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Uses Of Other Transactions

*By Richard L. Dunn**

An awareness of the way other transactions (OTs) have been used in the past can and should lead to the exploration of new ways of using their flexibility. All too often acquisition professionals default to discussing and focusing on contracting process issues rather than the potential benefits the flexibility OTs permit if used intelligently. Unfortunately past examples of OTs seem forgotten and often go untaught in what passes for innovative contracting education. This BRIEFING PAPER documents uses of OTs as a step toward raising awareness and a curiosity for exploring potential future uses of the authority to engage in OTs. Various aspects of OTs have been explored in previous BRIEFING PAPERS.[1]

Legal Basis

Before surveying specific ways OT contracts have been used it might be good to ask and answer some fundamental questions. First, what legal authority exists for the United States to enter contracts that are not expressly authorized and regulated by Congress? That question was answered by the U.S. Supreme Court in 1831: "The United States [has in its] political capacity a right to enter into a contract, or take a bond in cases not previously provided by law. It is an incident to the general right of sovereignty, and the United States, being a body politic may . . . through the instrumentality of the proper department to which those powers are confided, enter into contracts not prohibited by law. . . ."[2]

Why "other transactions"? The use of OTs was pioneered by the National Aeronautics and Space Administration (NASA). Thus, we might query the motivation behind the inclusion of the term "other transactions" in NASA's organic statute.[3] Responding to an interview question on the subject, key author of the National Aeronautics and Space Act of 1958 ("Space Act") Paul G. Dembling, later General Counsel of NASA, explained:

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> Well, I tried to cover everything else that was [raised by others]. When somebody said, well, suppose we have this kind of a transaction or that kind of a transaction, I figured, it may not be covered under contracts, leases, and cooperative agreements. I couldn't think of any other terminology to use, so I used "other transactions as may be determined or necessary in the conduct of its work." So it was a sort of catchall phrase that I tried to use. . . . [A]n "other transaction" is not a procurement contract, cooperative agreement, or grant and, therefore, is not subject to the laws, regulations, and other requirements applicable to such contracts, agreements, and grants. It is this flexibility which provides authority to structure agreements in accordance with standard business practices.[4]

Similarly, in his own history of the Act, Dembling wrote:

> While it is common for Federal departments and agencies in their organic or authorizing statutes to be provided authority to enter into contacts, leases, and cooperative agreements, I wanted to assure that the organization met any contingency that might arise, and so I added the language for "other transactions." The Space Act, for the first time, authorized an agency, NASA, to enter into "other transactions." This authority is without limitation. Since such a transaction is not a procurement agreement, it is not subject to the laws, regulations, and other requirements applicable to contracts, leases, cooperative agreements. It is this flexibility which provides authority to structure agreements in accordance with standard business practices.[5]

Unrecognized OT Authority

Based on the use of OTs as documented by the Congressional Research Service, it might appear authority to use them has been limited to just a few agencies.[6] Many government agencies have some form of OT authority in their enabling legislation. Terms such as "other transactions," "other arrangements," "other similar transactions," and so forth imply that an agency is not limited to procurement or assistance relationships expressly authorized by statute. This authority has often gone unrecognized and therefor unused.

OTs gained increased visibility after the Defense Advanced Research Projects Agency (DARPA) sought and obtained authority to utilize other transactions for research[7] and prototype projects related to weapons and weapon systems.[8] The flexibility of other transactions is particularly useful for research, prototyping, and other activities that seek the expansion and application of knowledge and not merely the routine purchasing of goods and services.[9]

NASA Pioneers Other Transactions

In 1961, at a time when NASA space launches were less than 50% reliable, American Telephone and Telegraph (Bell Labs) approached NASA seeking to utilize its space launch capability. The government was then developing various means of space communications. It had developed a low tech balloon approach (Project Echo) and was planning or working on a medium orbit store and forward project (Relay) and a more complicated geosynchronous orbit capability (Syncom).[10] All these projects involved procurement contracts with industrial firms. AT&T was engaged in its own communications satellite project and needed the government's help since the government had a monopoly on space launches. This gave rise to an "other transaction" relationship where the government, instead of paying for a technology development, was paid to provide a space launch via a "reimbursable Space Act agreement" with a private company.

