public Law #114-92, 129 Stat. 727. 25 Nov 2015. https://www.govinfo.gov/content/pkg/CPRT-113HPRT92738/pdf/CPRT-113HPRT92738.pdf.
64. "National Defense Authorization Act for Fiscal Year 2018," Public Law #115-91, 131 Stat. 1288. 12 Dec 2017. https://www.congress.gov/bill/115th-congress/house-bill/2810/text.
65. House of Representatives, Report of the Committee on Armed Services on H.R. 5115. 115th Congress, Report 115-676. 15 May 2018. https://www.congress.gov/115/crpt/hrpt676/CRPT-115hrpt676.pdf.

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