Telstar

On July 10, 1962, a NASA Thor Delta launch vehicle carried the first privately owned satellite, which was also the world's first active communications satellite, into orbit. Telstar I enabled whole continents to "see" across oceans. Television programs to and from Europe brought new real-time sights and sounds to the homes of millions. Even though Telstar's "mutual visibility" of 20 minutes or less per orbit was short, the portents of the new communications medium were immediate. With an elliptical orbit that crossed the Van

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Allen belt, data from Telstar's sensors taught engineers about radiation damage to communications equipment. The NASA copy of the technical report from the project looks almost exactly like a technical report delivered in connection with a procurement contract. Successive developments such as Syncom and Early Bird were the beginning of a multibillion dollar industry.[11]

Launch Vehicle Upgrade

As the years passed, NASA found itself providing more space launches on a reimbursable basis that it did for its own or other government programs. However, with the decision to develop the Space Shuttle, NASA decided not to spend appropriations on the upgrade of expendable launch vehicles despite customer demand for greater launch capability. This set the stage for a Space Act OT arrangement between McDonnell-Douglas (Delta manufacturer), RCA (customer for upgraded Delta launch vehicle capability), and NASA. The agreement provided:

> [1.] McDonnell-Douglas agreed to design and develop the uprated vehicle at its own risk on commercial funds but with profit limitations.
>
> [2.] McDonnell-Douglas agreed to recover its investment through a specified "not to exceed" customer charge for each commercial launch. However, there would be no "investment charge" for U.S. Government use of the vehicle.
>
> [3.] NASA agreed to contract for production and launch services of the improved vehicle as an integral part of the ongoing Delta program and provide technical monitoring.
>
> [4.] RCA agreed to contract with NASA for three vehicles and launch services and with McDonnell-Douglas for three user-development amortization payments.[12]

Within just a couple years there were more than two dozen launches on the new Delta version, seven of which were for the U.S. government.[13] The vehicle had a long life and later versions of Delta are still in use today.

Joint Endeavor Agreements

The pattern set with the Delta vehicle upgrade OT was followed in developing a new upper stage that could be used with either the Delta expendable launch vehicle or the reusable Space Shuttle, the Payload Assist Module, as well as other system upgrades. With the advent of the Space Shuttle, NASA developed an OT called a Joint Endeavor Agreement (JEA) initially to promote materials processing in the microgravity of space (MPS) but expanded to other areas. This was viewed as a partnership arrangement with no exchange of funds between the participants. The private participant proffered an experiment or technology development for a joint endeavor that complied with MPS objectives, conducted the necessary ground investigation, and developed flight hardware at private expense. In exchange, flying the experiment and in some cases the company investigator (payload specialist) on the Space Shuttle was free of cost. The first JEA, involving McDonnell-Douglas and Ortho-Pharmaceuticals, was titled "Continuous Flow Electrophoresis." It resulted in higher quality and quantity of certain pharmaceuticals. Another project involving Microgravity Research Associates resulted in the production of pure gallium arsenide crystals. Numerous other projects followed.[14]

Commercial Launch Vehicles

Space Act OT agreements to support commercial launch services were initiated with a request from a start-up company (Space Services, Inc.) for limited NASA support in its efforts to demonstrate that a private company could successfully provide space launch services. The issue of whether NASA had authority to provide the requested support (use of NASA rocket motors) was resolved by a lengthy legal opinion.[15] An OT agreement provided for use of the engines with reimbursement to NASA at book cost plus the expense of refurbishing replacement rocket engines held in storage. The rocket motors that were destroyed in use provided lift to the successful launch of Conestoga I from a private launch site on Matagorda Island, Texas on September 9, 1982.[16] Subsequently, NASA solicited proposals for the commercialization of its existing stable of expendable launch vehicles. The OT agreements involved were much more complicated than the Space Services agreement since they involved multiple facility use aspects, transition from incumbent contractor to new operator, new provisions for government oversight and many other details. Eventually agreements were negotiated with General Dynamics (incumbent contractor) for Atlas-Centaur and Transpace Carriers Inc. (new entrant) for Delta.[17] Due to the Space Shuttle disaster and other factors the commercialization of these vehicles was long delayed. A more recent example is the development of the Falcon 9 launch vehicle through a partnership between Space Exploration Corp. and NASA. An interesting aspect of that OT agreement was the structure of milestone payments. NASA payments to SpaceX were based not only on technical accomplishments but also on the receipt of third-party financing.[18]

Current Use

NASA has used Space Act OTs for various technology

transfer and demonstration activities including the descriptively titled Technology Exchange Agreement and Industrial Guest Investigator agreement. NASA policies regarding Space Act agreements contemplate a variety of uses and potential partners. They address reimbursable, non-reimbursable, and funded agreements. Partners may be domestic or foreign governmental, including federal, state, or local government, or non-governmental, including educational, non-profit, and profit-making organizations.[19]

NASA currently has hundreds of active Space Act agreements issued from headquarters and field centers including its contractor operated Jet Propulsion Laboratory. Many of these are unfunded or of low dollar value but a few involve funding of more than $100 million.[20]

DARPA Blazes The Trail For DOD

DARPA obtained OT authority in 1989[21] and executed its first OT agreement in April 1990.[22] Being the first of a new kind of agreement and coming at a time when there was a debate concerning the government's role in industrial policy, it stirred some controversy.[23] When questioned about the agreement, Deputy Secretary of Defense Donald Atwood testified to Congress that he thought that the authority was appropriate and stated that the Director of Defense Research and Engineering and Under Secretary for Acquisition gave their approval to go ahead with the OT and agreed with the approach.[24]

That first OT agreement with Gazelle Microcircuits incorporated several unique features. First, it was with a firm entirely dependent on venture capital. DARPA's involvement came at a time when it was trying to transition its long term support for research in gallium arsenide semiconductors to practical applications. The result of the agreement and DARPA's $4 million in funding was a highly successful transition to product sales supporting several government programs in less than a year.[25] The agreement took advantage of the original DARPA OT authority having no requirement for competition. Upon discovering the opportunity for technology transition DARPA could act quickly with a minimum of the bureaucracy which was foreign to a company unfamiliar with doing research and development (R&D) business with the government. Although the OT statute had a base line of joint funding if *practicable*, Gazelle, entirely dependent on venture capital was not required to cofund. The government had the possibility of receiving payments from Gazelle in the event of successful commercialization. There was no agreements officer. The agreement was signed by the Director of DARPA. Oversight was provided by a *scientific officer*, the cognizant DARPA program manager, who gained insight into the program by attending meetings of the Gazelle board of directors. Some of the approaches pioneered in this agreement could be, but are not, being followed today. You should keep in mind this agreement with its unique attributes was approved by senior officials.

IHPTET Ceramic Consortium

The Ceramic Fiber Consortium supported the joint Integrated High Performance Turbine Engine Technology program.[26] The fiber consortium, an early DARPA's multiparty agreement, was a cost-shared project involving seven gas turbine engine manufacturers with government funding provided by the Air Force, DARPA, and NASA. DARPA represented the government. The companies individually signed the agreement but selected a single point of contact to deal with the government. The ceramic fiber consortium developed high performance component materials for ceramic matrix composite applications in gas turbine engines and was considered highly successful. It had several unique features. Utilizing DARPA's original OT contracting authority, government technical leadership was provided by the Air Force.[27] The engine companies provided funding and strategic management of the program with leadership rotating among the companies. Consortium voting was weighted based on company financial contributions. Administrative matters were handled by a fee-for-service integrating subcontractor selected by industry. Funds from both the government and companies were deposited in a project bank account obligating the funds. The service fee was the administrative subcontractor's sole source of project income. Pass-through funds were not "taxed."

Research was in many cases subcontracted to small innovative companies or universities. However, all researchers were required to partner with a materials manufacturer. The goal of the program was to develop prototype components that could be manufactured and put into use in engines and not merely to advance the state of the art or publish research results. Consortium decisions on what projects to fund were all fully open. Intellectual property vested jointly in the engine companies. The use any engine company made of a particular component or technology could be proprietary. Project funding decisions were exclusively in the hands of the consortium companies. An entire industry segment was able to work together to advance the state of the art and develop unique applications rather than the government selecting a single or a few companies to receive its largess.

The Technology Reinvestment Project (TRP)

The Technology Reinvestment Project (TRP) was a comprehensive effort in the 1990s to mitigate the combined effect of shrinking defense budgets and shift from government to private-sector dominance in cutting-edge technology investment. TRP's goal was to ease the transition of defense firms into the commercial market.[28] TRP spearheaded a dual-use program to incentivize commercial technologies that could benefit DOD, in contrast to the traditional dual-use prioritization of DOD technology that could transition to commercial use. TRP programs were managed by a joint board of government agencies chaired by the DARPA and had representatives from the Department of Energy, the National Institute of Standards and Technology, the National Science Foundation, NASA, and the Department of Transportation.

OT authority was integral to TRP's design in two respects: special partnerships between government and industry (including academia and nonprofits) and cost-sharing requirements. Neither of these attributes were possible through traditional contracting methodologies. TRP emphasized the cost-sharing flexibility of OTs to ensure industry participants were interested and invested in technologies that were targeted for full privatization within five years. TRP consisted of programs within three broad categories: (1) technology development programs to create new dual-use technologies, (2) technology deployment programs to disseminate existing dual-use technologies, and (3) manufacturing education and workforce training programs. The common thread was collaboration among federal agencies, nonprofits, federal laboratories, educational institutions, private businesses, and state and local governments. Most TRP efforts required a 50/50 cost sharing with private industry. Some of the statutes authorizing the TRP have lapsed but basic authority exists to replicate a TRP-like dual-use technology development program.[29]

TRP was meant to integrate, coordinate, and combine many disparate areas of the private sector—university, laboratories, nonprofits, and businesses. It was critical to showcase the capability of OT authority to get beyond government business as usual and be a friendly partner to the private sector. TRP advertised using many methods, including standard government solicitation portals, in a conscious effort to reach as broad an audience as possible.

To give just one example of a TRP partnership, the Trauma Care Information Management System project involved seven private companies both large and small, three college medical schools, and a government organization (Uniformed Services University of Health Sciences). The system backbone and interface data for functional nodes were all developed jointly and openly while individual functional nodes were proprietary.

Within just two years hundreds of TRP projects were executed. Government funding of about $800 million leveraged over $1 billion in private sector investments. According to Under Secretary of Defense Paul Kaminski, TRP "significantly help[ed] the Services and the Department of Defense meet the challenges both of today and of the future."[30] The TRP was a major source of data for the military industry panel chaired by former Marine Commandant General Alfred M. Gray. The panel recommended a dual-use strategy as DOD's primary approach to gain improvements in military systems and noted the TRP could not have been successful without innovative (OT) contracting.[31]

DOD Projects

Early DARPA OT projects provided examples of OT use. To engage the broader DOD community DARPA also partnered with other DOD elements not only to advance technology but to field new capabilities and upgrade existing systems more rapidly and at lower cost than through traditional approaches.

Global Hawk

DARPA partnered with the Defense Airborne Reconnaissance Office (DARO) to execute the first prototype OT. The Advanced Concept Technology Demonstration (ACTD) approach was used to rapidly field a new autonomous high altitude, long endurance reconnaissance airplane in a fraction of the time such a large new capability would have taken under business as usual. DARPA issued a two-page description of desired performance capabilities. As an ACTD there was no formal requirement. In lieu of detailed specifications or an extensive statement of work, DARPA's stated desire was for an unmanned aerial vehicle (UAV) that could reach an altitude of 60,000 feet and remain aloft for 24 hours with a strict limitation on the price tag for the production item of $10 million. DARPA allowed industry to propose their own solution sets for achieving the desired performance. Prior to Global Hawk and its predecessor, the MQ-1 Predator, which originated under DARPA's Amber program, UAV technology was an emerging developmental area that was generally unreliable.[32]

The project started in 1994. DARPA-DARO initially

selected five contractors in Phase I through a competitive solicitation. While the original program plan was to select two competing performers in Phase II in 1995, budget constraints allowed for the selection of only one performer in this phase. Phase III spanned 1997 through 1999 and produced eight UAV prototypes. In the final Phase IV years of 2000 through 2001, the specifications were finalized for full production and transition to the U.S. Air Force. This overall timeline of approximately seven years was deemed a success as traditional aerial vehicle development programs typically spanned up to two decades. The funding over seven years was approximately $372 million.

DARPA's use of a prototype OT allowed industry innovation through creative flexibility in UAV development while remaining within budget and meeting DARPA's and Air Force's various performance goals. The contractor was given wide latitude to select and defend tradeoffs of performance parameters as long as the "flyaway" price tag of $10 million was achieved. "Design-to-price" was a distinct departure from traditional acquisition programs, which typically focus on achieving the highest possible performance, which can result in cost increases.[33] Giving the contractor freedom to design and run the program was also a departure from the normal process of extensive government control. The Global Hawk project allowed government and industry to collaboratively and successfully test the limits of technology within the constraint of a price point. Global Hawk performed operational missions while still in its demonstration phase. Over 40 Global Hawks were produced for the Air Force as the RQ-4 under the traditional acquisition system. It remains in service with the Air Force and the Navy has a derivative, Triton. NATO, Japan, and South Korea have also acquired Global Hawks.

Commercial Operations And Support Savings Initiative (COSSI)

Most of the examples above are not necessarily meant to be replicated but to stimulate thinking as to what is possible with OTs. The Commercial Operations and Support Savings Initiative (COSSI) is a program that can and should be replicated and become a standard way of doing business. The interesting thing about COSSI is that despite achieving a record of success it was allowed to fade away with only vestiges remaining. COSSI was successfully piloted at the Office of Secretary of Defense level. When transitioned to the military departments, business as usual attitudes and the budget priorities of the individual services seem to trump innovative approaches, opening the technology base to new entrants, and cost savings.[34]

COSSI started in 1997 aimed at reducing operations and support (O&S) costs by replacing (often expensive and outdated) military specific components in DOD systems with components adapted from commercial products or technology. O&S costs, primarily contract services, engineering support, and spare parts, generally account for about 70% of a weapons system's life-cycle cost. COSSI involved two phases using the original research OT authority or prototype OT authority. Phase 1 consisted of the government funding, typically cost-shared, non-recurring engineering to take a commercial product and make it part of a kit that could replace a component of a legacy system. Phase 2 involved testing and qualification of the kit to verify utility, safety, and cost savings. The R&D funding organization needed to be partnered with a buying command that made a future purchase commitment if agreed performance was met. In virtually every case where cost-savings were verified performance improvement was also achieved.

The program was premised on DOD funding the modification, testing, and adaptation of the commercial component for military needs on a cost-shared basis while the commercial partner gained the promise of a fixed-price procurement if the savings was successfully demonstrated. Since OT production authority did not then exist, COSSI was designed to use Federal Acquisition Regulation Part 12 commercial item contracts for the follow-on procurement. COSSI was successful in the sense that documented (O&S) cost savings exceeding the government's R&D investment were realized and eventually the program attracted considerable participation by nontraditional firms. However, a glitch occurred when contrary to program guidelines some buying organizations refused to make a direct award to the cost-shared developer and either went out competitively to procure the improved component (often from a traditional defense contractor) or opted not to procure the improved item despite demonstrated cost savings and improved performance. Today, with the ability to transition seamlessly to production following a successful prototype project, a COSSI-like program could operate more efficiently than the original. As pioneered by DARPA over its first two years, $100 million of government R&D funding resulted in $3 billion in operations and maintenance and procurement savings over 10 years—a 30:1 savings on investment.[35]

In COSSI, flexibility in intellectual property rights and streamlined business practices were important to attracting commercial firms. COSSI was competitive with competitions generally resembling broad agency announcements.[36]

Other Resources

The examples cited above including both individual agreements and programs involving hundreds of agreements review only a fraction of the OTs issued since the first NASA agreement. You can explore other perspectives on the agreements cited or other agreements by consulting various collections of case studies.[37] There are also in-depth studies of some agreements and programs.[38] While early agreements executed by NASA and the Department of Defense have been highlighted, you should be aware that more recent agreements and those executed by other agencies have had noteworthy impacts and in some cases obligated many millions of dollars. By using the flexibility of OTs, new relationships such as those between government and large pharmaceutical manufacturers drove the rapid development of new vaccines and therapies.[39] Caveat: along with useful information much misinformation about OTs is in circulation.[40]

Lessons From Early OT Agreements

The agreements and programs described in this BRIEFING PAPER provide lessons that can aid in successfully executing OT projects and agreements.

1. *Leadership*. When key leaders understand the need to do better than business as usual and that OTs have the potential to provide the means to improve the execution of programs and accomplishing missions the right setting for OT success is in place.

2. *Vision.* OTs thrive in the context of a clear vision of a problem to be solved or a mission to be accomplished. From that vision and an understanding of potential solutions sets goals can be derived. The flexibility of OTs permit goals rather than rules to drive project structure.

3. *Team.* OTs thrive when they are executed by a team of critical thinking problem solvers prepared to abandon business as usual paradigms.

4. *Program centered.* The OT vision and team need to be driven by program needs and not by unnecessary rules and process. Rules applicable to OT are few so success of the program rather than compliance with rules needs to be the focus.

5. *Industry.* Good ideas exist outside government as well as within. The private sector needs to be embraced as a partner in executing OTs not viewed as an adversary.

6. *Perspective*. The role played by the procurement contracting office, if any, in OT contracting is administrative support. Concepts such as only the contracting officer "can obligate the government" or "change the contract" play no part in OT contracting. A contracting specialist can be a welcome member of the OT team.

ENDNOTES:

[1]For previous Briefing Papers on OTs, see Vacketta, Kuyath & Svetz, "Other Transactions," 98-04 Briefing Papers 1 (Mar. 1998); Vadiee & Garland, "The Federal Government's 'Other Transaction' Authority," 18-5 Briefing Papers 1 (Apr. 2018); Kelly, "IP Rights Under NASA and DOD "Other Transaction" Agreements—Inventions and Patents," 18-9 Briefing Papers 1 (Aug. 2018); Kelly, Krieger & Fowler, "Determining Litigation Fora Under the FAR and Under Other Transaction Authority," 19-11 Briefing Papers 1 (Oct. 2019); Masiello, Chin & Monahan, "Federally Funded Research and Development: Intellectual Property Rights," 22-1 Briefing Papers 1 (Jan. 2022); see also Dunn, "Feature Comment: Appropriate Contractual Instruments for R&D," 59 GC ¶ 202 (July 12, 2017); Dunn, "Feature Comment: DOD Other Transactions Guide—A Breath of Fresh Air," 60 GC ¶ 362 (Dec. 5, 2018); Dunn, "Feature Comment: Thirty Years of Other Transactions," 61 GC ¶ 347 (Nov. 26, 2019); Dunn, "Feature Comment: New Administration: New Acquisition System?," 62 GC ¶ 344 (Dec. 9, 2020); Dunn, "Feature Comment: Space Development Agency: Why Was Using an OT the Second Choice?," 63 GC ¶ 366 (Dec. 15, 2021); Dunn, "Feature Comment: New Life and a New Number for Research Other Transactions," 64 GC ¶ 63 (Mar. 9, 2022); Dunn, "Feature Comment: New DOD Other Transactions Guide: Retreating From Innovation," 65 GC ¶ 202 (Aug. 2, 2023).

[2]United States v. Tingey, 30 U.S. (5 Pet.) 115, 125 (1831).

[3]National Aeronautics and Space Act of 1958 ("Space Act"), Pub. L. No. 85-568, § 203(b)(5), 72 Stat. 426, 430 (1958) (current version at 51 U.S.C.A. § 20113(e)).

[4]Schuman, "Space Act Agreements: A Practitioner's Guide," 34 No. 2 J. Space L. 277, 288–89 (Winter 2008) (quoting telephone interview with Paul G. Dembling (July 25, 2002) (transcript on file with Mr. Schuman).

[5]Dembling, "The National Aeronautics and Space Act of 1958: Revisited," 34 No. 2 J. Space L. 203, 211 (Winter 2008).

[6]Halchin, Cong. Rsch. Serv., RL34760, Other Transaction (OT) Authority 7–18 (July 15, 2011), https://fas.org/sgp/crs/misc/RL34760.pdf.

[7]National Defense Authorization Act for Fiscal Years 1990 and 1991, Pub. L. No. 101-189, § 251, 103 Stat. 1352, 1403 (1989); see current version at 10 U.S.C.A. § 4021.

[8]National Defense Authorization Act for Fiscal Year 1994, Pub. L. No. 103-160, § 845, 107 Stat. 1547, 1721 (1993). The terminology "weapons or weapons systems" has been greatly expanded by amendments to the original language. Follow-on production authority has been added. See current version at 10 U.S.C.A. § 4022.

[9]See Dunn, "Feature Comment: Appropriate Contractual Instruments for R&D," 59 GC ¶ 202 (July 12, 2017).

[10]Staff of Subcomm. on Space Science and Applications, H. Comm. on Science and Technology, 97th Cong., 1st Sess., United States Civilian Space Programs 1958–1978, at 938–39, 951 (Comm. Print Jan. 1981).

[11]Dunn, "Contractual Mechanisms in Support of Commercial Space Activity," 1 No. 3 Air & Space Law. 3 (Spring 1984).

[12]Space Commercialization: Hearings Before the Subcomm. on Space Science and Applications, H. Comm. on Science and Technology, 98th Cong. 83 (Comm. Print May 1983) (statement of Charles A. Ordahl, Director of Space Programs, McDonnell-Douglas Astronautics).

[13]Id.; see Dunn, "Contractual Mechanisms in Support of Commercial Space Activity," 1 No. 3 Air & Space Law. 3, 4 (Spring 1984).

[14]Dunn, "Contractual Mechanisms in Support of Commercial Space Activity," 1 No. 3 Air & Space Law. 3, 5 (Spring 1984).

[15]Memorandum for John E. O'Brien, Transfer of Rocket Engines to a Private Company (Apr. 20, 1982) (on file with author).

[16]Abell, "Sept. 9, 1982: 3-2-1. . .Liftoff! The First Private Rocket Launch," Wired (Sept. 9, 2009), https://www.wired.com/2009/09/dayintech0909privaterocket/.

[17]"Transpace Carriers Inc.," United Press Int'l, Jan. 9, 1984, https://www.upi.com/Archives/1984/01/09/Transpace-Carriers-Inc-a-recently-formed-space-transportation-company/1993442472400/.

[18]NASA's Commercial Cargo Providers: Are They Ready To Supply the Space Station in the Post-Shuttle Era?, Hearing Before the Subcomm. on Space and Aeronautics of the H. Comm. on Science, Space and Technology, 112th Cong. (May 26, 2011) (statement of William H. Gerstenmaier, Associate Administrator, Space Operations Mission Directorate, National Aeronautics and Space Administration), https://republicans-science.house.gov/sites/republicans.science.house.gov/files/documents/hearings/052611_Gerstenmaier%20Testimony.pdf.

[19]Authority To Enter Into Partnership Agreements, NASA Policy Directive (NPD) 1050.7 (Jan. 11, 2021), https://nodis3.gsfc.nasa.gov/displayDir.cfm?Internal_ID=N_PD_1050_0007_&page_name=main.

[20]NASA, List of Active Space Act Agreements (as of June 30, 2023) With U.S. Non-Federal Partners, https://www.nasa.gov/partnerships/current-space-act-agreements/.

[21]National Defense Authorization Act for FY 1990 and 1991, Pub. L. No. 101-189, § 251, 103 Stat. 1352 (1989) (adding 10 U.S.C.A. § 2371); see current version at 10 U.S.C.A. § 4021.

[22]News Release, DOD Public Affairs, DARPA Signs Agreement for Gallium Arsenide Work (Apr. 9, 1990).

[23]Weinberger, The Imagineers of War: The Untold Story of DARPA, the Pentagon Agency That Changed the World 283–85 (Vintage Books 2017)

[24]Donald Atwood, Deputy Secretary of Defense, Transcript of Testimony, Subcomm. on Defense Industry and Technology, S. Comm. on Armed Services (Apr. 24, 1990).

[25]2 Van Atta, Reed & Deitchman, Institute for Defense Analyses, DARPA Technical Accomplishments: An Historical Review of Selected DARPA Projects 19-2 to 19-8 (Apr. 1991), https://apps.dtic.mil/sti/citations/ADA241725; Dunn, Digital Gallium Arsenide (GaAs) Semi-conductors (unpublished paper) (on file with author).

[26]The agreement is described and graphically represented in Strategic Institute, Guide to Other Transactions Authority 64 (3d ed. 2021).

[27]DARPA's original OT authority (10 U.S.C.A. § 2371) is currently codified at 10 U.S.C.A. § 4021.

[28]See 10 U.S.C.A. § 4811(b) for the congressionally mandated national security strategy creating a civil military integration policy and increasing reliance on the "commercial national technology and industrial base."

[29]See 10 U.S.C.A. § 4831.

[30]National Technology Transfer Center, The Technology Reinvestment Project: Dual-Use Innovation for a Stronger Defense 3 (1995), contains brief descriptions of over 200 projects and more detailed descriptions of 24 projects. The Trauma Care Information Management System is described on pages 65, 72, and A46; see also Richardson et al., Potomac Institute for Policy Studies, A Review of the Technology Reinvestment Project (Jan. 30 1999), https://www.potomacinstitute.org/images/studies/TRPFinalReport_Publish.pdf.

[31]Gray et al., Potomac Institute for Policy Studies, Dual Use Research Project Report (July 21 1996), https://www.potomacinstitute.org/images/dualuse.pdf.

[32]Leonard & Drezner, RAND Corp. MR1474, Innovative Development: Global Hawk and Dark Star (2002); Office of the Under Secretary of Defense for Acquisition and Sustainment, Other Transactions Guide 13 (Version 2.0 July 2023), https://www.acq.osd.mil/asda/dpc/cp/policy/docs/guidebook/TAB%20A1%20-%20DoD%20OT%20Guide%20JUL%202023_final.pdf.

[33]The $10 million unit price of the demonstrator aircraft eventually ballooned more than 10 times after the production program transitioned to the Air Force. Changes included switch to traditional procurement, the acquisition of initial developer Ryan-Aeronautical by Northrop Grumman, the addition of new requirements, and inflation. Despite the changes, the Congressional Budget Office found that Global Hawk has a lower life cycle cost than its nearest manned equivalent. Congressional Budget Office, Usage Patterns and Costs of Unmanned Aerial Systems 8 (June 2021), https://www.cbo.gov/publication/57090.

[34]There are several studies of COSSI. See National Center for Advanced Technologies, An Evaluation and Assessment of the Commercial Operations and Support Savings Initiative (Sept. 2001); Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, Commercial Operations and Support Savings Initiative (Dec. 2001), https://apps.dtic.mil/sti/pdfs/ADA399271.pdf; Department of Defense Office of Inspector General, Audit Report No. D-2001-082, Management of the Commercial Operations and Support Savings Initiative Program (Mar. 19,

2001), https://www.dodig.mil/reports.html/Article/1116428/management-of-the-commercial-operations-and-support-savings-initiative-program/.

[35]See Strategic Institute, Guide to Other Transactions Authority 71 (3d ed. 2021), for a graphic representation and brief discussion of COSSI.

[36]For a detailed description of the COSSI program and solicitation, see Program Description for the Commercial Operations and Support Savings Initiative (COSSI), Announcement No. 00-94058 (Feb. 7, 2000).

[37]Ablard et al., Logistics Management Institute, An Analysis of Special Instruments for Department of Defense Research and Acquisition (Feb. 2007) (case studies in App. C); Dunn, Injecting New Ideas and New Approaches in Defense Systems: Are Other Transactions an Answer? 13-21 (University Of Maryland/Naval Postgraduate School 2009); Strategic Institute, Guide to Other Transactions Authority 12 (Joint Unmanned Combat Air System), 32 (Maritime Fire Support Demonstrator), 58 (Chemical, Biological Radiological Technology Alliance) (3d ed. 2021); Office of the Under Secretary of Defense for Acquisition and Sustainment, Other Transactions Guide 6 (Robotic Servicing of Geostationary Satellites), 8 (Air Operations Center) (Version 2.0 July 2023), https://www.acq.osd.mil/asda/dpc/cp/policy/docs/guidebook/TAB%20A1%20-%20DoD%20OT%20Guide%20JUL%202023_final.pdf.

[38]See, e.g., Arsenal Ship Joint Program Office, Arsenal Ship Lessons Learned (Dec. 31, 1997); see also National Technology Transfer Center, The Technology Reinvestment Project: Dual-Use Innovation for a Stronger Defense (1995); Richardson et al., Potomac Institute for Policy Studies, A Review of the Technology Reinvestment Project (Jan. 30 1999), https://www.potomacinstitute.org/images/studies/TRPFinalReport_Publish.pdf.works; Leonard & Drezner, RAND Corp. MR1474, Innovative Development: Global Hawk and Dark Star (2002); Office of the Under Secretary of Defense for Acquisition and Sustainment, Other Transactions Guide 13 (Version 2.0 July 2023), https://www.acq.osd.mil/asda/dpc/cp/policy/docs/guidebook/TAB%20A1%20-%20DoD%20OT%20Guide%20JUL%202023_final.pdf; National Center for Advanced Technologies, An Evaluation and Assessment of the Commercial Operations and Support Savings Initiative (Sept. 2001); Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, Commercial Operations and Support Savings Initiative (Dec. 2001), https://apps.dtic.mil/sti/pdfs/ADA399271.pdf; Department of Defense Office of Inspector General, Audit Report No. D-2001-082, Management of the Commercial Operations and Support Savings Initiative Program (Mar. 19, 2001), https://www.dodig.mil/reports.html/Article/1116428/management-of-the-commercial-operations-and-support-savings-initiative-program/.

[39]E.g., Genentech Umbrella Agreement (Genentech, Inc.—Dept of Health and Human Services) (Sept. 27, 2018); and AstraZeneca Pharmaceuticals LP—Army Contracting Command NJ (Oct. 28, 2020). OTs enabled positive engagement between government and "big Pharma," enabling rapid development of vaccines during a pandemic.

[40]For discussion of examples of misinformation, see Dunn, "Practitioner's Comment, COFC Holds That It Has Jurisdiction Over Challenge to OTA Evaluation," 64 GC ¶ 265 (Aug. 31, 2022) (court apparently misled by government representations); Dunn, "Feature Comment: The New Other Transactions Guide: Retreating From Innovation," 65 GC ¶ 202 (Aug. 2, 2023).

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BRIEFING PAPERS